MEDICAL DISCLAIMER:

Please note that these guidelines are approximate and cannot be substituted for clinical judgement. Please take particular care if your patient has other medical issues such as mental health disorders, alcohol dependence etc – your knowledge of the patient is paramount.

This document cannot and does not contain medical/health advice. The medical/health information is provided for general information and educational purposes only and is not a substitute for professional advice. The use of or reliance on any information contained in this document is solely at your own risk.

The Freshwell Low Carb Project
www.lowcarbfreshwell.co.uk

Deprescribing in Hypertension in Patients Following a Low Carbohydrate Diet

The Freshwell Low Carb Project promotes a low carbohydrate way of eating for those people who are overweight or suffering from pre-diabetes or type 2 diabetes. Many of these individuals often suffer with other sequelae of metabolic syndrome including hypertension. When following a low carbohydrate diet, blood pressure (BP) can often fall, which if not managed appropriately, can cause issues with dizziness, light-headedness and falls etc. Therefore, any individual who is prescribed antihypertensive therapy and decides to convert to a low carbohydrate way of eating, needs to monitor their BP more closely when changing to a low carbohydrate diet and should be informed to contact their GP with any concerns or symptoms of low BP.

Hypertension is a leading modifiable risk factor for cardiovascular disease and the most common condition in older people with multiple long-term conditions. Treatment has been shown to reduce the risk of stroke and cardiovascular disease, and more than half of people aged 80 or over are treated with antihypertensive therapy. However, antihypertensive therapy does not come without potential harms. Treatment can be associated with an increased risk of hypotension, acute kidney injury, hyperkalaemia, hyponatraemia, and syncope. Polypharmacy further exacerbates this risk.

On first thought, it appears that reducing BP medication is a simpler task than managing the de-prescribing of oral hypoglycaemics for those with diabetes. However, the complications begin on considering whether or not these types of medications are also being prescribed for other issues such as ischaemic heart disease, atrial fibrillation, migraines, heart failure etc. There may be some situations where a BP medication may need to be continued for harnessing the benefits for alternative issues other than blood pressure. This protocol will try to address this and discuss practical recommendations as to how this could be approached in routine clinical practice. In general, antihypertensives should be *deprescribed in reverse of guideline recommended treatment.*

Digital blood pressure monitors are now easily available both online and on the High Street, and in general it is always worth encouraging a patient to monitor their BP at home if they have the financial means and motivation to do so. However, there will always be some individuals who do not wish to take this route and will need to access a healthcare professional for monitoring. For ease, this policy will use the same BP readings for both home and clinic monitoring. If the patient is checking their BP at home, they should be informed at which level of BP they should be contacting their GP for review of their medications and also to seek advice if they have recurrent dizzy/light-headed spells.

Deprescribing in Hypertension in Patients Following a Low Carbohydrate Diet

Appendix 1 is a guideline for patients for the best method of measuring BP at home to ensure they are receiving clinically correct measurements.

In general, checking the BP once a month appears reasonable in an otherwise asymptomatic patient. Any patients who have experienced dizzy or light-headed spells should be encouraged to check more often as needed. Antihypertensives should generally be withdrawn in order of preference for de-prescribing, one at a time, at 4-week intervals. Some BP medications may benefit from a slow withdrawal instead of immediate cessation – such as beta blockers and diuretics – this may help avoid a rebound adrenergic response or the development of oedema etc.

If a patient describes symptoms associated with low BP such as dizziness or light-headedness, but their home or clinic readings do not suggest hypotension, then do have a low threshold for considering the role of ambulatory BP monitoring in these situations.

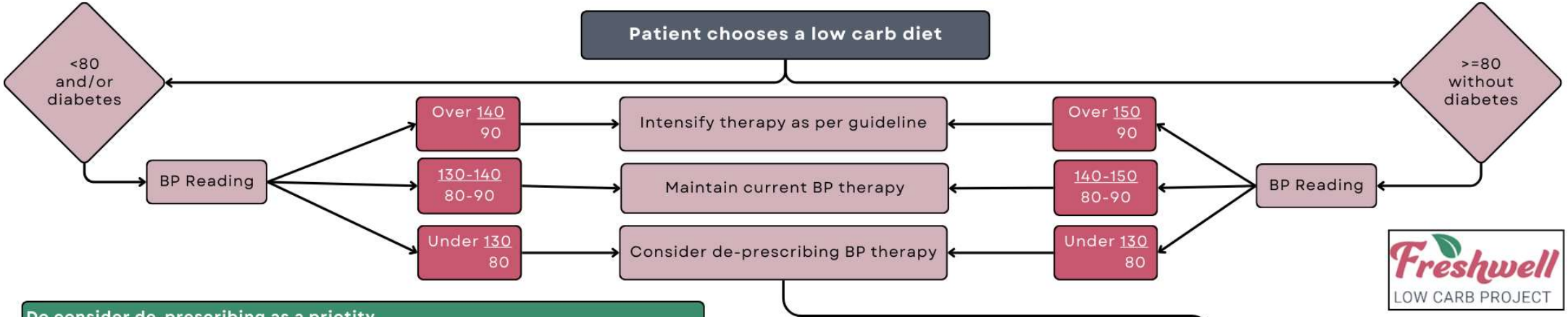
Of course, if the patient decides to go back to a standard carbohydrate diet, or if the BP readings increase – BP medication should be re-introduced as per standard guidelines.

