Harnessing the potential of electronic medical records with data analytics in back pain

Dr Gustavo Machado[1], Dr Bethan Richards[1], Dr Chris Needs[2], Ms Hannah Storey[3], Ms Lorraine Ho[3], Mr Noel Baidya[3], Prof Chris Maher[1]

[1]Institute for Musculoskeletal Health, Camperdown, Australia, [2]Royal Prince Alfred Hospital, Camperdown, Australia, [3]Sydney Local Health District, Camperdown, Australia

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Background
Back pain is the 5th most common condition seen in Australian emergency departments (ED). While many EDs now use electronic medical records (eMR), there are challenges in accessing, linking and analysing eMR data in a timely manner to drive change and improve patient care.

Objectives
To describe the development and functionalities of a data analytics application that accesses, links and analyses routinely collected eMR data for back pain presentations to EDs.

Method
Our data analytics application was developed using Qlik Sense®. It incorporates a data repository, data linkage and real-time analysis capabilities. Steps in the development involved identifying the goals for use, relevant variables to include, and pilot testing. Back pain presentations were identified using diagnosis codes. Patient's unique identifier was used to link hospital datasets. Graphs and charts were used to display summary data.

Results
Our application currently holds real-time data for >10,000 back pain presentations to three EDs in the Sydney Local Health District since January/2016. Our measures include number of presentations and hospital admissions, demographic characteristics, presenting day and hour, length of stay, arrival mode, triage category, KPIs, use of tests and treatments, and costs. We have used the application to collect outcomes for a large implementation trial (n=4,200) greatly reducing the costs of running the trial. I will give a live demonstration during the symposium.

Conclusions
Our application allows users to understand current practices, identify clinical variation, and optimise patient care. It facilitates clinician engagement with research and streamlines the conduct of trials embedded into routine care.