

PUTS A  
HALT ON LIFE  
**ONGOING**  
YOUNG OR OLD  
**BODYACHES**  
INTERRUPTS SLEEP  
**MALAISE**  
INCREASINGLY  
**BAD POSTURE**  
WITHDRAWN FROM ACTIVITIES  
**RESTRICTS**  
**MOBILITY**  
AFFECTS SOCIAL LIFE  
**CHRONIC**  
**ANGRY AND**  
**IRRITABLE**  
FULL BODY ACHING  
**SORENESS**  
EXHAUSTING  
**STRAINED**  
FEELING WEAK  
**PERSISTENT**  
**DISCOMFORT**

# Patient case study.

## Musculoskeletal pain

### #ListenToPain

Brought to you by the makers of



Start here >



Presentation



Horizontal lines for text entry

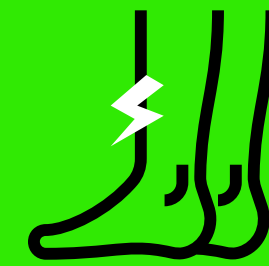
# Andrew

52 years.

Andrew hurt his lower back while playing squash.



The initial severe pain is better, however, he still has a dull ache which is a cause of irritation.



He complains of a shooting pain down his legs when he bends down to tie his shoelaces.

Presentation



History



Clinical examination



Differential diagnosis



Treatment plan



Clinical evidence



Follow-up & summary





### Past history and family history:

**Hypertensive**  
for 3 years and further investigations revealed dyslipidemia.

**At present,** takes lisinopril and atorvastatin tablets for hypertension and dyslipidemia, respectively.

**No family history**  
of any medical illness.  
**He requests medication.**

## What do you advise?

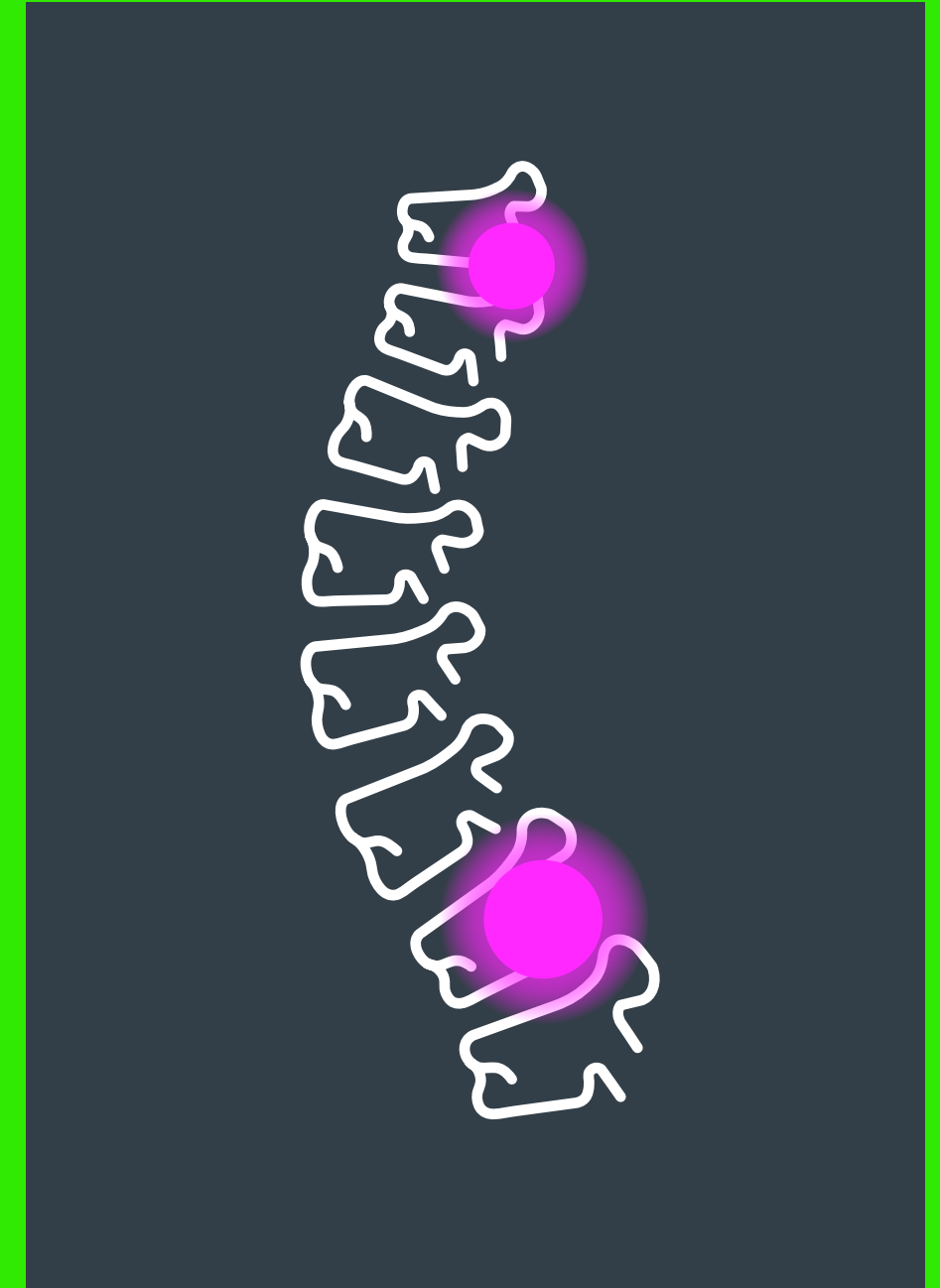






# Clinical examination

- > General appearance:  
Appeared uneasy and tense.
- > Well-nourished.
- > BP: 134/88mmHg, PR: 78bpm.
- > BMI: 26.0kg/m<sup>2</sup>.
- > Lungs/CVS/Abdomen: NAD.
- > CNS: NAD.
- > Gait: Stable.
- > Increase in pain and tenderness in lower back on movement and bending, limited range of spinal motion, negative straight leg raise test, no paresthesia, normal reflexes.



BMI, body mass index; BP, blood pressure; CNS, central nervous system; CRP, C-reactive protein; CVS, cardiovascular system; ESR, erythrocyte sedimentation rate; NAD, nothing abnormal detected; PR, pulse rate.







