PROJECT TITLE: Minor trauma, major burden? A look at non-major upper limb musculoskeletal trauma in Emergency Departments

FIELD OF RESEARCH CODE: 9211

PROJECT SYNOPSIS:

Background:

Injuries represent a significant health burden globally (1) and in Australia (2). Major trauma is a cause of pain, disability and chronic musculoskeletal conditions that affect an individual’s health-related quality of life (HRQoL) and is responsible for substantial economic and social costs (3). In Western Australia the main focus of trauma reform has been on major trauma. A comprehensive state-wide trauma service ensures timely and appropriate care for patients who have sustained major trauma; from the time of admission to discharge and continued rehabilitation in the community. Less well understood is the impact and burden of minor trauma, specifically minor musculoskeletal injuries, and the experience of health care received by patients who attend the emergency department (ED). Minor trauma may not necessarily result in an observable or detectable injury to muscle, bones or joints, however evidence
suggests the sequelae following minor musculoskeletal trauma contribute to the development of persistent pain and poor outcomes (1).

It is well known that every intervention from the time of injury influences the course of recovery. Therefore, planning appropriate and relevant patient-centred care is imperative for optimal long-term outcomes. The non-major trauma working group in Western Australia developed a framework and described a tool, the Triangle of Care, to triage trauma to minor, moderate or major categories to ensure patients receive the right care, at the right time, by the right team, in the right place with the right resources (4).

The sequelae of minor trauma can be significant and contributes to the musculoskeletal burden of disease. Major trauma care is well-funded and patients receive appropriate and relevant assessment and management. In contrast, minor trauma is less well managed with patients reporting unsatisfactory experiences in the Emergency Departments in hospitals in Western Australia. This contributes to the burden-service gap; there is a gap in the assessment and management of minor trauma in Perth Metropolitan Hospitals.

Aims:

The aim of this project is to characterize how patients with minor trauma, specifically upper limb musculoskeletal injuries, are cared for in the Emergency Department (ED) at Royal Perth Hospital (RPH).

Specifically, we will:

1. Establish and document the current procedures for data collection and identify what data are collected for ALL upper limb musculoskeletal injuries presenting to the ED.

2. Map the typical care pathway for the patient with an upper limb musculoskeletal injury presenting to ED through to discharge into the community;

3. Understand and evaluate the patient-reported experience of care within the emergency departments for the patient presenting with an upper limb musculoskeletal injury to ensure health services develop and improve in line with patient-centred needs;

4. Explore the barriers and facilitators to optimising outcomes following discharge from ED (amongst stake-holders: patients with upper limb musculoskeletal injuries and ED staff).

Significance:

This work is aimed at:

- Identifying features associated with patients presenting to ED with upper limb musculoskeletal injuries who are at risk of an eventful recovery, that is, poorer outcomes and,

- Identifying and suggesting recommendations for improvement in the model of service delivery for quality health care for patients presenting to ED with upper limb musculoskeletal injuries.

Project plan:

This project will use a mixed-methods approach to address the aims listed above:
1. In partnership with the Consumer and Community Health Research Network, we will recruit consumers who have sustained an upper limb injury. They will be engaged throughout various stages of the project; from pre-project via invitation to participate in a consumer conversation forum to inform the project aims; invitation to participate in a qualitative study, outlined in point 4, to the project finale where a forum evaluating project outcomes to consumer experiences (during and after presentation to the emergency department for the care of their injury).

2. Undertake a trauma registry audit, over a 6-month period, of the quality of the data collected (that is, fidelity of data reported and entered in databases to the physical examination, diagnoses and onward referral) as part of the musculoskeletal review of patients with upper limb musculoskeletal injuries who present at E.D;

3. Map the typical care pathway for patients who present to ED with an upper limb musculoskeletal injury. We will follow them to track their course of care at follow at 1 week, 4 weeks and 3 months following visit and discharge from the ED. The data collected at each time point will include the following:
   a. a pain rating scale, Numeric Rating Scale (NRS),
   b. self-reported questionnaires:
      i. Patient-reported Outcome Measures (PROMs); e.g. QuickDASH – a valid and reliable self-report outcome measure to evaluate symptoms and physical function for people with musculoskeletal upper limb disorders(5);
      ii. Patient-reported Experience Measures (PREMs); e.g. The Consumer Quality Index, a valid and reliable self-report measure to evaluate patient’s perception of their personal experience of the health care that they have received in ED(6);
   c. Screening tools to identify patients at risk of a poor outcome, e.g. The Orebro, a musculoskeletal screening tool, a valid and reliable self-report measure to identify patients at risk of pain chronicity and poor outcome(7);

4. Conduct focus groups with all relevant stakeholders, including consumer representatives from the consumer engagement networks (as outlined in point 1) and ED staff (medical, nursing, clerical), to establish their thoughts and experiences with the health care process and identify the barriers and facilitators to successful outcomes for patients presenting to ED with an upper limb musculoskeletal injury.

Recruitment targets and sample size:

In order to determine what factors predict poor outcomes for the patient presenting to ED with upper limb musculoskeletal injuries, sample size, how many patients needed to be followed, will be calculated; given the premise a multiple regression analysis will be undertaken, the dependent variable will be defined and independent variables to be examined in the model identified and estimates of approximately 10 patients per independent variable will inform sample size.

Similarly, the number of focus groups and participant numbers needed to reach saturation, the point where no new information is gained (point 4) will be informed from the literature.

Health care impact:
The expected immediate health care impact of the project is to:

- identify which patients presenting to ED with upper limb injuries are at risk of poor long-term outcomes

The expected long-term health care impact of the project would be to:

- inform a high value care pathway for the patient presenting to ED with an upper limb musculoskeletal injury to discharge to the community;
- inform a comparative effectiveness trial to compare the high value care pathway to usual care, and,
- recommend a model of service delivery for the Emergency Department to community care and ensure continued patient-centred timely treatment of the patient with upper limb musculoskeletal injuries.

FEASIBILITY AND RESOURCING – DESCRIPTION OF THE SUPPORT THIS PROJECT WILL RECEIVE:

Supervision by Professor Woodhouse and Drs Ranelli and Thorpe will be part of the workload as academics. Resources for consumer engagement will be covered by The Consumer Network.

THE SIGNIFICANCE OF THE PROJECT/ PROGRAM FOR THE ENROLLING SCHOOL OR INSTITUTION:

This project is part of a larger body of work through the Perth Upper Limb Centre of Excellence (PULCE) and Curtin University exploring evidence-informed person-centred models of service delivery to establish the optimum care pathways to minimise personal and societal burden for the patient with upper limb musculoskeletal injury/pain.

Dr Sonia Ranelli and Dr Alison Thorpe are established clinician researchers and academics in the area of upper limb musculoskeletal pain. Development of translatable research in this clinical area will complement established research in the area of musculoskeletal spinal pain and further promote the profile of the School of Physiotherapy and Exercise Science, locally, nationally and internationally aligning with Curtin’s 2017-2020 Strategic Plan and Vision of global recognition in education, research and engagement.

Students must express interest in this scholarship opportunity by emailing the Project Lead listed below. Please provide a copy of your current curriculum vitae and detail your suitability to be involved in this strategic project.

PROJECT LEAD CONTACT:

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