

RAISED BLOOD PRESSURE OR HYPERTENSION IN ADPKD

How common is raised blood pressure in ADPKD and why is it important?

Raised blood pressure or **hypertension** is very common in people with ADPKD (autosomal dominant polycystic kidney disease), including those with normal kidney function. It is not fully understood why blood pressure goes up in ADPKD, but we think that the cystic changes occurring within the kidneys compress normal kidney tissue leading to excessive salt and water retention. Some research has also suggested that increased activity of a hormone system called the “reninangiotensin system” may play a part, although this is controversial.

Raised blood pressure substantially increases the **risks of heart attacks and strokes**, which are the major causes of death and disability in people with ADPKD. In addition, **intracranial aneurysms** – localised bulging of blood vessels within the brain – are more common in people with ADPKD than in the general population. Rupture of aneurysms can result in fatal bleeding within the brain, and treatment of raised blood pressure may reduce the likelihood of this happening.

What is the ‘ideal’ blood pressure for people with ADPKD?

As for the general population, rigorous blood pressure control is likely to be of considerable importance in reducing the cardiovascular complications – heart attacks and strokes – associated with ADPKD. However, there isn’t any research which has looked at whether lowering blood pressure reduces the risks of strokes and heart attacks specifically in people with ADPKD, predominantly because ADPKD is relatively uncommon.

Instead, much of our knowledge about the effects of blood pressure on the cardiovascular system in ADPKD comes from the study of a condition called **left ventricular hypertrophy** or *LVH*, where the heart muscles become thickened in response to raised blood pressure. LVH is particularly common in people with ADPKD, and it has been shown that those who had their blood pressure lowered to less than 120/80 mmHg experienced a greater reduction in LVH than those whose blood pressure was less tightly controlled.

It is unclear from current research whether rigorous control of blood pressure also slows

the rate of kidney function deterioration in ADPKD. It may be the case that the gradual increase in number and size of kidney cysts outweigh the beneficial effects of lowering blood pressure. An alternative explanation is that studies that have looked at the effects of blood pressure reductions on kidney function in ADPKD may not have lasted long enough to see any benefit.

Our **recommendations for blood pressure** in people with ADPKD are in accordance with the guidelines published by the [British Hypertension Society](#) and other organisations such as [NICE](#). In general, we aim for a blood pressure of 130 mmHg systolic and 80 mmHg diastolic – often expressed as **130/80 mmHg**. For those with large amounts of urinary protein loss (or *proteinuria*) a blood pressure of \leq **120/75 mmHg** is usually recommended.

What medications are used to treat raised blood pressure in ADPKD?

The medications used to treat raised blood pressure in ADPKD are the same as are used for other forms of high blood pressure. Three distinct classes of medications are commonly used:

- ACE inhibitors (ACEi)
- Calcium channel blockers
- Diuretics (water tablets)

In addition, people may be prescribed tablets called angiotensin-receptor blockers (ARB) if they have side effects with ACEi, such as a cough. Although ACEi or ARB may be the preferred initial medication in someone with

LVH or significant proteinuria, what matters most is the blood pressure achieved. It is therefore quite common for people with ADPKD to be taking two or three blood pressure medications i.e. one from each of the classes listed above.

What can I do to help myself?

The beneficial effects of **reducing salt intake** are the same in people with ADPKD as in other people with raised blood pressure. Our research (at St George's) has shown that systolic blood pressure is reduced by roughly 10 mmHg when people with ADPKD reduce their salt intake from 15 to 3 grams per day.

We therefore recommend that people with ADPKD restrict their daily salt intake as much as possible, and definitely to below 6 grams.

In addition we recommend that people with ADPKD should:

- avoid smoking tobacco
- maintain an ideal body mass index (BMI) of 20 to 25 kg/m²
- take regular aerobic exercise – at least 30 minutes three times a week
- avoid excessive alcohol consumption – less than 21 units a week for a man and 14 units a week for a woman
- eat a healthy balanced diet without excessive saturated fat content