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'I can't understand why others don't screen more': a qualitative study exploring why Australian general practitioners screen for primary aldosteronism

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ABSTRACT

Objective We sought to understand the factors that influence a general practitioner's (GP's) experience of screening for primary aldosteronism (PA) in hypertensive patients.

Design A qualitative study, framed by phenomenology, using semistructured interviews that were audiorecorded, transcribed verbatim, entered into NVivo V.12.0 for coding and analysed for emerging themes.

Setting Melbourne, Australia.

Participants Eligible GPs had received education on PA as part of a previous study. We recruited a purposive sample of 16 GPs (6 females, 10 males) who varied in practice location, clinical experience and the number of patients screened for PA.

Results Although GPs had been educated about PA, they found it challenging to explain the condition to patients and were uncertain about how to screen patients who were already taking antihypertensive medications. Most viewed the screening process to be practical, inexpensive and, by and large, acceptable to their patients. However, they found it inconvenient to alter antihypertensive medications before screening to allow for easier interpretation of the aldosterone-renin ratio. They were also less enthused about screening patients whom they thought fitted a clinical picture of essential hypertension. Knowledge of the screening process, cost and convenience of performing the aldosterone–renin ratio, conceptualisation of risk related to PA, and a desire to improve clinical care were influencing factors that modified the GPs' screening experience.

Conclusion Our findings suggest that knowledge gaps, practical limitations of the aldosterone–renin ratio, and errors in diagnostic reasoning were challenges of routine PA screening. Most of these practical barriers could be addressed by relatively simple educational and practice modifications to increase PA screening rates and optimise detection for the most common cause of secondary hypertension in primary care.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ Strengths of this study include the robust methodology and use of member checking, reflexive journaling and dual coding with a non-clinical researcher, all of which enhanced the trustworthiness of our findings.
⇒ A limitation is that general practitioners (GPs) who did not screen for primary aldosteronism (PA) were not interviewed.
⇒ As participation in our study was voluntary, the experiences of GPs who were more enthusiastic about PA screening may have been over-represented.

INTRODUCTION

Hypertension is a common presentation in Australian general practice and a significant risk factor for cardiovascular disease.[1] The 2016 Lancet Commission on Hypertension found that missing a diagnosis of secondary hypertension is one of the most important reasons for unacceptably poor control of blood pressure levels.[2]

Primary aldosteronism (PA), also known as Conn's Syndrome, is the most common cause of secondary hypertension[3] and is due to adrenal overproduction of aldosterone despite suppressed renin. While PA was initially considered rare and restricted to patients with hypokalaemia, increasing evidence suggests its prevalence is between 3.2% and 12.7% in primary care patients with hypertension[4] with most patients being normokalemic.[5]

Early detection and targeted treatment of PA are important for three reasons. First, patients with PA have worse cardiovascular outcomes than patients with blood pressure-matched essential hypertension.[6 7] Second, targeted treatment of PA, either with unilateral adrenalectomy or the commencement of a mineralocorticoid receptor antagonist, can improve blood pressure control, reduce cardiovascular risk and reverse end-organ damage.[8] Finally, diagnosing PA at a younger age reduces untreated disease duration and has been associated with better treatment outcomes.[9–11]

Screening hypertensive patients with a simple blood test called the plasma aldosterone–renin ratio (ARR) can enable early

- Sustained blood pressure above 150/100 mmHg
- Blood pressure above 140/90 mmHg that is resistant to 3 conventional medications
- BP above 140/90 mmHg that controlled with four or more anti-hypertensive medications
- Hypertensive patients with spontaneous or diuretic-induced hypokalaemia
- Hypertensive patients with an adrenal tumour
- Hypertensive patients with obstructive sleep apnoea (OSA)
- High blood pressure and a family history of early-onset hypertension or cerebrovascular accident at a young age (40 years)
- All hypertensive first-degree relatives of patients with PA

Figure 1 Figure shows a summary of the recommendations from the 2016 Endocrine Society guidelines.[12] Patients who satisfy any of these criteria should be screened for PA. BP, blood pressure; PA, primary aldosteronism.

detection of PA. The ARR is elevated in patients with PA due to elevated aldosterone with a suppressed renin concentration. The 2016 Endocrine Society guidelines recommend measuring an ARR in specific patient populations (figure 1).[12] For accurate PA screening, the Endocrine Society advises substituting antihypertensives that interfere with the ARR (beta-blockers, angiotensin-receptor blockers, ACE inhibitors and diuretics) with non-interfering medications (verapamil, moxonidine, prazosin and hydralazine), measuring the ARR under normokalaemic conditions, and collecting blood samples once patients have been ambulatory for 2 hours. The confounding effects of other commonly used medications (such as the contraceptive pill) should also be considered when interpreting the ARR.