What could be the possible cause for stiffness and pain in Andrew?

Click an option to select your answer.

- ACUTE MUSCULO-SKELETAL INJURY
- FRACTURE
- INFECTION
- CAUDA EQUINA SYNDROME







What could be the possible cause for stiffness and pain in Andrew?

Click an option to select your answer.

ACUTE MUSCULO-SKELETAL INJURY

× FRACTURE

INFECTION

CAUDA EQUINA SYNDROME







What could be the possible cause for stiffness and pain in Andrew?

Click an option to select your answer.

ACUTE  
MUSCULO-  
SKELETAL INJURY

FRACTURE

× INFECTION

CAUDA  
EQUINA  
SYNDROME





Clinical examination



What could be the possible cause for stiffness and pain in Andrew?

Click an option to select your answer.

ACUTE MUSCULO-SKELETAL INJURY

FRACTURE

INFECTION

× CAUDA EQUINA SYNDROME

Presentation



History



Clinical examination



Differential diagnosis



Treatment plan



Clinical evidence



Follow-up & summary







What could be the possible cause for stiffness and pain in Andrew?

Click an option to select your answer.

- ✓ ACUTE MUSCULO-SKELETAL INJURY
- FRACTURE
- INFECTION
- CAUDA EQUINA SYNDROME





Clinical examination

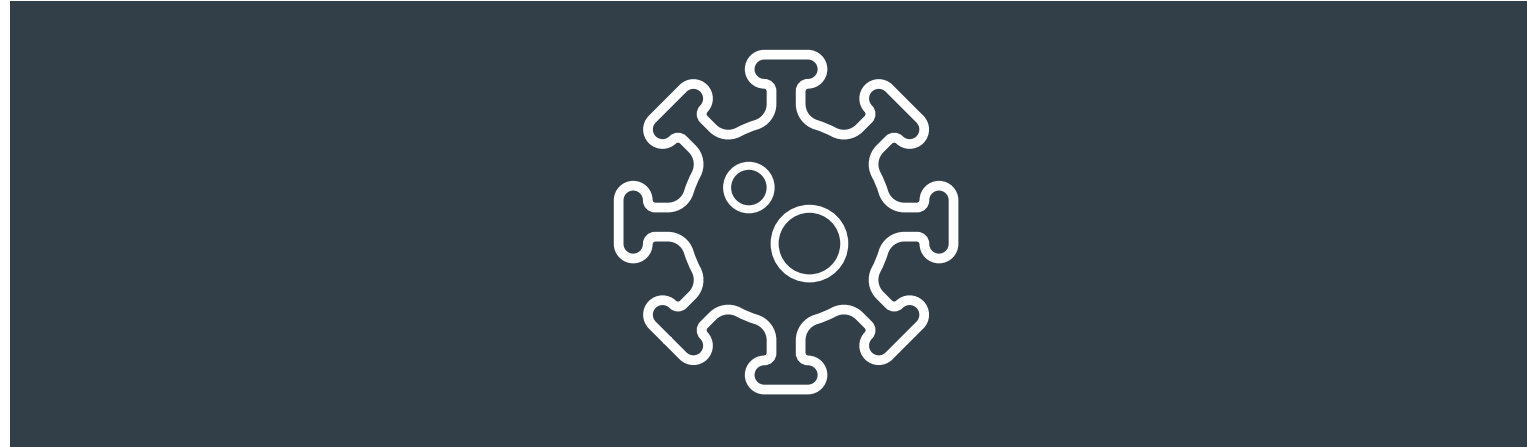


What are the red flags that should be looked out for in a patient like Andrew?

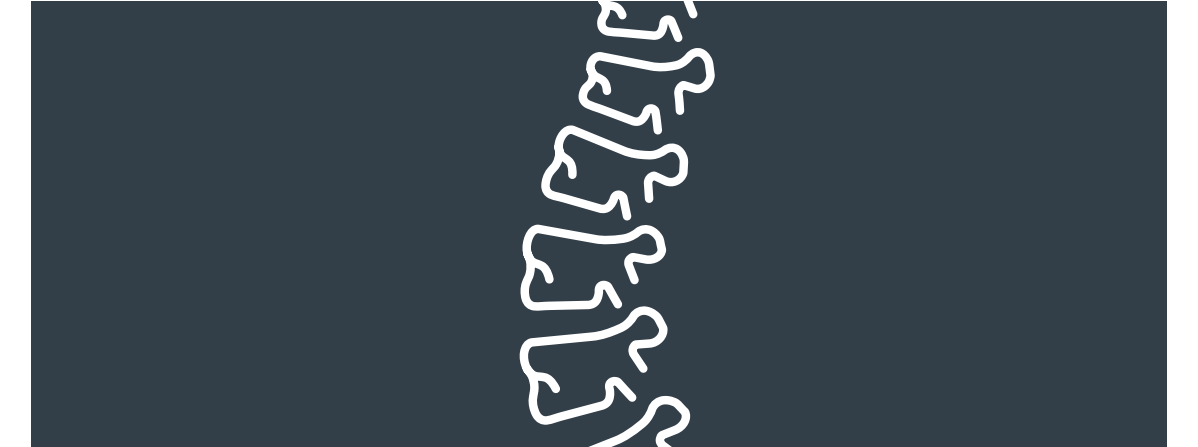
HIV, human immunodeficiency virus; IV, intravenous; UTI, urinary tract infection.



Possible fracture



Possible tumour or infection



Possible cauda equina syndrome

From medical history

- > Major trauma, such as vehicle accident or fall from height.
- > Minor trauma or even strenuous lifting in an older, or potentially osteoporotic, patient.

- > Age over 50 or under 20.
- > History of cancer and/or constitutional symptoms, such as recent fever or chills or unexplained weight loss.
- > Risk factors for spinal infection: recent bacterial infection (e.g., UTI), IV drug abuse, or immune suppression, (e.g., from corticosteroids, transplant or HIV).
- > Pain that worsens when supine and/or severe night-time pain.

- > Saddle anaesthesia.
- > Recent onset of bladder dysfunction, such as urinary retention, increased frequency, or overflow incontinence.
- > Severe or progressive neurological deficit in the lower extremity.

From clinical examination

- > Peri-anal/perineal sensory loss.
- > Major motor weakness: quadriceps (knee extension weakness); plantar flexors, evertors and dorsiflexors (foot drop).

