Prediction of death in general practice: a cluster randomised controlled study

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  - Mr Chee Kong Teo
  - Mr Aaron Tan
End-of-life care

General practice and end-of-life care
- Majority of last year of life spent in the community
- Evidence that GPs are able to provide high quality end-of-life care with specialist support
- GPs allow more people to die at home, which is the wish of most people

Challenges to end-of-life care in general practice:
- Time and resource constraints
- Knowledge, skills, attitude
- Unclear role delineation between GP and specialist services
- Suboptimal end-of-life care planning
End-of-life care planning

Ideally should include:

- Practice register of patients in need of palliative care
- Regular patient reviews
- Coordination of care
- Multidisciplinary care with focus on social supports
- Example: GSF
- Requires accurate identification of patients who are in need of end-of-life care
Identification of patients

Several methods have been devised

- Clinician’s intuition
- Clinician’s intuition framed differently through the ‘surprise question’
- Tools
  - Supportive and Palliative Care Indicators Tool (SPICT)
  - Prognostic Indicator Guidance (PIG)

Issues

- Developed overseas
- Feasibility and acceptability of these tools not evaluated in Australian general practice
- Unclear whether these tools offer advantage over clinical acumen of the GP
Aims

Evaluate the positive predictive value (PPV) of:

- GP’s clinical acumen in predicting patient death
- Clinical prediction tool in predicting patient death

Hypotheses:

1. GPs can predict most deaths in their patients that will occur as a result of diseases with a predictable palliative phase
2. A clinical prediction tool will help GPs better identify those who will die compared to clinical acumen alone
Method

• Cluster RCT design

Inclusion criteria
• GPs working in Sydney or Brisbane

Exclusion criteria
• worked <12 months in the practice
• not seeing patients > 70 years of age
• no computerised patient records
Patient recruitment - seek record review of patients with the following

- Patient of participating GPs
- ≥ 70 years of age
- Seen at least once by the GP in the preceding 2 years
- Also patients < 70 years of age could be nominated by their GP to be included in the study if considered at risk of death

Randomisation

- GPs randomised using computer generated random number sequence
- Stratified according to years of clinical experience (≤10 or >10)
Intervention
  – Modified Supportive and Palliative Care Indicators Tool (SPICT) to identify patients at risk of death in the next 12 months

Control
  – Asked to use clinical acumen to predict patients likely to die in the next 12 months
The SPICT™ is a guide to identifying people at risk of dying within the next 12 months.

**Look for two or more general indicators of deteriorating health.**

- Performance status poor or deteriorating, with limited reversibility. (Needs help with personal care, in bed or chair for 50% or more of the day).
- Two or more unplanned hospital admissions in the past 6 months.
- Weight loss (≥ 10%) over the past 3 - 6 months and/or body mass index < 20.
- Persistent, troublesome symptoms despite optimal treatment of any underlying condition(s).
- Lives in a nursing care home or NHS continuing care unit, or needs care to remain at home.
- Patient requests supportive and palliative care, or treatment withdrawal.

**Look for any clinical indicators of advanced conditions**

<table>
<thead>
<tr>
<th>Cancer</th>
<th>Heart/ vascular disease</th>
<th>Kidney disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional ability deteriorating due to progressive metastatic cancer.</td>
<td>NYHA Class III/IV heart failure, or extensive coronary artery disease:</td>
<td>Stage 4 or 5 chronic kidney disease (eGFR &lt; 30ml/min) with deteriorating health.</td>
</tr>
<tr>
<td>Too frail for oncology treatment or treatment is for symptom control.</td>
<td>- breathlessness or chest pain at rest or on minimal exertion.</td>
<td>Kidney failure due to another life limiting condition or its treatment.</td>
</tr>
<tr>
<td></td>
<td>- Severe, inoperable peripheral vascular disease.</td>
<td>Stopping dialysis.</td>
</tr>
<tr>
<td>Dementia/ frailty</td>
<td>Respiratory disease</td>
<td>Liver disease</td>
</tr>
<tr>
<td>Unable to dress, walk or eat without help.</td>
<td>Severe chronic obstructive pulmonary disease or severe pulmonary fibrosis</td>
<td>Advanced cirrhosis with one or more complications in past year:</td>
</tr>
<tr>
<td>Eating less; difficulty maintaining nutrition.</td>
<td>- breathlessness at rest or on minimal exertion between exacerbations.</td>
<td>- diuretic resistant ascites</td>
</tr>
<tr>
<td>Urinary and faecal incontinence.</td>
<td>Needs long term oxygen therapy.</td>
<td>- hepatic encephalopathy</td>
</tr>
<tr>
<td>Unable to communicate meaningfully; little social interaction.</td>
<td>Has needed ventilation for respiratory failure.</td>
<td>- hepatorenal syndrome</td>
</tr>
<tr>
<td>Fractured femur; multiple falls.</td>
<td></td>
<td>- bacterial peritonitis</td>
</tr>
<tr>
<td>Recurrent febrile episodes or infections; aspiration pneumonia,</td>
<td></td>
<td>- recurrent variceal bleeds</td>
</tr>
<tr>
<td>Neurological disease</td>
<td></td>
<td>Liver transplant is contraindicated.</td>
</tr>
<tr>
<td>Progressive deterioration in physical and/or cognitive function despite optimal therapy.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speech problems with increasing difficulty communicating and/or progressive dysphagia.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recurrent aspiration pneumonia; breathless or respiratory failure.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Assess and plan supportive & palliative care**