Despite the high prevalence in primary care, general practitioners (GPs) rarely screen for PA. For instance, retrospective data from the Bettering the Evaluation And Care of Health database revealed that Australian GPs measured the ARR 66 times in 1.5 million patient encounters over 16 years (April 2000–March 2016).[13] Furthermore, a survey of 500 European GPs reported that 5%–7% of hypertensive patients were screened for PA.[14]

Several authors have suggested that limited awareness is a major barrier to screening for PA.[14–17] For example, the survey of 500 European GPs found that 36% reported having no patients with PA, and 40% were unaware of the Endocrine Society screening recommendations for PA.[14] The authors believed limited awareness of PA, combined with conventional teachings that it is rare and benign, explained the low rates of PA screening among GPs.[14]

A recent study by Libianto *et al* delivered a training intervention (table 1) to GPs in an effort to increase their awareness of PA.[18] GPs were then encouraged to screen all newly diagnosed hypertensive patients and refer those with a positive ARR to an endocrine hypertension clinic in Melbourne, to assess the prevalence of PA in treatment-naïve hypertensive patients. However, even among GPs who were informed about PA, there was still significant variation in screening rates, ranging from 0 to 44 patients over 2 years.[18] Given that, in theory, all participants were aware of PA following the training, we suspect that other factors may be responsible for the screening behaviour of GPs.

There is no research on the factors that influence GP screening decisions for PA beyond limited awareness. Given the benefits of early detection and the low GP screening rates, this gap in the literature remains an obstacle to optimal PA detection. Hence, our study aimed

Table 1 Key attributes of the training intervention

Setting	39 clinics with more than three practicing GPs within the South East Primary Healthcare Network in Victoria, Australia ► 37 in metropolitan Melbourne ► 2 in regional victoria
Participants	70 GPs (ranging from 1 to 10 per session)
Date	March 2017 to November 2020
Duration	30 min
Presenters	► Consultant endocrinologist ► Research nurse ► PhD student
Format	Didactic presentation in clinic with case examples ► Provided with a one-page summary of the session for reference (online supplemental figure 1), explanatory statement and consent form
Content	Prevalence of PA Guidelines for screening patients ► Replacement of interfering antihypertensives with verapamil (slow release) for at least 4 weeks ► Details for sample collection Management of PA ► Referral pathway for a positive screening test ► Indications for medical or surgical management of PA

The table lists the key attributes of the training intervention from Libianto *et al*'s study.[18]
GP, general practitioner; PA, primary aldosteronism.

to explore the factors that influence a GP's experience of screening for PA in hypertensive patients.

METHODS

Study design

This qualitative study involved semistructured interviews with GPs working in Melbourne, Australia. We used a phenomenological approach[19] to data collection and analysis to understand the lived experiences of GPs who were previously made aware of PA through a training intervention.

Researcher descriptions

AKN is a final year medical student who is interested in improving hypertension management. He completed targeted background reading on qualitative methodology, attended weekly workshops on qualitative research, and had regular supervision from GR, SP and JY as part of a research honours undergraduate degree. Both JY and GR have extensive experience in PA-focussed research. GR is an academic GP with over 20 years' experience in primary care research, SP is a postdoctorate researcher with an educational and social science background, and JY is an endocrinologist who delivered the training intervention in Libianto *et al*'s study[18] and thus, had interacted with participants before commencing our study. AKN, SP and GR had no prior relationship with study participants.

Recruitment

GPs were eligible to participate in this study if they had attended the training intervention on PA in Libianto *et al*'s study.[18] This sample permitted analysis of other factors, besides limited awareness, which influenced the GPs' approach to PA screening. We excluded potential participants who were on extended leave or retired. We sought to gather a purposeful sample of GPs who maximally varied in practice location, clinical experience, and the number of newly diagnosed hypertensive patients screened for PA (as documented in Libianto *et al*'s study). Through prior consent, JY had access to the contact information of GPs who had participated in the training intervention. JY sent an email invitation, including an explanatory statement, to all eligible GPs. To follow-up, some GPs received another email from JY to seek expressions of interest, while the others received a phone call from AKN to invite them for an interview. We approached 26 GPs to participate in this study; eight GPs declined due to other commitments, and two were on maternity leave. GPs interested in participating in the study were emailed a consent form. On return of a signed consent form, an interview was arranged.

