Can a protocol-based, nurse-led Diabetes Renal Clinic improve outcomes?
Dr Alvin Shrestha, Susan Irwin, Dr Parijat De. City Hospital Birmingham, UK.

Introduction
Nurse-led clinics have been accepted as effective ways to manage long term conditions. We evaluated the current practice and outcomes of a nurse-led diabetes renal clinic at a teaching hospital. Our aims were to find out if:
- Adequate control of HbA1c (<7%)[1], BP <130/80 mmHg[2] and cholesterol (<4.0) [3] were being achieved?
- Are we adhering to prescription of aspirin, ACE inhibitors/ARBs and statins as recommended?
  - Aspirin indicated in age >50, cardiovascular disease, BP >145/90, microalbuminuria[2]
  - ACE/ARBs indicated in urine ACR >3 mg/mmol [1,2]
  - Statin indicated in age >40, cholesterol >4.0 mmol/l
- Is there any significant improvement in HbA1c, BP, cholesterol, urine ACR and renal impairment?

Method
Patients attending the diabetes renal clinic between 2010 and 2014 were requested using a clinic code.
Generated 365 clinic attendances from 208 patients.
Excluded if they
- did not attend 2 or more nurse-led clinics within 12 months
- attended the 2 visits less than 2 months apart

This generated 91 patients in total
Baseline data at time of referral (TR) compared to the final clinic visit within a 12 month period (T1)
Data from clinic letters and electronic records.
Systolic (SBP) and diastolic blood pressures (DBP) from clinic letters were taken (lowest in the case of multiple BP readings)
The following measurements at TR and T1 were compared: HbA1c, total cholesterol (mmol/l), urine albumin:creatinine ratio (ACR; mg/mmol), creatinine (μmol/l), estimated glomerular filtration rate (eGFR; ml/minute/1.73m²)
TR measurements were taken within 6 months preceding referral date, as close to the time of referral as possible.
If no measurements were available at this time, then a measurement between TR and T0 was taken.

T1 measurements were taken as close to T1 clinic date as possible, or within 3 months before or after T1 (unless this overlapped with T0, in which case the measurement was declared "not available").
Data comparison was performed using the computer programme Minitab.

Results
Average age was 62.8 years
57 were male
34 (72%) Male
57 (85%) Female

Table 1 shows changes between TR and T1.

<table>
<thead>
<tr>
<th></th>
<th>TR</th>
<th>T1</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HbA1c</td>
<td>74</td>
<td>69</td>
<td>&lt;0.01*</td>
</tr>
<tr>
<td>SBP</td>
<td>152</td>
<td>142</td>
<td>&lt;0.01*</td>
</tr>
<tr>
<td>DBP</td>
<td>75</td>
<td>73</td>
<td>&lt;0.113*</td>
</tr>
<tr>
<td>Total cholesterol</td>
<td>4.4</td>
<td>4.3</td>
<td>&lt;0.371*</td>
</tr>
<tr>
<td>Urine ACR</td>
<td>53</td>
<td>31</td>
<td>&lt;0.01**</td>
</tr>
<tr>
<td>eGFR</td>
<td>54</td>
<td>51</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Mean number of antihypertensive drugs</td>
<td>2.34</td>
<td>2.52</td>
<td></td>
</tr>
<tr>
<td>Antplatelet</td>
<td>41 (45%)</td>
<td>41 (45%)</td>
<td></td>
</tr>
<tr>
<td>Antlipid</td>
<td>73 (80%)</td>
<td>78 (85%)</td>
<td></td>
</tr>
</tbody>
</table>

*paired t-test, **Wilcoxon

Aspirin use
- 41 patients (45%) were taking aspirin at T1
- All 50 off the 50 who were not taking aspirin had at least one risk factor (age >50, SPB >145, microalbuminuria) thus aspirin would have been indicated

Antilipid use
- 79 patients (86%) were on a lipid-lowering agent by T1
- All 11 patients who were not on an antilipid by T1 had a risk factor (hypertension, CKD, microalbuminuria)
- 10 of 11 patients had a cholesterol >4.0
- ACE/ARB use in urine ACR >3 mg/mmol
  - 77 patients had uACR>3 at T1
  - 4 of 11 who were not on an ACE/ARB had either added (7 were not initiated, although one of these patients was on aliskiren)
  - However 5 patients who were on ACE/ARB had it stopped (only 1 documented due to hyperkalaemia)
  - In total 65 (84%) were on an ACE/ARB at T1 in patients with at least microalbuminuria

Discussion
These results from one year follow-up suggests that the nurse-led clinic is effective in reducing HbA1c, systolic blood pressure and urine ACR levels in this high CV risk patients. This should hopefully result in improved cardiovascular and renal outcomes and appropriate referrals to renal specialist clinic.
Significant improvements in HbA1c, SBP and urine ACR were observed
However DBP and total cholesterol did not improve
There was poor prescription of aspirin (all patients would have benefited from aspirin)
There was good rate of ACE/ARB prescription and most patients with macroalbuminuria received one
There was good prescription of anti-lipids, but this could have been even higher
The prescriptions may not have been accurate due to erratic documentation of drug history in clinic letters
A new clinic proforma will be proposed to include compulsory drug history, encouragement of CV risk calculation and to check smoking status

References