- Review current treatment and medication so the patient receives optimal care.
- Consider referral for specialist assessment if symptoms or needs are complex and difficult to manage.
- Agree current and future care goals/ plan with the patient and family.
- Plan ahead if the patient is at risk of loss of capacity.
- Handover: care plan, agreed levels of intervention, CPR status.
- Coordinate care using the GP/ primary care register.
Ethics
  – Approval from the UNSW and UQ Human Research Ethics Committees

Trial registration
  – ANZCTR 363803
Results

Enrollment

Assessed for eligibility (n= 40)

Excluded (n= 1)
  - Not meeting inclusion criteria (n= 0)
  - Declined to participate (n= 1; busy)
  - Other reasons (n= 0)

Randomized (n= 39)

Allocation

Allocated to intervention (n= 19)
  - Received allocated intervention (n= 14; patients = 2181)
  - Did not receive allocated intervention (n=5; 5 too busy)

Allocated to control (n= 20)
  - Received allocated intervention (n= 17; patients = 2873)
  - Did not receive allocated intervention (n= 3; 1 too busy, 2 no response)

Follow-Up

Lost to follow-up (n= 1; patients = 416; no response)
Discontinued intervention (n= 0)

Lost to follow-up (n= 0)
Discontinued intervention (n= 0)

Analysis

Analysed (n= 12; patients = 1546)
  - Excluded from analysis (n= 1; patients = 219; misidentified patient data)

Analysed (n= 17; patients = 2873)
  - Excluded from analysis (n= 0)
### Control (practice data)

<table>
<thead>
<tr>
<th></th>
<th>Deceased</th>
<th>Not deceased</th>
<th>PPV</th>
<th>NPV</th>
<th>Sensitivity</th>
<th>Specificity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identified as at risk</td>
<td>27</td>
<td>130</td>
<td>157</td>
<td>99%</td>
<td>42%</td>
<td>95%</td>
</tr>
<tr>
<td>Not identified</td>
<td>38</td>
<td>2678</td>
<td>2716</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>65</td>
<td>2808</td>
<td>2873</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Intervention (practice data)

<table>
<thead>
<tr>
<th></th>
<th>Deceased</th>
<th>Not deceased</th>
<th>PPV</th>
<th>NPV</th>
<th>Sensitivity</th>
<th>Specificity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identified as at risk</td>
<td>31</td>
<td>199</td>
<td>230</td>
<td>99%</td>
<td>70%</td>
<td>87%</td>
</tr>
<tr>
<td>Not identified</td>
<td>13</td>
<td>1303</td>
<td>1316</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>44</td>
<td>1502</td>
<td>1546</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Data from the NSW Death Registry

- Of 15 practice recorded deaths
  - 10 confirmed as deaths during study period
  - 5 not recorded as deaths by the registry
- Of 45 deaths recorded by death registry
  - 20 were during the study period
  - 10 (half) were recorded by the practice
  - 25 were before the study period
Discussion

Low PPV
- A lot of false positives (NB: 6 months data only)
- 17% control, 13% modified SPICT
- Baseline death rate = 2-3%

Very high NPV
- 99% control & intervention
- If the doctor or the tool does not think you will die then you are unlikely to!

Problem with data quality
- Many deaths not recorded in GP database
- Deaths not reflected in the registry
- Some patients see more than one GP
Limitations

• 6 months vs 12 months
• Issues with practice database software
  – Use of PEN CAT or similar may address problem
• Delays in completing forms
• Time-intensive