Data collection

Data collection involved either face-to-face or online semistructured interviews. Face-to-face interviews were conducted in GPs' offices, while online interviews were conducted by video conference (Zoom). Interviews used open-ended questions to explore the GPs' experiences of screening, diagnosing, and managing patients with PA and followed a written guide (online supplemental figure 2) based on themes identified from a literature review. We made minor adjustments to the sequencing and wording of interview questions following four pilot interviews with academic GPs from Monash University. The interview guide was progressively modified to explore emerging insights gained from ongoing data analysis. AKN conducted all interviews from June to July of 2021 and made participants aware that he was a medical student before commencing the interview. Interviews lasted 30–45 min and were audiorecorded, transcribed verbatim and reviewed for accuracy. Field notes were used to capture non-verbal expressions and contextual elements during interviews. All participants were reimbursed $A 100 in recognition of the time spent participating in the interview. GPs received a summary of their interview and were invited to make clarifications or additions through member checking.

Data analysis

In keeping with the iterative process of qualitative research, we commenced analysis during the data collection phase. AKN and SP began by independently reading interview transcripts to inductively identify codes. Next, both researchers met weekly to compare codes and reach agreement on a coding template, which was refined throughout data analysis. The researchers used the first five transcripts to familiarise themselves with key messages and organise the template into main codes and subcodes. Subsequently, all transcripts and field notes were uploaded into NVivo V.12.0 and coded using the template. Finally, main codes were categorised into themes to describe the influencing factors. Regular team meetings were held to discuss emerging patterns within the data. AKN used a reflexive journal to document potential bias throughout data analysis.

Patient and public involvement

There were no patients or members of the public involved in this study.

RESULTS

We interviewed 16 GPs. Data saturation was reached by the 14th interview, and two further interviews were used to confirm or disconfirm themes. Six GPs identified as female, and 10 identified as male. The GPs varied by clinical experience (1–35 years, μ=17 years), practice location (2 regional, 14 metropolitan), and the number of newly diagnosed hypertensive patients screened for PA (1–44). One information-rich GP had worked at a regional practice before working in metropolitan Melbourne and provided screening experiences from both settings. Most of the GPs worked five or more sessions per week, one worked three sessions and the other worked two sessions.

Influencing factors

Knowledge

Nearly all GPs suggested that the training intervention improved their knowledge of PA and provided a platform for them to expand their screening practice beyond patients with treatment-resistant hypertension.

> It's a common form of hypertension, but I didn't quite appreciate that before, so I only ordered it [ARR] if someone was resistant to treatment, whereas now I order it almost every time. (GP16, 30 years' experience, metropolitan, screened 1 patient for PA)

However, knowledge deficits in key areas of the PA diagnostic process influenced their ability to conduct screening within the existing time constraints of general practice. For example, many GPs found it 'abstract and very hard to explain' (GP11) PA using patient-friendly language. They, therefore, viewed PA screening as an additional burden amidst the time constraints of normal clinical care.

Although almost all GPs knew they had to cease common antihypertensive medications to obtain an accurate ARR, many felt they lacked readily accessible information on how to replace them before screening for PA. As a result, some found it easier to continue current antihypertensive therapy rather than switch to one suitable for screening.

> I don't have a precise list of what antihypertensives they can use instead of the ones they are taking. It's not fresh in my mind… so sometimes you just write a prescription for the next antihypertensive and say goodbye. (GP10, 35 years' experience, regional, screened three patients for PA)

All GPs recognised the ARR could still be interpreted while patients were on antihypertensive medications. However, most found it 'bloody hard to interpret' (GP14) whether the result was accurate or whether it had been compromised by the use of specific antihypertensive medications.

Cost and convenience

Perceptions about the cost and convenience of performing the ARR influenced the GPs' approach to screening for PA. It was clear that GPs preferred to screen newly diagnosed hypertensive patients as they found it practical to order the ARR with blood tests for a cardiovascular risk assessment (like fasting lipids). Although many GPs recognised that screening all newly diagnosed hypertensive patients would increase the number of screening tests performed, they noted the ARR was relatively inexpensive.