Presentation



History



Clinical examination



Differential diagnosis



Treatment plan



Clinical evidence



Follow-up & summary





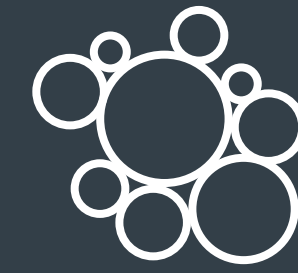
## Differential diagnosis

**What could the possible cause for the pain be in patients like Andrew?**



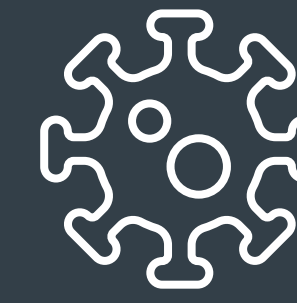
### Acute musculoskeletal pain<sup>1,2</sup>

- Ache, spasm.
- Increases with activity or bending.
- Local tenderness, limited spinal motion.



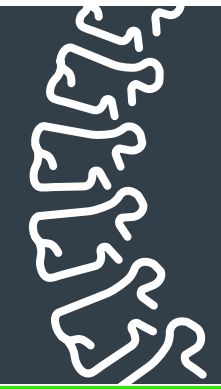
### Tumour<sup>3-5</sup>

- Unexplained weight loss, fever or chills.
- Past history of malignant tumour.



### Infection<sup>3-5</sup>

- Recent bacterial infection, IV drug abuse, immunocompromised condition.
- Severe pain at night.



### Cauda equina syndrome<sup>3-5</sup>

- Bladder dysfunction (urinary retention, occasional overflow incontinence).
- Sphincter disturbance.
- Saddle anaesthesia.
- Global or progressive weakness in the lower limbs or gait disturbance.


IV, intravenous.

1. National Health Committee. Low Back Pain: A Pathway to Prioritisation. Available at: [www.health.govt.nz/system/files/documents/publications/nhc-lbp-pathway-to-prioritisation.pdf](http://www.health.govt.nz/system/files/documents/publications/nhc-lbp-pathway-to-prioritisation.pdf) (last accessed May 2021). 2. Patel A. Am Fam Physician 2000;61(6): 1779-1786. 3. NSW Therapeutic Assessment Group. Low back pain. Rational use of opioids in chronic or recurrent non-malignant pain: prescribing guidelines for primary care clinicians. Available at: [www.nswtag.org.au/wp-content/uploads/2017/08/pain-low-back-gp-dec-2002.pdf](http://www.nswtag.org.au/wp-content/uploads/2017/08/pain-low-back-gp-dec-2002.pdf) (last accessed May 2021). 4. European guidelines for the management of acute nonspecific low back pain in primary care. Available at: [www.ncbi.nlm.nih.gov/pmc/articles/PMC3454540/pdf/586\\_2006\\_Article\\_1071.pdf](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3454540/pdf/586_2006_Article_1071.pdf) (last accessed May 2021). 5. Australian Acute Musculoskeletal Pain Guidelines Group. Evidence-based management of acute musculoskeletal pain. Available at: [www.catalogue.nla.gov.au/catalog/3355145](http://www.catalogue.nla.gov.au/catalog/3355145) (last accessed May 2021).

Presentation 

History 

Clinical examination 

Differential diagnosis 

Treatment plan 

Clinical evidence 

Follow-up & summary 





Treatment plan



# Approach to management of acute musculoskeletal pain.

01

What are the modalities of treatment?

02

What is the clinical evidence?

03

What do guidelines say regarding the most suitable management?

Presentation



History



Clinical examination



Differential diagnosis



Treatment plan



Clinical evidence



Follow-up & summary





#ListenToPain

Treatment  
plan



What  
modalities can  
be used to treat  
patients like  
Andrew?

Click an option to select your answer.

PHYSICAL  
THERAPY

PATIENT  
EDUCATION

PHARMACOLOGICAL  
MANAGEMENT

ALL OF  
THE ABOVE

HALEON



Presentation



History



Clinical  
examination



Differential  
diagnosis



Treatment  
plan



Clinical  
evidence



Follow-up  
& summary





#ListenToPain

Treatment  
plan



What  
modalities can  
be used to treat  
patients like  
Andrew?

Click an option to select your answer.

- × PHYSICAL THERAPY
- PATIENT EDUCATION
- PHARMACOLOGICAL MANAGEMENT
- ALL OF THE ABOVE

HALEON



Presentation



History



Clinical  
examination



Differential  
diagnosis



Treatment  
plan



Clinical  
evidence



Follow-up  
& summary





#ListenToPain

Treatment  
plan



What  
modalities can  
be used to treat  
patients like  
Andrew?

Click an option to select your answer.

PHYSICAL  
THERAPY

×

PATIENT  
EDUCATION

PHARMACOLOGICAL  
MANAGEMENT

ALL OF  
THE ABOVE

HALEON



Presentation



History



Clinical  
examination



Differential  
diagnosis



Treatment  
plan



Clinical  
evidence



Follow-up  
& summary





#ListenToPain

Treatment  
plan



What  
modalities can  
be used to treat  
patients like  
Andrew?

Click an option to select your answer.

PHYSICAL  
THERAPY

PATIENT  
EDUCATION

×

PHARMACOLOGICAL  
MANAGEMENT

ALL OF  
THE ABOVE

HALEON



Presentation



History



Clinical  
examination



Differential  
diagnosis



Treatment  
plan



Clinical  
evidence



Follow-up  
& summary





Treatment plan



What modalities can be used to treat patients like Andrew?

Click an option to select your answer.

