Multi-morbidity care in diabetes: Cardio-metabolic morbidities

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Multimorbidity

• Multimorbidity is the presence of two or more long term conditions.

It matters because:
• Living with multiple conditions is the norm rather than the exception for many people. It is associated with poorer quality of life, more hospital admissions and higher mortality
• Health services are largely organised to provide care for single diseases
Multimorbidity is common

- The majority of over-65s have 2 or more conditions, and the majority of over-75s have 3 or more conditions
- More people have 2 or more conditions than only have 1

Barnett K et al. Lancet 2012; 380:37-43
Most people with a chronic condition have **multimorbidity**

Comorbidity of 10 common conditions among UK primary care patients

Guthrie B et al. BMJ 2012;345: e6341
Long term trends of multimorbidity and association with physical activity in an older English population

Steady increase in the prevalence of MM over time
Polypharmacy is associated with increased risk of falls

<table>
<thead>
<tr>
<th>Definition</th>
<th>Rate of falls/1000 person years</th>
<th>IRR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥4 drugs</td>
<td>166.8 (155.2-179.3)</td>
<td>1.18 (1.08, 1.28)</td>
</tr>
<tr>
<td>≥5 drugs</td>
<td>174.9 (161.1-189.8)</td>
<td>1.21 (1.11, 1.31)</td>
</tr>
<tr>
<td>≥6 drugs</td>
<td>190.7 (173.9-209.1)</td>
<td>1.31 (1.21, 1.42)</td>
</tr>
<tr>
<td>≥7 drugs</td>
<td>200.7 (180.4-223.3)</td>
<td>1.39 (1.28, 1.51)</td>
</tr>
<tr>
<td>≥8 drugs</td>
<td>198.9 (175.0-226.2)</td>
<td>1.31 (1.20, 1.44)</td>
</tr>
<tr>
<td>≥9 drugs</td>
<td>215.3 (185.5-249.8)</td>
<td>1.55 (1.41, 1.71)</td>
</tr>
<tr>
<td>≥10 drugs</td>
<td>220.8 (185.2-263.3)</td>
<td>1.50 (1.34, 1.67)</td>
</tr>
</tbody>
</table>

IRR adjusted for age, sex, ethnicity, wealth quintiles, walking speed, smoking status, excess alcohol consumption and multimorbidity

Figure 2 Rates and rate ratios for falls comparing people with and without polypharmacy, using different definitions of polypharmacy. IRR, incidence rate ratio.
Adherence rates determined through biochemical testing

- Routine urine samples, received at the time of annual diabetes review
- 228 people with T2DM
- Adherence assessed by LC-MS/MS
- 28.1% non-adherent to OHAs, antihypertensive and/or lipid lowering medications
- Non-adherence to statins was the highest at 23.7% and was 9.3% for OHAs.
- HbA1c, ACR & lipid profiles significantly higher in the non-adherent people

## Cardiometabolic morbidity

- All-cause mortality for the Emerging Risk Factors Collaboration by disease status of participants at baseline (N=689,300)

<table>
<thead>
<tr>
<th>Disease status at baseline</th>
<th>No. of participants</th>
<th>No. of deaths</th>
<th>Person-years</th>
<th>HR (95% CI)</th>
<th>I² (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes, stroke and MI</td>
<td>541</td>
<td>379</td>
<td>3584</td>
<td>6.9 (5.7,8.3)</td>
<td>51 (38, 62)</td>
</tr>
<tr>
<td>Stroke and MI</td>
<td>1836</td>
<td>1174</td>
<td>14,210</td>
<td>3.5 (3.1, 4.0)</td>
<td>61 (52, 69)</td>
</tr>
<tr>
<td>Diabetes and stroke</td>
<td>1321</td>
<td>778</td>
<td>10,234</td>
<td>3.8 (3.5, 4.2)</td>
<td>18 (0, 38)</td>
</tr>
<tr>
<td>Diabetes and MI</td>
<td>3233</td>
<td>1794</td>
<td>25,321</td>
<td>3.7 (3.3, 4.1)</td>
<td>69 (62, 75)</td>
</tr>
<tr>
<td>MI</td>
<td>21,591</td>
<td>9636</td>
<td>216,081</td>
<td>2.0 (1.9, 2.2)</td>
<td>84 (80, 86)</td>
</tr>
<tr>
<td>Stroke</td>
<td>8583</td>
<td>3814</td>
<td>82,208</td>
<td>2.1 (2.0, 2.2)</td>
<td>50 (36, 61)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>24,677</td>
<td>8087</td>
<td>254,608</td>
<td>1.9 (1.8, 2.0)</td>
<td>76 (70, 80)</td>
</tr>
<tr>
<td>None</td>
<td>627,518</td>
<td>103,181</td>
<td>8,772,977</td>
<td>1 [reference]</td>
<td></td>
</tr>
</tbody>
</table>

The Emerging Risk Factors Collaboration. *JAMA* 2015;314:52
Life expectancy is reduced by 12 years in patients with diabetes and previous CV disease*

The Emerging Risk Factors Collaboration. JAMA 2015;314:52
Association between disease and life expectancy

Participants with a disease have **reduced life expectancy** compared to those with none.

At age of 45 years, being physically active was associated with life years gained:

- Diabetes: 2.34 (0.93, 3.54)
- Diabetes & CVD: 2.28 (1.40, 3.16)
- CVD: 2.15 (0.05, 4.26)
- Diabetes, CVD & Dep: 6.81 (-1.50, 15.31)
Implications

• Multimorbidity is the norm for people with long-term conditions
• Cardiometabolic multimorbidities are more prevalent
• Multimorbidity contributes significantly to health inequalities and the inverse care law
• We need to understand how to better support people with multimorbidity
• Primary care is central to providing this support
Thank you

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