> We're already doing blood tests anyway and it isn't expensive from what I can tell, so why not screen them [newly diagnosed hypertensive patients]? (GP4, 16 years' experience, metropolitan, screened 11 patients for PA)

However, several GPs felt it was inconvenient for newly diagnosed hypertensive patients to perform the ARR 2 hours after rising from bed. They suggested that patients had to either fast for 2 hours before undergoing screening (to complete the ARR with fasting blood tests) or perform 'two tests at different times of the day' (GP2) (fasting blood tests and a non-fasting ARR).

In contrast to newly diagnosed patients, GPs believed it was costly and inconvenient to screen patients who were already taking antihypertensives. They found that patients were reluctant to 'spend more money buying another medication just in case they have primary aldosteronism' (GP10). Some GPs noted that patients were reluctant to switch antihypertensives due to concerns about potential side effects, particularly if their current medications were well tolerated. The GPs' acceptance of PA screening did not appear to be influenced by their clinical experience.

> Some people can't be bothered changing to new medications like verapamil that have side effects of headaches, constipation… (GP5, 35 years' experience, metropolitan, screened one patient for PA)

Most GPs were comfortable referring a positive ARR to the endocrine hypertension clinic in Melbourne as patients were 'seen quickly and managed appropriately for no cost' (GP12). However, some GPs suggested that geographical distance made it time-consuming and inconvenient for patients to attend multiple appointments for further investigations and management of PA. This was more evident among rural GPs but was also highlighted by two metropolitan GPs.

> It's a bit arduous to refer them all the way down to the clinic, which is not close to where I am…Sometimes I make the judgement not to refer them. (GP4)

Conceptualisation of risk

The GPs' decision to screen was influenced by their conceptualisation of risk related to PA. They often prioritised screening patients with uncontrolled hypertension on multiple antihypertensives, as they felt these patients were at significant risk of 'side effects, compliance issues, and end-organ damage' (GP12). Most GPs were less enthused about screening patients with mild hypertension as they perceived a low risk of harm if PA was not detected.

GP perceptions about the prevalence of PA also influenced screening decisions. Many GPs perceived a higher prevalence of PA following the training intervention which appeared to reinforce the GPs' role in screening for PA, as they recognised that a significant proportion of their patients were at risk of developing the condition.

> When we were told the prevalence was 1 in 10, they had our attention right away…I now see it as a GP's job to exclude it [PA] and I can't understand why others don't screen more. (GP5)

However, nearly all GPs perceived a low prevalence of PA in patients who fit their clinical conceptualisation of essential hypertension. GPs were often reluctant to screen older patients with mild hypertension as they felt essential hypertension was the more likely diagnosis. They also seemed less inclined to screen patients with features of metabolic syndrome or cardiovascular complications, as they were viewed as risk factors for essential hypertension.

> If they're above 40 and smoke, have a history of heart attacks, are overweight or have diabetes and high cholesterol, I just assume they have essential hypertension. (GP8, 4 years' experience, metropolitan, screened five patients for PA)

Only one GP recognised that clinical features such as age and blood pressure were unreliable indicators of PA and thus, preferred to screen all hypertensive patients irrespective of their clinical presentation.

> …not all patients [with PA] are that young and most of them didn't have a blood pressure that was super high, so I think it'd just be easier to screen all hypertensive patients. (GP14)

Improving clinical care

GPs recognised the potential to improve clinical care by detecting PA and initiating treatment. Many noted that targeted treatment of PA would allow them to 'treat the underlying disease rather than the effects' (GP15) of hypertension, thereby lowering blood pressure and reducing cardiovascular risk.

Furthermore, many GPs found the possibility of 'reducing the number of medications they will need long term' (GP2) was a powerful motivator for younger patients to undergo screening for PA, as they were often reluctant to commence lifelong antihypertensive medications.

In contrast to younger patients, screening was less positively perceived when caring for elderly patients with hypertension. GPs seemed to prioritise quality of life in elderly patients, particularly if they were frail or multimorbid. They were reluctant to inconvenience these patients by replacing antihypertensives that interfered with the ARR. They also noted these patients were poor surgical candidates and unlikely to benefit from further testing to confirm PA. Hence, some GPs opted to trial spironolactone in these patients without screening for PA.

> If they're older, they're probably not going to go have an operation. They're also probably already on quite a few medications, so it'd be hard to take them off them and do a test. So pragmatically, we start the pill and see what happens. (GP14, 24 years' experience, regional, screened two patients for PA)

Research process

GPs often suggested that additional mechanisms related to the Libianto *et al*.'s research process (rather than routine clinical practice) influenced their decision to screen for PA.