- ✓ PHYSICAL THERAPY
- ✓ PATIENT EDUCATION
- ✓ PHARMACOLOGICAL MANAGEMENT
- ✓ ALL OF THE ABOVE

Presentation



History



Clinical examination



Differential diagnosis



Treatment plan



Clinical evidence



Follow-up & summary

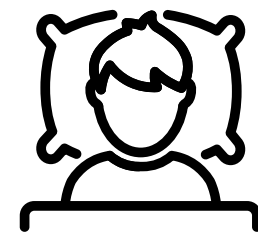




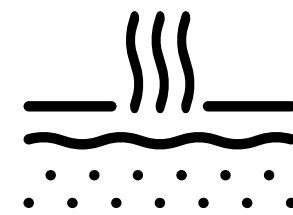


### What modalities can be used to treat patients like Andrew?

Adequate rest for 2-3 days and slowly resume daily activities<sup>1,2</sup>



Physical therapy e.g., superficial heat<sup>2</sup>



Patient education to avoid re-injury<sup>1</sup>



Pharmacological management e.g., topical and/or oral analgesics<sup>3</sup>



1. NSW Therapeutic Assessment Group. Low back pain. Rational use of opioids in chronic or recurrent non-malignant pain: prescribing guidelines for primary care clinicians. Available at: [www.nswtag.org.au/wp-content/uploads/2017/08/pain-low-back-gp-dec-2002.pdf](http://www.nswtag.org.au/wp-content/uploads/2017/08/pain-low-back-gp-dec-2002.pdf) (last accessed May 2021).  
2. Accident Compensation Corporation (ACC). New Zealand acute low back pain guide. Available at: [www.acc.co.nz/assets/provider/lower-back-pain-guide-acc1038.pdf](http://www.acc.co.nz/assets/provider/lower-back-pain-guide-acc1038.pdf) (last accessed May 2021). 3. Annals of Internal Medicine. Noninvasive treatments for acute, subacute, and chronic low back pain: A clinical practice guideline from the American College of Physicians. Available at: [www.acpjournals.org/doi/full/10.7326/M16-2367](http://www.acpjournals.org/doi/full/10.7326/M16-2367) (last accessed May 2021).

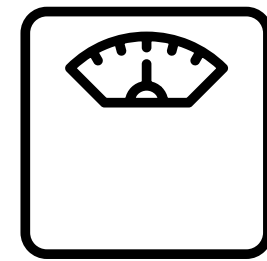






### Lifestyle modifications for Andrew.

Weight management<sup>1</sup>



Reduction of strenuous physical activity<sup>2</sup>



Ergonomic adaptations in the workplace<sup>1,3</sup>



Appropriate posture training for sitting, driving and lifting<sup>1,3</sup>



1. NSW Therapeutic Assessment Group. Low back pain. Rational use of opioids in chronic or recurrent non-malignant pain: prescribing guidelines for primary care clinicians. Available at: [www.nswtag.org.au/wp-content/uploads/2017/08/pain-low-back-gp-dec-2002.pdf](http://www.nswtag.org.au/wp-content/uploads/2017/08/pain-low-back-gp-dec-2002.pdf) (last accessed May 2021). 2. Accident Compensation Corporation (ACC). New Zealand acute low back pain guide. Available at: [www.acc.co.nz/assets/provider/lower-back-pain-guide-acc1038.pdf](http://www.acc.co.nz/assets/provider/lower-back-pain-guide-acc1038.pdf) (last accessed May 2021). 3. Annals of Internal Medicine. Noninvasive treatments for acute, subacute, and chronic low back pain: A clinical practice guideline from the American College of Physicians. Available at: [www.acpjournals.org/doi/full/10.7326/M16-2367](http://www.acpjournals.org/doi/full/10.7326/M16-2367) (last accessed May 2021).





#ListenToPain

Treatment  
plan



What are the  
therapeutic  
options for  
patients with  
MSK pain?

Click an option to select your answer.

MSK, musculoskeletal.

**TOPICAL  
DICLOFENAC  
PARACETAMOL  
IBUPROFEN  
ALL OF  
THE ABOVE**

**HALEON**



Presentation



History



Clinical  
examination



Differential  
diagnosis



Treatment  
plan



Clinical  
evidence



Follow-up  
& summary





Treatment  
plan



What are the  
therapeutic  
options for  
patients with  
MSK pain?

Click an option to select your answer.

MSK, musculoskeletal.

× **TOPICAL  
DICLOFENAC**  
PARACETAMOL  
IBUPROFEN  
ALL OF  
THE ABOVE



Presentation



History



Clinical  
examination



Differential  
diagnosis



Treatment  
plan



Clinical  
evidence



Follow-up  
& summary





Treatment plan



What are the therapeutic options for patients with MSK pain?

Click an option to select your answer.

MSK, musculoskeletal.

TOPICAL  
DICLOFENAC

× PARACETAMOL

IBUPROFEN

ALL OF  
THE ABOVE



Presentation



History



Clinical examination



Differential diagnosis



Treatment plan



Clinical evidence



Follow-up & summary





Treatment  
plan



What are the  
**therapeutic**  
options for  
patients with  
**MSK pain?**

Click an option to select your answer.

MSK, musculoskeletal.

TOPICAL  
DICLOFENAC  
PARACETAMOL  
× **IBUPROFEN**  
ALL OF  
THE ABOVE



Presentation



History



Clinical  
examination



Differential  
diagnosis



Treatment  
plan



Clinical  
evidence



Follow-up  
& summary





Treatment plan



What are the **therapeutic options** for patients with **MSK pain?**

Click an option to select your answer.

- ✓ TOPICAL DICLOFENAC
- ✓ PARACETAMOL
- ✓ IBUPROFEN
- ✓ ALL OF THE ABOVE



MSK, musculoskeletal.

