Rotorua GP CME – 2014
Shoulder Surgery
Consideration Factors
Entitlement to ACC funding

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Workshop 76 & 88
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Disclosure

• An ACC employee
• Presentation today is on behalf of ACC
• I am a member of ACC’s Clinical Advisory Panel (CAP); a group of clinicians employed by ACC to review funding requests to ACC for elective Surgery
• I provide clinical comment on causation to ACC for shoulder surgery requests.
Shoulders – what science out there?

• An endeavour to reach agreement between
  • ACC – represented by members of ACC’s Clinical Advisory Panel
  • NZOA – represented by members of the NZ Shoulder and Elbow Society (SES) about
  • Shoulder conditions – specifically rotator cuff
    – That require surgery; and
    – Are more likely to be caused by trauma;
    – And therefore could be fast-tracked through the ACC assessment process.
  • An endeavour that began with a first meeting in February 2008 in Wellington, NZ
A legislative framework

• What is cover?
• What is entitlement?
• What are the exclusions to entitlement?
• A definition of causation
• Scientific vs ACC vs Legal causation
• Shoulder factors
• Exposure to evidence base
• Radiology Guidelines
• Take home messages
What is cover? (1)

- Accident Compensation Act 2001 (AC Act 2001)
- Part 2 (Sections 19-38)
- S20 – Cover for personal injury suffered in NZ
- (1) – (a) After 1 April 2002 in NZ and
- (b) - A kind of injury (S26 (1) (a),(b),(c) or (e)) and
- (c) - Described in Subsection (2)
What is cover? (2)

Personal injury is:
1. Caused by an accident
2. Treatment injury
3. Infections (that are accepted as treatment injury) and then passed on
4. A consequence of treatment for a covered personal injury
5. Work-related gradual process disease or infection
What is cover?(3)

**Personal injury** cont...
1. Gradual process disease or infection after covered personal injury (PI) or treatment for PI
2. Cardio and cerebrovascular accidents (TI/PI)
3. Exclusions (outside of NZ and prior to 1974)
What does personal injury mean? (S26) (1)
1. Death
2. Physical injury – e.g. sprain or strain
3. Mental injury
4. Damage to prostheses
5. Hearing loss
What is cover? (5)

- What is **excluded** from personal injury? (26)(2)
- Any personal injury caused wholly or substantially by a gradual process, disease or infection **UNLESS** it is
  - Work-related
  - TI
  - Consequential on PI
  - Consequential on treatment for PI
  - Cardiovascular or cerebrovascular
What is cover? (6)

- What is an accident? (25(1) – (3)

  (1)

  a) A specific event or series of events, other than a gradual process, that
      - involves the application of a force or resistance external to the human body
      - Involves the sudden movement of the body to avoid
      - Involves a twisting movement.

  b) Inhalation
What is cover? (7)

b) Inhalation of a solid liquid or gas on a specific occasion (but not viruses, bacteria, protozoa, fungi) unless criminal act of another person

c) Oral ingestion

d) A burn/ radiation/ rays on a specific occasion but not by exposure to the elements

e) Absorption of any chemical within 1 month
What is cover?(8)

Any exposure to the elements or extremes of temperature or environment within a defined period of less than 1 month that causes death or results in restriction or lack of ability that prevents person from performing an activity in the manner or within the range considered normal for the person.
What is cover (9)

- Personal injury – such as sprain/strain but excludes any sprain or strain caused wholly or substantially by a gradual process, disease or infection (OA Shoulder)

- In NZ [Dislocation episodes]

- After April 2002 \{prior to 2001 different version of legislation\}
What is cover (10)

- **Caused** by...(see above)
- An accident (for purposes of shoulder conditions)
- A specific event or series of events
  - Involves application of force or resistance external to the human body OR sudden movement OR twisting
What is cover? (11)

S25 of ACC Act 2001

- Ss (3) The fact that a person has suffered a personal injury is not of itself to be construed as an indication or presumption that it was caused by an accident
Alternative Diagnoses for presentation of sore shoulder

- Frozen Shoulder
- Impingement syndrome
- Radicular symptoms
- Shingles
- Subsequent clarification of the diagnosis
Take Home Message #1