For example, many GPs felt it was tedious to discuss an explanatory statement and consent form with patients before screening for PA. Consequently, some GPs described opting to screen without 'enrolling patients because it's a lot easier and less cumbersome' (GP7). In contrast, others felt the study's instructions 'helped to cement the practice of ordering the test in my memory' (GP16). They, therefore, viewed the study process as an enabler to screening for PA.

DISCUSSION

Although GPs had been educated about PA, they found it challenging to explain the condition to patients and were uncertain about how to screen patients who were already taking antihypertensives. Most viewed the screening process to be practical, inexpensive, and, by and large, acceptable to their patients. However, they found it inconvenient to alter antihypertensive medications before screening to allow for easier interpretation of the ARR. They were also less enthused about screening patients whom they thought fitted a clinical picture of essential hypertension. Knowledge of the screening process, cost and convenience of performing the ARR, conceptualisation of risk related to PA, and a desire to improve clinical care were influencing factors that modified the GPs' screening experience.

Although we interviewed a diverse sample of GPs and intentionally searched for disconfirming cases, the transferability of our findings is limited as we were unable to recruit GPs who did not screen for PA following the training intervention. Thus, we may have overlooked experiences shared by other GPs who were excluded from this study. Furthermore, as sampling involved self-selection, we may have also overrepresented the experiences of GPs who were more enthusiastic about PA screening.

As the interviewer (AKN) was a medical student, some GPs may have naturally assumed a teaching role, thereby providing detailed responses during the interview. However, given AKN's interest in the research topic, he may have subconsciously encouraged GPs to discuss the facilitators and opportunities rather than the difficulties of PA screening. In line with a phenomenological approach, we minimised potential bias and enhanced the trustworthiness of our findings through member checking, reflexive journaling, and dual coding with a non-clinical researcher (SP).[19]

Although study participants were instructed to switch potentially interfering antihypertensives for at least 4 weeks, the Endocrine Society guidelines note that most antihypertensives (excluding mineralocorticoid antagonists) can be withdrawn for at least 2 weeks before screening.[12] Given the perceived cost and inconvenience associated with switching antihypertensives, it is possible that reducing the medication washout period to 2 weeks

may lead to improved acceptance of PA screening among both GPs and patients.

It may be considered a limitation that GPs were made aware of PA before conducting the interviews. However, we intentionally sought GPs who were aware of PA to explore additional barriers, other than limited awareness, influencing the GPs' screening behaviour.

We found clear evidence that a significant barrier to PA screening was the perceived difficulty of switching interfering antihypertensives before measuring the ARR. Several studies have documented the influence of common antihypertensives on the measurement of the ARR.[20–22] However, more recently, some authors have observed that the ARR was reliable at detecting PA while patients were using potentially interfering antihypertensives. Therefore, the absolute need to cease these medications before screening for PA remains controversial.[23 24]

GPs saw less value in screening for PA in patients with mild hypertension. This finding tallies with several retrospective cohort studies, which observed that PA screening rates were lower among patients with a lower systolic blood pressure.[25–27] Our findings may explain this observation as patients with mild hypertension appeared to fit into the GPs' clinical conceptualisation of essential hypertension, and they seemed to assume these patients had a low risk of harm if they were not diagnosed with PA.

Methods of clinician diagnostic reasoning may explain the GPs' reluctance to screen patients who fitted their clinical conceptualisation of essential hypertension. Elstein suggests that clinicians use two approaches to make diagnoses—pattern recognition and hypothesis testing.[28] Pattern recognition is an intuitive process where clinicians assign patients into diagnostic categories based on their clinical presentation, while hypothesis testing involves generating several hypotheses for a patient's diagnosis. GPs spoke of how patients with mild hypertension with coexisting metabolic syndrome and/or cardiovascular complications fitted into what they saw as a pattern of essential hypertension. Although this pattern seemed to make them less likely to consider PA, it contradicts both the prevalence of PA in patients with mild hypertension (15.7%)[29] and the evidence that both metabolic syndrome and cardiovascular complications are more common in patients with PA than those with essential hypertension.[6 15 30]