Presentation



History



Clinical examination



Differential diagnosis



Treatment plan



Clinical evidence



Follow-up & summary

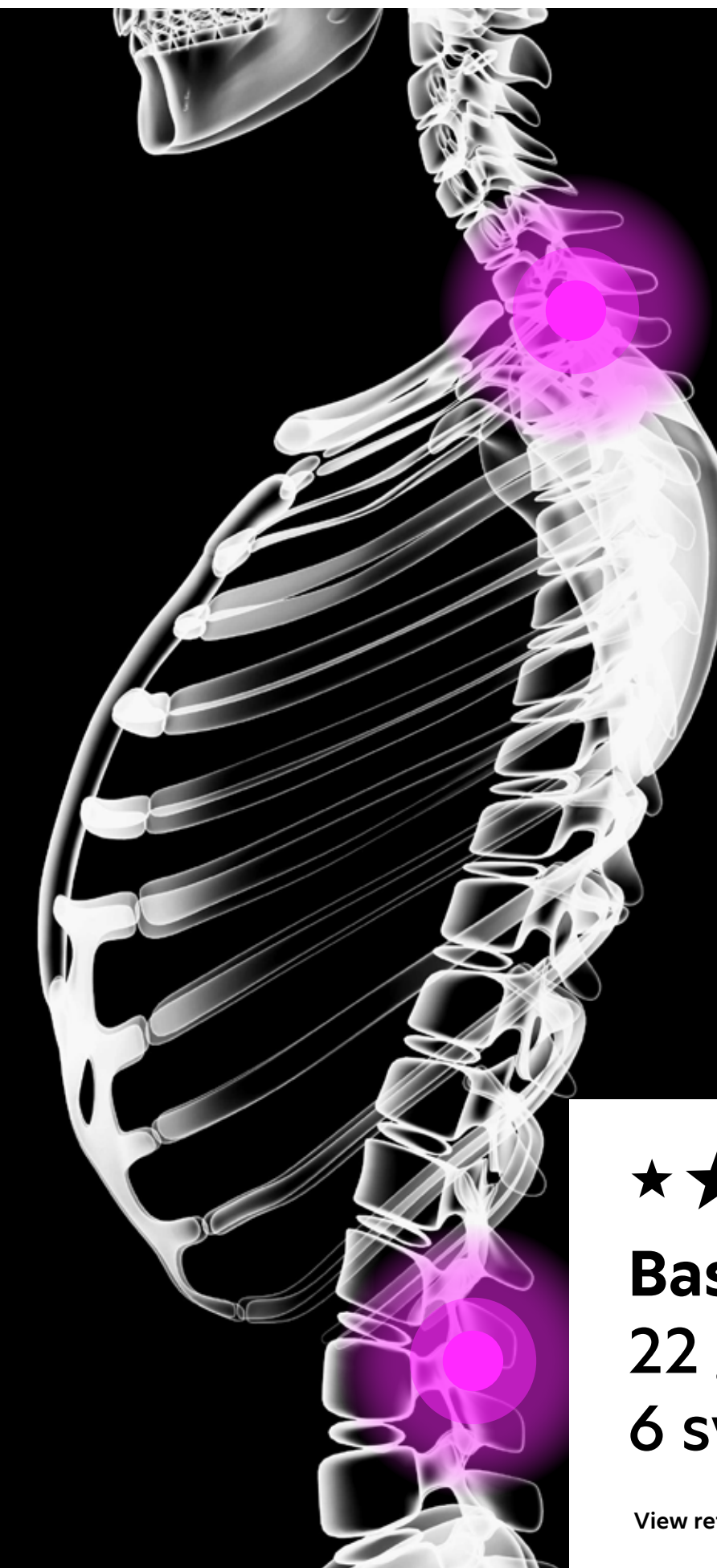






# What do guidelines recommend?

- > High-grade evidence for use of **topical diclofenac**.
  - Effective for acute musculoskeletal pain, such as sprains, with minimal adverse event profile.
- > Both paracetamol and ibuprofen show comparable efficacy, however, the quality of evidence evaluated was low.



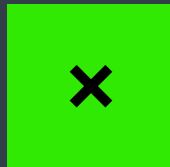
**Based on robust evidence**  
22 guidelines &  
6 systemic reviews.<sup>1-22</sup>

[View references >](#)

1. Saragiotto B et al. *Cochrane Database of Systematic Reviews* 2016;(6):CD012230. 2. Davies R, et al. *Eur Spine J* 2008;17(11):1423-1430. 3. Ridderikhof M, et al. *Emerg Med J* 2019;36(8):493-500.







## References

1. Gaseem A, et al. *Ann Intern Med* 2017;166(7):514-530.
2. National Institute for Health and Care Excellence (NICE), United Kingdom. Low back pain and sciatica in over 16s: assessment and management NICE Guideline NG59. Available at: [www.nice.org.uk/guidance/ng59](http://www.nice.org.uk/guidance/ng59) (last accessed May 2021).
3. The Royal Australian College of General Practitioners Ltd (RACGP). RACGP aged care clinical guide (Silver Book). Available at: [www.racgp.org.au/silverbook](http://www.racgp.org.au/silverbook) (last accessed May 2021).
4. Van Tulder M, et al. *Eur Spine J* 2006;15 Suppl 2:S169-91.
5. National Health Committee. Low back pain: a pathway to prioritisation. Wellington: National Health Committee. 2015.
6. Krismer M, Van Tulder M. *Best Pract Res: Clin Rheumatol* 2007;21(1):77-91.
7. North American Spine Society. Evidence-based clinical guidelines for multidisciplinary spine care. Diagnosis and treatment of low back pain. Available at: [www.spine.org/Portals/0/assets/downloads/ResearchClinicalCare/Guidelines/LowBackPain.pdf](http://www.spine.org/Portals/0/assets/downloads/ResearchClinicalCare/Guidelines/LowBackPain.pdf) (last accessed May 2021).
8. Hsu J, et al. *J Orthop Trauma* 2019;33(5):e158.
9. Ftouh S, et al. *BMJ* 2011;21:342.
10. National Institute for Health and Care Excellence (NICE), United Kingdom. Fractures (non-complex): assessment and management NICE Guideline NG38. Available at: [www.nice.org.uk/guidance/ng38](http://www.nice.org.uk/guidance/ng38) (last accessed May 2021).
11. NSW Agency for Clinical Innovation. Management of people with acute low back pain: model of care. Available at: [https://aci.health.nsw.gov.au/\\_\\_data/assets/pdf\\_file/0007/336688/acute-low-back-pain-moc.pdf](https://aci.health.nsw.gov.au/__data/assets/pdf_file/0007/336688/acute-low-back-pain-moc.pdf) (last accessed May 2021).
12. NSW Therapeutic Assessment Group. Low back pain. Rational use of opioids in chronic or recurrent non-malignant pain: prescribing guidelines for primary care clinicians. Available at: [www.nswtag.org.au/wp-content/uploads/2017/08/pain-low-back-gp-dec-2002.pdf](http://www.nswtag.org.au/wp-content/uploads/2017/08/pain-low-back-gp-dec-2002.pdf) (last accessed May 2021).
13. Australian and New Zealand Hip Fracture Registry (ANZHFR) Steering Group. Australian and New Zealand Guideline for Hip Fracture Care. Improving Outcomes in Hip Fracture Management of Adults. Available at: [www.anzhfr.org/wp-content/uploads/sites/1164/2021/12/ANZ-Guideline-for-Hip-Fracture-Care.pdf](http://www.anzhfr.org/wp-content/uploads/sites/1164/2021/12/ANZ-Guideline-for-Hip-Fracture-Care.pdf) (last accessed May 2021).
14. Australian Acute Musculoskeletal Pain Guidelines Group. Evidence-based management of acute musculoskeletal pain. Available at: [www.catalogue.nla.gov.au/catalog/3355145](http://www.catalogue.nla.gov.au/catalog/3355145) (last accessed May 2021).
15. Accident Compensation Corporation (ACC). New Zealand acute low back pain guide. Available at: [www.acc.co.nz/assets/provider/lower-back-pain-guide-acc1038.pdf](http://www.acc.co.nz/assets/provider/lower-back-pain-guide-acc1038.pdf) (last accessed May 2021).
16. New Zealand government. Shoulder-treatment-guidelines.
17. Toward Optimized Practice Low Back Pain Working Group. Evidence-Informed Primary Care Management of Low Back Pain. Available at: [www.actt.albertadoctors.org/media/zpgdhot5/lbp-guideline.pdf](http://www.actt.albertadoctors.org/media/zpgdhot5/lbp-guideline.pdf) (last accessed May 2021).
18. Negrini S, et al. *Europa Medicophysica* 2006;42(2):151-170.
19. Bisciotti G, et al. *BMJ Open Sport Exerc Med* 2018;4(1):e000323.
20. Department: Health Republic of South Africa. Symptom-based integrated approach to the adult in primary care. Available at: [www.hst.org.za/publications/NonHST%20Publications/PC-101-Guideline-v2-2013-14-2.pdf](http://www.hst.org.za/publications/NonHST%20Publications/PC-101-Guideline-v2-2013-14-2.pdf) (last accessed May 2021).
21. Rached R, et al. *AMB* 2013;59(6):536-553.
22. Hussein A, et al. Malaysian low back pain management guideline. Malaysian association for the study of pain. Available at: [www.masp.org.my/index.cfm?&menuid=23](http://www.masp.org.my/index.cfm?&menuid=23) (last accessed May 2021).