Patient Prevalence of Atraumatic Asymptomatic RCT with age

- Tempelhof (99)
- Milgrom (95)
- Sher (95)
- Moosmayer (09)
- Meta analysis
- Linear (Meta analysis)
Take home Message #1

• Background prevalence of rotator cuff tears
  – Age 55 up to 40%
  – Age 65 up to 60%
  – Age 75 up to 80%
What is entitlement? (1)

• Entitlement means the entitlements described or referred to in S(69).
• Subsection (1)
  (a) Rehabilitation, comprising treatment, social rehab and vocational rehab;
  (b) Compensation
  (c) Lump sums for permanent impairment
  (d) Funeral grants, survivors grants and weekly compensation for spouse, children and other dependents.
What is entitlement? (2)

• You must have cover with ACC for a personal injury caused by an accident and if you do then you can apply to ACC for an entitlement.
• Treatment is a form of Rehabilitation
• Shoulder surgery is a form of treatment
• Schedule 1 Part 1 Discusses Treatment under 6 headings
What is an entitlement?(3)

Schedule 1, Part 1 of the AC Act 2001

1) Liability to pay or contribute to cost of treatment for personal injury *for which the claimant has cover.*
   a) Agreements,
   b) Contracts
   c) Regulations
   d) Cost (appropriate and agreed)
What is an entitlement (4)

Examples
1) Cover is clarified – sprain vs cuff tear
2) Pre-existing pathology – cuff tear
3) Condition requiring surgery is substantially caused by gradual process, disease or infection
4) CAP role - referrals
Role of CAP

• Consider the facts of each shoulder request;
  - Including MOA, clinical history, examination findings, imaging, etc
• Members comment on causal link between
  - Pathology to be addressed AND
  - The ACC-covered claim
• Members do not:
  - Make funding decisions
  - Normally comment on necessity or appropriateness of the proposed surgery
Who is CAP?

- Chairperson Karen Rasmussen 2009 (Physiotherapist)
- CAP Members – virtual team
- Dr Michael Austen 2003 (Specialist Urgent Care Physician)
- Dr Patrick Medlicott 2003 (Orthopaedic Surgeon)
- Dr Ka Man (Ray) Fong 2008 (Orthopaedic Surgeon)
- Dr Michael Sexton 2008 (General Surgeon)
- Dr Ian Murphy 2010 (Sports Med Specialist)
- Dr Peter Hunter 2010 (Orthopaedic Surgeon)
- Dr Denis Atkinson 2011 (Orthopaedic Surgeon)
- Dr Joe Brownlee 2011 (Orthopaedic Surgeon)
- Katherine Kennedy 2012 (Physiotherapist)
- Dr Gordon Howie 2014 (Orthopaedic Surgeon)
What is an entitlement?(5)

Schedule 1, Part 1 of the AC Act 2001

• The treatment is for the purpose of restoring the claimant’s health to the maximum extent practicable AND
• Is necessary and appropriate; and of the quality required for that purpose AND
• Will be performed only on the number of occasions necessary for that purpose
• At a time or place appropriate for that purpose
What is an entitlement?(6)

- Schedule 1, Part 1 of the AC Act 2001
- Normally provided by a treatment provider
- A treatment provider who is qualified to provide that treatment and who normally provides that treatment AND
- Provided after the Corporation has agreed to the treatment (Patient and Surgeon go ahead prior to approval being granted)
What is an entitlement (7)

Schedule 1, Part 1 of the AC Act 2001

- The Corporation must take into account when deciding:
- The nature and severity of the injury AND
- The generally accepted means of treatment for such an injury in NZ AND
- Other options available in NZ for treatment AND
- The cost of the generally accepted means of treatment compared with the benefit that the claimant is likely to receive
Scientific Causation

- Population-based randomised studies
- Reproducibility of hypotheses
- Stochastic, chaos theory
  - “Does the flap of a butterfly’s wings in Brazil set off a tornado in Texas?” Edward Lorenz - 1972
- Multifactorial (Bradford-Hill criteria 1965)
- Association progressing to Aetiology
Clinical Causation

- What the patient tells us
- Mechanism of Accident
- Time to presentation
- How does that story fit in with our training/experience?
- Examination findings
- Response to treatment
- Special Tests
- Investigations
ACC Causation

COVER

• Personal injury caused by accident
• Exclusions:
  - Wholly or substantially caused by gradual process, disease or infection (or ageing)