If screening rates are to improve, GPs will require evidence-based information on PA. Our data illustrates a clear need for GPs to have access to practical information detailing how to manage antihypertensives that interfere with screening, as well as information that emphasises how PA is often clinically indistinguishable from essential hypertension to reduce errors in diagnostic reasoning. Furthermore, our findings demonstrate the need for patient education resources to assist GPs with concisely explaining PA while improving patient knowledge and facilitating informed consent.[31]

Our findings highlight the need for practical strategies to engage GPs in the detection of PA in order to improve clinical practice. Some GPs developed practical solutions to overcome the challenges of diagnosing PA. For instance, several GPs opted to empirically trial a mineralocorticoid receptor antagonist in patients who they felt were unsuitable for screening, further testing or surgical management due to age, comorbidities, or access to the endocrine hypertension clinic. Other authors have advocated for a similar approach to diagnosis as it avoids the cost and inconvenience of screening for PA while ensuring these patients benefit from targeted medical therapy if they have the condition.[17 32]

Our findings highlight several key areas that could be further explored in future research. For example, given the uncertainty about whether antihypertensive medications need to be replaced and the inconvenience of the 2-hour ambulatory period before screening, further research to determine the necessity of these stringent testing requirements may be beneficial. Furthermore, future studies could examine patients' experience of undergoing PA screening to elicit additional barriers to implementing screening in primary care.

CONCLUSION

Several studies have identified the importance of detecting PA and initiating early treatment. With the dissemination of this knowledge to primary care, we anticipate increased awareness of PA among GPs. Our findings provide an insight into the practical challenges of screening as GPs become more aware of this common and treatable cause of secondary hypertension. Future interventions at the level of policy, practice and research could consider the challenges identified in our study when attempting to increase PA screening rates in primary care.

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Contributors AKN, GR and JY designed this study. AKN and JY recruited participants. AKN completed data collection with assistance from all other authors. Analysis was led by AKN and SP with contributions from GR. AKN wrote the paper and all other authors reviewed it. GR is the acting guarantor of the study.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

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Supplementary Figure 1

1) Does your patient have BP > 140/90 and not on medications? YES.

- If possible, set an alert in your practice software so that a prompt to enter the study appears when untreated hypertensive patients are seen.

2) Check UEC, aldosterone, renin, ARR (aldosterone: renin ratio)

- Please advise patients to do this test 2 hours after getting out of bed, (9 – 10AM; no need to fast)
- It may be easiest to enter these blood tests and specific instructions into your practice software as a set, eg. “hypertension screening tests”, so that you can order these tests at the click of a button.

3) Please CC path result to:
Dr Jun Yang (Endocrinologist), Department of Endocrinology, Level 3, Block E, Monash Medical Centre, Clayton Road, Clayton 3168

- This can also be pre-entered into your practice software.

4) Please ask patients to sign the consent form, allowing their results to be released to Dr Jun Yang, and you can sign as a witness.

- Please keep the signed consent page.
- Patients can keep the remaining document to read.
- Enter patient details and pathology results into an Excel sheet for 40 Category 1 CPD points

5) If ARR is abnormal (> 70 pmol/mU) or renin is suppressed, please refer the patient to the bulk-billing Endocrine Hypertension Clinic at Monash Medical Centre in Clayton (fax referral to 9594-3558, attention to Dr Jun Yang).

6) If you have other treated hypertensive patients who do not have good BP control, consider screening for PA as well (although they do not qualify for this study). The antihypertensives to use during the testing process, which do not interfere with aldosterone and renin levels,
include:

- verapamil SR 90 – 240 mg daily
- hydralazine 12.5 – 50 mg bd
- prazosin 0.5 – 5 mg tds
- moxonidine 200 mcg d

You can refer patients with an abnormal ARR or suppressed renin to us for further investigations and management, even if they are not part of the study.

Supplementary Figure 2

1. To begin, I'm interested in your thoughts about managing hypertension in general practice.
- *How has your management changed over the years/ what influenced these changes?*
- *How confident do you feel managing it?*

2. I wonder if you could think back to a recent patient whom you diagnosed with hypertension, particularly one who you felt needed some active management?
- *Did you conduct any investigations?*
- *How did you manage this patient?*

3. One of the things spoken about at the seminar was primary aldosteronism. What do you think about PA?
- *What do you think about its prevalence?*
- *Where does it fit into your clinical care of hypertension?*

4. Have you ever seen a patient in whom you thought primary aldosteronism may be present? If so, tell me about that patient

5. Some suggest that it may be sensible to screen all patients with hypertension for PA? What are your thoughts about this?