Presentation



History



Clinical examination



Differential diagnosis



Treatment plan



Clinical evidence

Follow-up & summary





Clinical evidence 



Musculoskeletal pain

**Topical diclofenac**  
Recommended first-line for:

**Paracetamol**  
Recommended for:

**Ibuprofen**  
Limited use



MSK pain



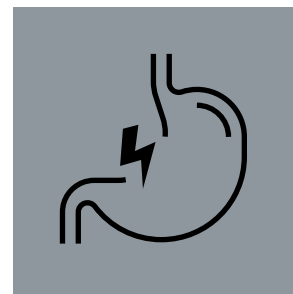
GI risks



CVD



Elderly



GI risks



CVD



Elderly


> Most guidelines recommend topical diclofenac as first-line treatment for acute MSK pain. > Only a few guidelines recommend paracetamol as first-line therapy.

CVD, cardiovascular disease; GI, gastrointestinal; MSK, musculoskeletal.  
1. Saragiotto B, et al. *Cochrane Database of Syst Rev* 2016(6):CD012230. 2. Davies R, et al. *Eur Spine J* 2008;17(11):1423-1430. 3. Ridderikhof M, et al. *Emerg Med J* 2019;36(8):493-500.

Presentation 

History 

Clinical examination 

Differential diagnosis 

Treatment plan 

Clinical evidence

Follow-up & summary 



#ListenToPain

Clinical  
evidence



Which is the  
most suitable  
option for  
Andrew?

Click an option to select your answer.

**TOPICAL  
DICLOFENAC  
PARACETAMOL  
IBUPROFEN  
TOPICAL  
DICLOFENAC +  
PARACETAMOL**

Presentation



History



Clinical  
examination



Differential  
diagnosis



Treatment  
plan



Clinical  
evidence

Follow-up  
& summary



HALEON







Which is the most suitable option for Andrew?

Click an option to select your answer.

- × TOPICAL DICLOFENAC
- PARACETAMOL
- IBUPROFEN
- TOPICAL DICLOFENAC + PARACETAMOL







Which is the most suitable option for Andrew?

Click an option to select your answer.

- TOPICAL DICLOFENAC
- × PARACETAMOL
- IBUPROFEN
- TOPICAL DICLOFENAC + PARACETAMOL







Which is the most suitable option for Andrew?

Click an option to select your answer.

- TOPICAL DICLOFENAC
- PARACETAMOL
- × IBUPROFEN
- TOPICAL DICLOFENAC + PARACETAMOL





Clinical evidence



Which is the most suitable option for Andrew?

Click an option to select your answer.