ENTITLEMENT

Treatment – shoulder surgery – necessary and appropriate – for a condition for which the claimant has cover
Legal causation

- Balance of probabilities
- Possibilities
- Legal Consideration factors:
  - Specific anecdotal details of the case
  - Qualifications
  - Examined the patient
  - Expert
  - Deductive logic
  - Preferred opinion
Legal Precedent in NZ

- Rendered Symptomatic
- Impingement is a common condition
- Rotator cuff deterioration is known to occur naturally
- Accident causes injury to be superimposed
- Catastrophic failure
- Natural history
- Extension of a tear
Conditions Included for FTA

1. Glenohumeral and AC joint dislocations
2. Fractures about the shoulder and the clavicle
3. Isolated subscapularis tendon tears
4. Isolated pectoralis major tendon tears
   (added July 2012)
5. Rotator cuff tears requiring repair within 6 months of the Date of Injury (DOI)
Conditions Excluded from FTA

- Multidirectional laxity/ instability
- Glenohumeral OA/ Total Shoulder Replacement
- Pathological fractures
- Osteolysis outer end of clavicle or AC joint OA
- Adhesive Capsulitis/ Frozen Shoulder
- Subacromial bursitis/ Impingement
- Calcific tendinitis
- Any other shoulder condition not already mentioned
Essential Criteria (1)

1. ACC covered shoulder injury.
   The treatment on the sideline in NZ – no notes
   What is covered (patient expectations)

2. No unexplained previously documented injury or claims for that shoulder.
   A level of complexity in terms of management
Essential criteria (2)

3. Mechanism of incident involves an unexpected and high energy force
   • (controlled activities/ activities of daily living (ADL’s) are excluded from FTA).
   • Back Seat/ Cupboard

4. No unexplained delay between injury and initial presentation.

Timeframes 3 – 7 days; more than 30 days

Explanations
Essential criteria (3)

5. No history mismatch between ARTP and contemporaneous medical records.

Your records (delayed presentation or not at all!)
Physiotherapy records
Take home message #2

Shoulder injuries - Clinical records – The clinical history is the most important factor.

• Clear description of mechanism of accident

• If there has been a delay in presentation – Is there an explanation of why that delay has occurred

• A previous history of shoulder trouble
Additional criteria

- X-ray AND ST imaging
- Radiological veto features
- Corroborative features -
  - A weighing up process by you as the clinician
“Veto Factors”

- If any of the following radiological features are present then the request is excluded from FTA:
  - Acromiohumeral interval (AHI) \(\leq 7\)mm
  - Large acromial spur >10mm
  - Rotator cuff arthropathy
  - Goutallier Stage II Atrophy within 3 months or Stage III within 6 months of the DOI
  - Imaging reporting anterior greater tuberosity cysts
  - Bilateral cuff pathology
Why acromiohumeral interval (1)

- Reduced Acromio-humeral Interval (AHI)

- Indicates massive chronic rotator cuff tear
  - Level 1 evidence that the measurement of AHI is reliable on standardized AP x-ray
Why acromiohumeral interval (2)


- 3 groups of 21 patients; <=7mm, 8-10mm, >10mm on x-ray
  - MRI to assess cuff tear, location, size and atrophy
  - In AHI, <=7mm 90% had FT SP tear, 67% had FT Infrasp tear, 43% had FT subscap tear
  - Correlation between decreased AHI and large tear with fatty degeneration
Why acromiohumeral interval (3)

Walch et al, ‘The acromiohumeral and coracohumeral intervals are abnormal in rotator cuff tears with muscular fatty degeneration’ CORR 2005

- Consecutive series of 206 patients with full thickness cuff tears who had surgery
- Pre-op x-rays (AHI) and CT (fatty degeneration)
- 21% had AHI, 7mm
- An abnormal AHI was associated with multiple tendon tears involving the infraspinatus, fatty degeneration of supra or infraspinatus and duration of symptoms longer than 5 years
- Level of evidence II
Why acromiohumeral interval (4)

- Zingg et al, ‘Clinical and structural outcomes of nonoperative management of massive rotator cuff tears’ JBJS (Am) 2007
  - Followed 19 patients with massive cuff tears mean 48 months (minimum 24 months)
  - Glenohumeral arthritis progressed by 1 or 2 grades
  - AHI decreased by 2.6mm to 5.6mm
  - Fatty muscle infiltration progressed by 1 stage
  - Level of evidence IV
Why acromiohumeral interval (AHI) (5)

- AHI <7mm and fatty degeneration indicate chronic large rotator cuff tear of some years duration
Why sub-acromial spur?

