DEVELOPMENT AND EXTERNAL VALIDATION OF A PROGNOSTIC MODEL FOR PREDICTING POOR OUTCOME IN PATIENTS WITH ACUTE ANKLE SPRAINS

Physiotherapy UK 2017

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Acknowledgements

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All NHS recruitment site collaborators

Supported by: NIHR Biomedical Research Centre, Oxford
Introduction

• OBJECTIVE: To develop and externally validate a prognostic model for predicting poor outcome in patients with acute ankle sprains

• Candidate predictors:
  • age, sex, sprain severity, pain, previous injury, ankle stability tests, weight bearing ability, and severity of presenting clinical signs and symptoms
  • 23 variables examined

• Outcome: poor recovery at 9 months
**Stage 1: Prediction model development**

- Randomised controlled trial dataset (n=584)
  - 8 emergency departments (UK)

**Stage 2: External validation**

- Prospective cohort study (n=682)
  - 10 emergency departments
  - **prognostic variables** identified in stage 1
  - collected at baseline
  - **outcome** assessed 9 months
### Stage 1: PREDICTION MODEL DEVELOPMENT

<table>
<thead>
<tr>
<th>Model for <strong>outcome 1</strong></th>
<th>Model for <strong>outcome 2</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>presence of pain / functional difficulty / lack of confidence in the ankle</td>
<td>outcome 1 plus ankle sprain reoccurrence within 9 months</td>
</tr>
<tr>
<td>- Age</td>
<td>- Days since injury (0-2 / &gt;2)</td>
</tr>
<tr>
<td>- BMI</td>
<td>- Previous sprain (yes / no)</td>
</tr>
<tr>
<td>- Days since injury (0-2 / &gt;2)</td>
<td>- Able to bear weight (yes / no)</td>
</tr>
<tr>
<td>- Previous sprain (yes / no)</td>
<td>- Pain at rest (0-100)</td>
</tr>
<tr>
<td>- Able to bear weight (yes / no)</td>
<td>- Pain when bearing weight (0-100)</td>
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</tr>
</tbody>
</table>

C-index = **0.74** (95% CI 0.74 to 0.75)  **0.70** (95% CI 0.69 to 0.71)
Stage 2: PREDICTION MODEL EXTERNAL VALIDATION

Outcome 1:
Pain / functional difficulty / lack of confidence in the ankle

C-index: 0.72
(95% CI 0.66 To 0.79)

Outcome 2:
+ reoccurrence of sprain

C-index: 0.63
(95% CI 0.58 to 0.69)
Interpretation

Developing a fairly simple prognostic model for ankle sprain recovery outcomes, using clinical and socio-demographic variables routinely collected at emergency departments was achievable.

Potential for assisting clinical decision making

Ongoing work to facilitate implementation in clinical practice