TOPICAL  
DICLOFENAC  
PARACETAMOL  
IBUPROFEN



**TOPICAL  
DICLOFENAC +  
PARACETAMOL**

If topical diclofenac is not enough then add paracetamol

Presentation



History



Clinical examination



Differential diagnosis



Treatment plan



Clinical evidence

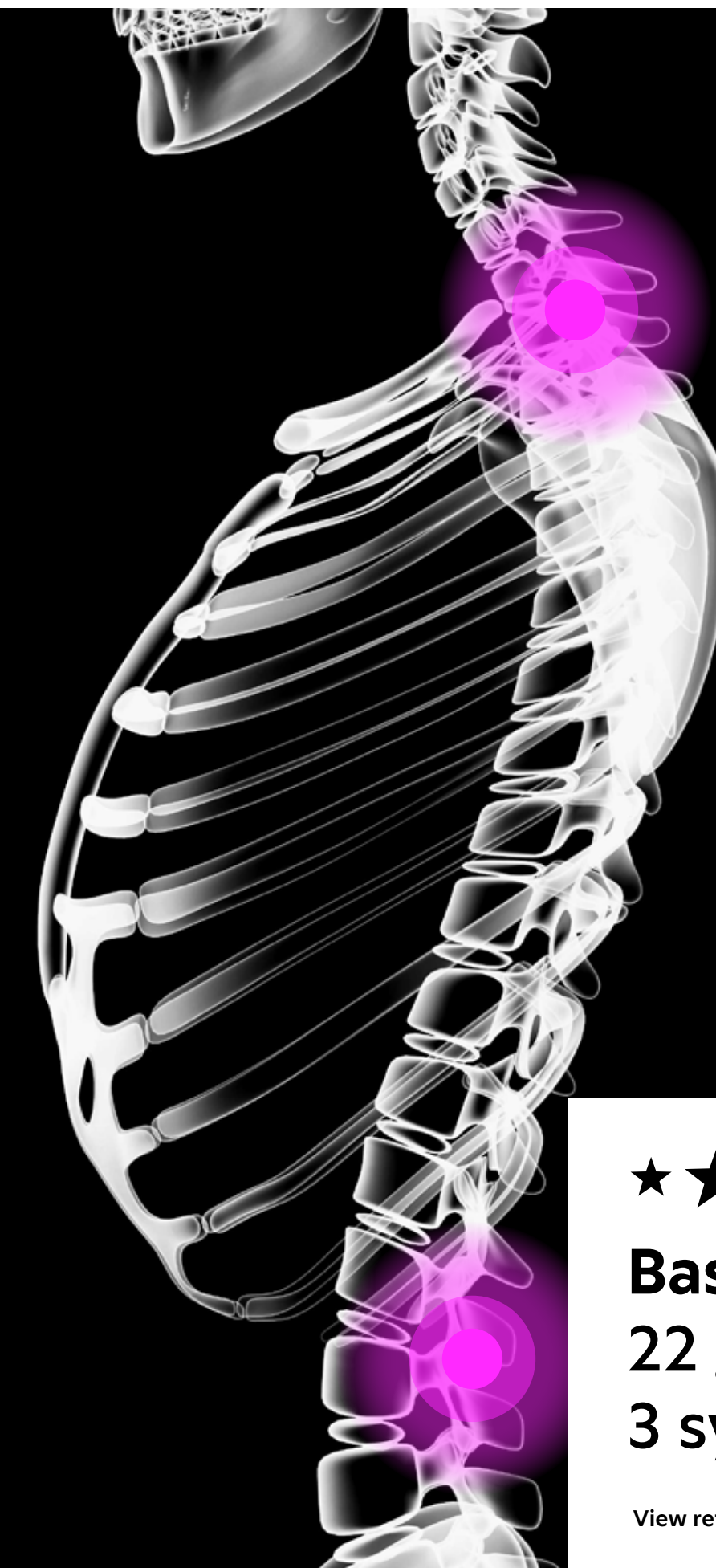
Follow-up & summary





# What do guidelines recommend?

- > **Topical diclofenac:** the latest systematic review based on 11,000 participants demonstrated that topical diclofenac is a suitable, effective first-line treatment for acute MSK pain, such as sprains, strains, and sports-related injuries with minimal reported adverse events.<sup>23-25</sup>
- > There is insufficient evidence regarding the comparative effectiveness of paracetamol and ibuprofen alone in relieving MSK pain.
- > Most of the guidelines recommend paracetamol while few also recommend its use as first-line therapy. In contrast, only limited number of guidelines recommend ibuprofen for management of musculoskeletal pain.
- > However, paracetamol is the drug of choice in management of MSK pain in elderly and patients with risk of gastrointestinal or cardiovascular events.

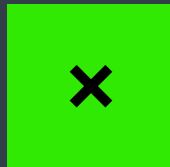


★ ★ ★  
**Based on robust evidence**  
22 guidelines &  
3 systemic reviews.<sup>1-22</sup>

[View references >](#)

MSK, musculoskeletal.





## References

1. Gaseem A, et al. *Ann Intern Med* 2017;166(7):514-530.
2. National Institute for Health and Care Excellence (NICE), United Kingdom. Low back pain and sciatica in over 16s: assessment and management NICE Guideline NG59. Available at: [www.nice.org.uk/guidance/ng59](http://www.nice.org.uk/guidance/ng59) (last accessed May 2021).
3. The Royal Australian College of General Practitioners Ltd (RACGP). RACGP aged care clinical guide (Silver Book). Available at: [www.racgp.org.au/silverbook](http://www.racgp.org.au/silverbook) (last accessed May 2021).
4. Van Tulder M, et al. *Eur Spine J* 2006;15 Suppl 2:S169-91.
5. National Health Committee. Low back pain: a pathway to prioritisation. Wellington: National Health Committee. 2015.
6. Krismer M, Van Tulder M. *Best Pract Res: Clin Rheumatol* 2007;21(1):77-91.
7. North American Spine Society. Evidence-based clinical guidelines for multidisciplinary spine care. Diagnosis and treatment of low back pain. Available at: [www.spine.org/Portals/0/assets/downloads/ResearchClinicalCare/Guidelines/LowBackPain.pdf](http://www.spine.org/Portals/0/assets/downloads/ResearchClinicalCare/Guidelines/LowBackPain.pdf) (last accessed May 2021).
8. Hsu J, et al. *J Orthop Trauma* 2019;33(5):e158.
9. Ftouh S, et al. *BMJ* 2011;21:342.
10. National Institute for Health and Care Excellence (NICE), United Kingdom. Fractures (non-complex): assessment and management NICE Guideline NG38. Available at: [www.nice.org.uk/guidance/ng38](http://www.nice.org.uk/guidance/ng38) (last accessed May 2021).
11. NSW Agency for Clinical Innovation. Management of people with acute low back pain: model of care. Available at: [https://aci.health.nsw.gov.au/\\_\\_data/assets/pdf\\_file/0007/336688/acute-low-back-pain-moc.pdf](https://aci.health.nsw.gov.au/__data/assets/pdf_file/0007/336688/acute-low-back-pain-moc.pdf) (last accessed May 2021).
12. NSW Therapeutic Assessment Group. Low back pain. Rational use of opioids in chronic or recurrent non-malignant pain: prescribing guidelines for primary care clinicians. Available at: [www.nswtag.org.au/wp-content/uploads/2017/08/pain-low-back-gp-dec-2002.pdf](http://www.nswtag.org.au/wp-content/uploads/2017/08/pain-low-back-gp-dec-2002.pdf) (last accessed May 2021).
13. Australian and New Zealand Hip Fracture Registry (ANZHFR) Steering Group. Australian and New Zealand Guideline for Hip Fracture Care. Improving Outcomes in Hip Fracture Management of Adults. Available at: [www.anzhfr.org/wp-content/uploads/sites/1164/2021/12/ANZ-Guideline-for-Hip-Fracture-Care.pdf](http://www.anzhfr.org/wp-content/uploads/sites/1164/2021/12/ANZ-Guideline-for-Hip-Fracture-Care.pdf) (last accessed May 2021).
14. Australian Acute Musculoskeletal Pain Guidelines Group. Evidence-based management of acute musculoskeletal pain. Available at: [www.catalogue.nla.gov.au/catalog/3355145](http://www.catalogue.nla.gov.au/catalog/3355145) (last accessed May 2021).
15. Accident Compensation Corporation (ACC). New Zealand acute low back pain guide. Available at: [www.acc.co.nz/assets/provider/lower-back-pain-guide-acc1038.pdf](http://www.acc.co.nz/assets/provider/lower-back-pain-guide-acc1038.pdf) (last accessed May 2021).
16. New Zealand government. Shoulder-treatment-guidelines.
17. Toward Optimized Practice Low Back Pain Working Group. Evidence-Informed Primary Care Management of Low Back Pain. Available at: [www.actt.albertadoctors.org/media/zpgdhot5/lbp-guideline.pdf](http://www.actt.albertadoctors.org/media/zpgdhot5/lbp-guideline.pdf) (last accessed May 2021).
18. Negrini S, et al. *Europa Medicophysica* 2006;42(2):151-170.
19. Bisciotti G, et al. *BMJ Open Sport Exerc Med* 2018;4(1):e000323.
20. Department: Health Republic of South Africa. Symptom-based integrated approach to the adult in primary care. Available at: [www.hst.org.za/publications/NonHST%20Publications/PC-101-Guideline-v2-2013-14-2.pdf](http://www.hst.org.za/publications/NonHST%20Publications/PC-101-Guideline-v2-2013-14-2.pdf) (last accessed May 2021).
21. Rached R, et al. *AMB* 2013;59(6):536-553.
22. Hussein A, et al. Malaysian low back pain management guideline. Malaysian association for the study of pain. Available at: [www.masp.org.my/index.cfm?&menuid=23](http://www.masp.org.my/index.cfm?&menuid=23) (last accessed May 2021).
23. Saragiotto B, et al. *Cochrane Database Syst Rev* 2016;(6):CD012230.
24. Davies R, et al. *Eur Spine J* 2008;17(11):1423-1430.
25. Ridderlkhhot M, et al. *Emerg Med* 2019;36(8):493-500.