Ogawa et al “Relationship to aging and morphological changes in the rotator cuff.” JSES 2005

• Presence of small spur has no diagnostic value for rotator cuff tears
• Spurs of >5mm are of diagnostic value in cuff tears
• Spurs >10mm more than 50% have cuff tears
Anterior tuberosity cysts?

- These have a high association with rotator cuff disorders; 50% may have a full thickness tear
Take Home lesson #3

Review Radiology images where possible – get a login to local Radiology provider

Gruber et al - ‘Measurements of the acromiohumeral interval on standardized anteroposterior radiographs: A prospective study of observer variability’ JSES June 2009

AP film – shortest distance between dense subcortical bone marking the undersurface of the acromion and the most proximal articular cortex of the humeral head - mm
Goutallier Grading

- Grade 1 – Fatty streaks in muscle
- Grade 2 – Less than 50% of muscle with fatty streaks
- Grade 3 – Fat = muscle
- Grade 4 – More fat than muscle
## Corroborative Features

<table>
<thead>
<tr>
<th>In favour of acuity</th>
<th>Against acuity</th>
</tr>
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<tbody>
<tr>
<td>Loss of strength or active range of motion (ROM) at assessment</td>
<td>Retraction beyond rim or &gt;35 mm</td>
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<tr>
<td>Excessive bursal fluid, blood or debris</td>
<td>No fluid (joint or bursa)</td>
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<tr>
<td>Mid substance tears (tissue on tuberosity)</td>
<td>Medium spurs (5 - 10mm)</td>
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<tr>
<td>MRI oedema on the greater tuberosity</td>
<td>Inferior AC joint osteophyte</td>
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<tr>
<td>Unilateral tears if bilateral USS available</td>
<td>Greater tuberosity irregularity on USS imaging (X-ray changes not clear evidence)</td>
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<tr>
<td>Generalised tendinosis in multiple tendons</td>
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Corroborative Features

• Retraction of a cuff tear beyond the glenoid rim (35mm) are more likely present for at least 3 months.
Changes to FTA tool (2)

• Conditions included:
  – At 1. Glenohumeral dislocations *with a labral tear* and AC joint dislocations.
  – Addition of “*Pectoralis major tendon ruptures.*”

• Veto factors:
  – Change from Grade II within 3 months and Grade III within 6 months to “*Severe fatty infiltration (Goutallier Stage III or IV)*”

• Corroborative features:
  – Inferior AC joint osteophyte *shown to be impinging on the cuff on soft tissue imaging.*
  – Generalised *tendinopathy* in multiple tendons
Radiology reporting

- Standardised X-rays
- Reporting template
  - Acromiohumeral interval
  - Anterior tuberosity irregularity
  - Anterior tuberosity cysts
  - Acromial spur and size
- U/S scan
  - Bilateral shoulders
  - Bony irregularity beneath insertion supraspinatus
  - Retraction
  - Fluid in the shoulder/tendon ends/bursa
  - Goutallier grading

Primary Care - important to get an X-ray done
Take Home message #4

The Shoulder and Elbow Society (SES) on behalf of the New Zealand Orthopaedic Association (NZOA), and the Clinical Advisory Panel (CAP) on behalf of ACC, have agreed on the following factors that will allow fast track assessment (FTA) of shoulder surgery requests.

Today an opportunity to present these to you within an ACC context.
Take home message #4

In terms of rotator cuff surgery, there is an asymptomatic prevalence, that increases with age;

A thorough initial clinical assessment focussing on the mechanism of injury, the acute clinical findings, the time to presentation and the history of previous symptoms will assist in establishing a causal link between an accident and the required surgery.

Consider the role of work
Take home message #4

There are Radiology features that can indicate very early on that the patient may have longstanding cuff pathology. Advising the patient of that possibility can be helpful in the context of possible surgery funding.

Any questions?

www.acc.co.nz - Shoulder consideration factors; Shoulder imaging guidelines