Dr Kim Andrews
The Freshwell Low Carb project
Freshwell Health Centre
Finchingfield
Essex CM7 4BQ

Deprescribing in Hypertension in Patients Following a Low Carbohydrate Diet

Freshwell LOW CARB PROJECT

Deprescribing Flowchart



Freshwell LOW CARB PROJECT

Do consider de-prescribing as a priotity
1. Thiazide diuretics in patients with gout
2. Beta Blockers in combination with verapamil
3. Beta Blockers in patients with COPD or asthma
4. Diltiazem or verapamil in patients with heart failure

Consider de-prescribing with more caution
1. Beta blockers in those treated for migraine
2. Alpha blockers in men treated for prostatism
3. Nifedipine in those treated for Raynaud's phenomenon

Do not consider de-prescribing (although dose reductions may be possible)
1. Beta blockers in those with atrial fibrillation or heart failure
2. ACE inhibitors or Angiotensin II receptor blockers in those with heart failure
3. ACE inhibitors or Angiotensin II receptor blockers in those with proteinuria
4. Aldosterone antagonists or thiazide diuretics in those with symptomatic heart failure
5. Beta Blockers or Calcium Channel Blockers in those with symptomatic angina

Identify drugs for de-prescribing
If contradictions are not present, deprescribe in the following order:

1. Aldosterone antagonists e.g. spironolactone
2. Centrally acting antihypertensives e.g. moxonidine, clonidine
3. Peripheral vasodilators e.g. nifedipine, cilostazol
4. Alpha Blockers e.g. doxazosin, terazosin
5. Thiazides e.g. indapamide, Bendroflumethiazide
6. Calcium Channel Blockers e.g. amlodipine, lercanidipine
7. Beta Blockers e.g. bisoprolol, atenolol
8. ACE inhibitors/Angiotensin II Receptor Blockers e.g. ramipril, losartan

Withdraw Medication
Remove one antihypertensive at a time at 4 week intervals following the above guidance
(consider a gradual reduction in Beta Blockers +/- diuretics to avoid rebound adrenergic symptoms or fluid retention)

Monitor Response
Recheck BP after 4 weeks to ensure good BP control is maintained. Check for adverse effects associated with medication withdrawal e.g. accelerated hypertension, palpitations, prostatism, migraines, peripheral oedema

Ensure patient is aware that their BP may rise again if they convert back to a higher carbohydrate diet

APPENDIX 1: MEASURING BLOOD PRESSURE AT HOME

Remember that you should try to take your blood pressure at roughly the same time every day. This should be at least 1 hour after taking any BP medication. If you do suffer from dizzy or light-headed spells, it is also worth trying to obtain a reading when you have such an event.

Preparation:

1. Wear a top that has loose sleeves and can easily be rolled up to expose your upper arm. Use the same arm where possible.
    - You don't want the sleeve to be too tight when it's rolled up or it could affect the readings.
2. Sit in a comfortable chair which supports your back and make sure your feet are flat on the floor. Do not cross your legs.
    - If you can, try and rest your arm on a table or on the arm of a chair so that it's at the level of your heart.
3. You need to sit quietly for 5 minutes before beginning.
4. Take the blood pressure monitor out of its case and switch on.
5. Roll up your sleeve and stretch your arm out straight with your palm facing up.
6. Put the blood pressure cuff over your bare arm (make sure it's the right size) with the bottom of the cuff one inch above your elbow.
7. Make sure that the arrow and the tubing are pointing towards the middle of your elbow crease.
8. Don't pull the cuff too tight, you should just be able to pass two fingertips underneath the cuff and check that the cuff is not tighter at the bottom or the top.

9. Once you're comfortable, press the start bottom on the blood pressure monitor with your other hand. Don't talk or move.
    - You will feel the cuff tighten and then start to deflate.
    - The blood pressure reading will appear on the machine.
10. Either write the reading (both top and bottom numbers) in a notebook of your own or on to a monitoring diary provided by your GP.
11. If you persistently have readings where the top number is under 130 or the bottom number is under 70 (<130/70), then arrange to see a healthcare professional to discuss further as you may require a reduction in your BP medication. If your BP shows a top number persistently above 150 or a bottom number over 90 (>150/90) – then also see your clinician for possible intensification of your BP therapy.