Presentation



History



Clinical examination



Differential diagnosis



Treatment plan



Clinical evidence

Follow-up & summary

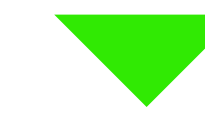
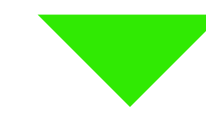
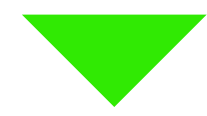




Clinical evidence



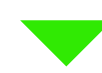
Andrew has hypertension and dyslipidemia.



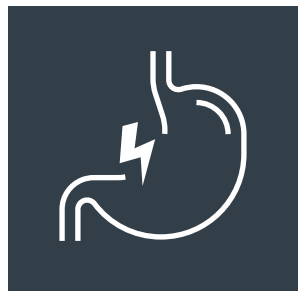
**Topical diclofenac**  
Recommended in first-line

**Paracetamol**  
Recommended in below population

**Ibuprofen**  
Limited use



MSK pain



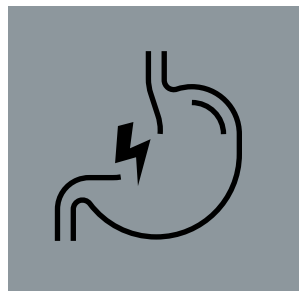
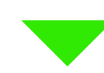
GI risks



CVD



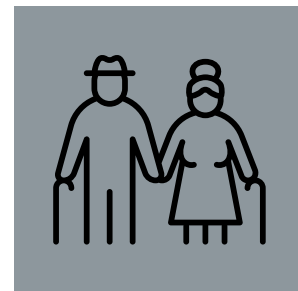
Elderly



GI risks



CVD



Elderly

**Guidelines recommend** monotherapy with topical diclofenac or, if no improvement, oral paracetamol in combination with topical diclofenac.

CVD, cardiovascular disease; GI, gastrointestinal; MSK, musculoskeletal.

Presentation



History



Clinical examination



Differential diagnosis



Treatment plan



Clinical evidence

Follow-up & summary





Follow-up  
& summary



## What next?

Andrew was asked to apply **topical diclofenac 1% gel (2g)** up to four times a day for up to 7 days, and follow a healthy lifestyle.

In case of persistent symptoms, combination therapy along with **oral paracetamol 500mg-1g SOS** can be advised.

During this course of treatment, **if symptoms worsen or persists beyond 7 days**, he is advised to consult his doctor.

SOS, as necessary.

Presentation



History



Clinical examination



Differential diagnosis



Treatment plan



Clinical evidence



Follow-up & summary







## Summary

**Andrew** is a 52-year-old man who hurt his lower back while playing squash.

The initial severe pain got better; however, he still had a dull ache, which was a cause of irritation.

Additionally, he complained of a shooting pain when he bent down to tie his shoelaces.

On examination, there was pain and tenderness in lower back, which increased on movement and bending, limited range of spinal motion, negative straight leg raise test, no paresthesias, normal reflexes.

He was diagnosed with **acute musculoskeletal pain**.

**He was recommended to apply topical diclofenac 1% gel (2g)** up to four times a day for up to 7 days, and was asked to follow up after 1 week.



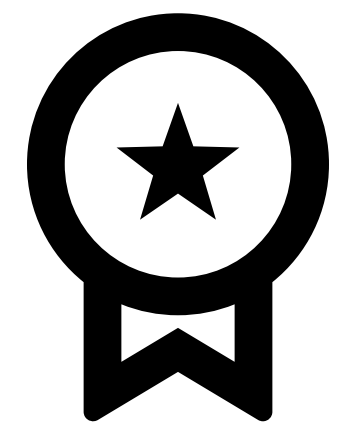
# Certificate

This is to certify that

Dr. \_\_\_\_\_

has completed the course:  
Patient Case Study.

**Musculoskeletal pain**



Brought to you by the makers of

