Medication and Renal Disease

Clinical Pharmacist
Introduction

- Role of the kidney
- Blood pressure
- Bone Disease
- Anaemia associated with impaired kidney
- Summary
The Role of the Kidney

- Filter blood
- Excretion of waste products
- Help control blood pressure
- Regulate water and electrolyte balance
- Help keep bones healthy
- Help make red blood cells
Blood Pressure (BP)

- Kidney helps control BP
- High BP can cause renal impairment
- Renal impairment can cause high BP
- Important to Control BP
- Controlling BP can delay dialysis
Blood pressure targets

- **Pre-dialysis**
  - 130/80
  - 125/75 (proteinuric)

- **Haemodialysis**
  - Before - 140/90
  - After - < 130/80
Treatment of high blood pressure

- Reduce the amount of water in the
  - Water tablets
- Vasodilators
  - Dilate blood vessels → reduce BP
- Beta-blockers
  - Make heart beat more efficiently
  - Reduce heart rate → reduce BP
Fluid Balance

- Kidney removes excess water

- Too much fluid
  - Over load → ankle swelling

- Too little fluid
  - Dehydration
Treatment of fluid overload

- Non-dialysis patients
  - Diuretics (water tablets)
  - May require dialysis

- Dialysis patients
  - Drink less
  - Water tablets don’t work
  - Dialysis
Renal Bone Disease

- Kidney helps keep bones healthy
- Kidney impairment $\rightarrow$ bone disease
  - soft bones

- Causes
  - High Phosphate
  - Low Calcium
  - Low Vitamin D
# Treatment of Renal Bone Disease

<table>
<thead>
<tr>
<th>Low Calcium</th>
<th>High Phosphate</th>
<th>Low Vitamin D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium Supplements</td>
<td>Diet Control</td>
<td>Needed to absorb Calcium</td>
</tr>
<tr>
<td>Dialysis fluid</td>
<td>Phosphate binders</td>
<td>Vitamin D Supplements</td>
</tr>
<tr>
<td>Vitamin D</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Anaemia

- Kidney helps make red blood cells
- Kidney makes Erythropoietin (EPO)
- EPO stimulates bone marrow to make red blood cells
- Kidney impairment – No EPO

- Treatment – EPO injection
Need iron stores to make red blood cells

Kidney disease – Low iron stores

Treatment

- Iron tablets
- Iron injection
Hepatitis vaccination

☐ Health and safety
☐ Frequent hospital visit
☐ Hep B vaccine

☐ Vaccine
  ■ Given as 3 or 4 injections before starting dialysis
Other issues

□ Leg Cramps
  ■ On dialysis or at night
  ■ Quinine Sulphate

□ Restless legs
  ■ Clonazepam
# Pain Killers and Renal Impairment

<table>
<thead>
<tr>
<th>Safe to Use</th>
<th>Avoid</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Paracetamol</td>
<td>☐ Non-steroidal anti-inflammatory drugs</td>
</tr>
<tr>
<td>☐ Co-codamol</td>
<td>☐ Ibuprofen</td>
</tr>
<tr>
<td>☐ Codeine*</td>
<td>☐ Diclofenac</td>
</tr>
<tr>
<td>☐ Co-Dydramol*</td>
<td>☐ Meloxicam</td>
</tr>
<tr>
<td>☐ Dihydrocodeine*</td>
<td>☐ Aspirin (300mg dose for pain) [75mg daily dose for blood thinning is OK]</td>
</tr>
</tbody>
</table>

* May cause drowsiness

- May accelerate kidney failure
<table>
<thead>
<tr>
<th>Ailment</th>
<th>First choice treatment</th>
<th>Medication to avoid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coughs and cold</td>
<td>Simple linctus, Menthol, Steam inhalation</td>
<td>Decongestants, Guaifenesin, Dextromethorphan</td>
</tr>
<tr>
<td>Indigestion</td>
<td>Preparations containing calcium (unless calcium is high)</td>
<td>Preparations containing sodium, potassium or magnesium</td>
</tr>
<tr>
<td>Diarrhoea</td>
<td>No treatment 2(^{nd}) choice - Loperamide</td>
<td>Rehydration sachets</td>
</tr>
<tr>
<td>Hayfever</td>
<td>Antihistamine eyedrops, Cetirizine</td>
<td>Pseudoephedrine</td>
</tr>
</tbody>
</table>
Summary

- Medication only prescribed if needed
- Important to take medication
- Information in presentation limited

Further Information

- Nicholas Weaver (Pharmacist) 01603 – 287139
- ‘Pharmacy helpline’ 01603 – 286286
- Contact Renal Unit or Consultant