CHOOSING WISELY AOTEAROA NEW ZEALAND

Provided by: The Royal Australian and New Zealand College of Radiologists

THE ROYAL AUSTRALIAN AND NEW ZEALAND COLLEGE OF RADIOLOGISTS: TESTS, TREATMENTS AND PROCEDURES CLINICIANS AND CONSUMERS SHOULD QUESTION

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1. Don't request imaging for acute ankle trauma unless indicated by the Ottawa Ankle Rules (localised bone tenderness or inability to weight-bear as defined in the Rules).

Most clinically significant acute ankle injuries can be diagnosed with history, examination, and selective use of plain radiography.

Extensive validation studies have shown that the Ottawa Ankle Rules can be safely applied to adult and paediatric populations.

Selective use of plain radiography in patients with acute ankle injury is useful in identifying patients who have sustained clinically important fracture, dislocation, and osteochondral injuries. However, acute ligamentous injuries involving the anterior talofibular ligament can be diagnosed clinically and treated symptomatically.

When there are persistent symptoms (such as pain and swelling) after an acute injury, which raise suspicion of either instability or other internal derangement, such as osteochondral injury, MRI can be used if the non-urgent (or delayed or elective or similar) weight bearing x-rays show no abnormality.

Recommendation released April 2015, reviewed April 2016.

Supporting Evidence

- Stiell IG, Greenberg GH, McKnight RD, Nair RC, McDowell I, Worthington JR. A study to develop clinical decision rules for the use of radiography in acute ankle injuries. Ann Emerg Med. 1992; 21(4): 384-90.

Clinician resources

- Find the free RANZCR Imaging CDRs App on the Google Play Store.
- Find the free RANZCR Imaging CDRs App on iTunes.
- RANZCR Choosing Wisely Australia CDR summaries . Download information about RANZCR Choosing Wisely New Zealand recommendations and clinical decision rules booklet.
- Additional websites that would be useful to include for both health consumers and medical practitioners include:
  - InsideRadiology www.insideradiology.co.nz

2. Don't request duplex compression ultrasound for suspected lower limb deep venous thrombosis in ambulatory outpatients unless the Wells Score (deep venous thrombosis risk assessment score) is greater than 2, OR if less than 2, D dimer assay is positive.

The potential complications of untreated deep venous thrombosis (DVT) include thrombus propagation, pulmonary embolism (PE) and death from PE. A significant but under-appreciated longer-term complication is post-thrombotic syndrome (PTS) and this can occur in up to 40% of patients with proximal DVT, as a result of venous incompetence and hypertension.

Wells et al. (2003) showed that ambulatory outpatients with suspected lower limb DVT and a DVT risk assessment score (Wells Score) of less than 2, can have DVT excluded by a negative result on D dimer assay, obviating the need to perform duplex compression ultrasound. The lower limit of the negative predictive value of the combination of a score <2 and negative D dimer was found to be 96.7. The Wells Score has been extensively and externally validated since first publication.

Recommendation released April 2015, reviewed April 2016.

Supporting Evidence

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3. Don't request any diagnostic testing for suspected pulmonary embolism (PE) unless indicated by Wells Score (or Charlotte Rule) followed by PE Rule-out Criteria (in patients not pregnant). Low risk patients in whom diagnostic testing is indicated should have PE excluded by a negative D dimer, not imaging.

Pulmonary embolism (PE) affects 2-3 per 1000 adults per year. It can be fatal if untreated, more often in hospitalised people than outpatients. The symptoms and signs of PE (chest pain, cough, dyspnoea, and tachycardia) are non specific and so imaging is required to make the diagnosis.

PE is diagnosed by direct (CT pulmonary angiogram) or indirect (ventilation/perfusion or "V/Q" lung scanning) demonstration of the emboli within the pulmonary arterial tree. PE can be excluded in low risk patients by a negative result on whole blood D dimer. Some low risk patients ("Pulmonary Embolism Rule-out Criteria [PERC] negative") are at such low risk they require no diagnostic testing, including D dimer.

Clinical decision rules (CDRs) are more specific than clinical gestalt in determining which patients are unlikely to have PE, and thus can prevent unnecessary imaging in these groups.

Validated risk assessment strategies are not applicable to pregnant women and D dimer is physiologically elevated early in pregnancy. Ventilation perfusion lung scanning is the test of choice in the presence of a normal chest radiograph in a pregnant woman with suspected PE as the radiation dose to the breast is much lower than for CT pulmonary angiography and the fetal dose is very small and comparable for both imaging tests.

Recommendation released April 2015, reviewed April 2016.

Supporting Evidence

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- Wells PS, Anderson DR, Rodger M, Ginsberg JS, Kearon C, Gent M, et al. Derivation of a Simple Clinical Model to Categorize Patients Probability of Pulmonary Embolism-Increasing the Models Utility with the SimpliRED D-dimer. Thromb Haemost. 2000; 83(3): 416-20. Stuttgart.
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Clinician resources

- Read about Diagnostic imaging respiratory pathways information on the Diagnostic Imaging Pathways website.
- Find the free RANZCR Imaging CDRs App on the Google Play Store.
- Find the free RANZCR Imaging CDRs App on iTunes.
- RANZCR Choosing Wisely New Zealand CDR summaries .Download information about RANZCR Choosing Wisely Australia recommendations and clinical decision rules booklet.
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4. Don't perform imaging for patients with non-specific acute low back pain and no indicators of a serious cause for low back pain.

Low back pain (LBP) is extremely common, being the third most common health complaint seen by Australian general practitioners.

A simple classification places patients into one of three categories:

- *LBP associated with sciatica or spinal canal stenosis*
- *Serious spinal pathology (such as cancer, infection, fracture, and cauda equina syndrome) comprises 1% of GP presentations with LBP*
- *Non-specific low back pain (90% of presentations)*

When evaluating patients with acute LBP, one of the key issues to be addressed is whether or not the patient should be investigated using imaging to confirm or refute the presence of an underlying/associated condition that would change the subsequent medical treatment or investigation of the patient.

Age over 70 years, trauma, corticosteroid therapy, and female gender are risk factors for fracture and previous or current cancer significantly increases the likelihood of cancer related back pain. At least one of fever, systemic symptoms, recent invasive procedure or sepsis, or elevated CRP are seen in most but not all patients with discitis or epidural abscess. New lower limb or bladder motor dysfunction increase the likelihood of cauda equina syndrome in a patient with LBP and are indications for emergency MRI.

Recommendation released April 2015, reviewed April 2016.

Supporting evidence

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- Koes BW, van Tulder M, Lin CW, Macedo LG, McAuley J and Maher C. An updated overview of clinical guidelines for the management of non-specific low back pain in primary care. Eur Spine J. 2010.
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- Henschke N, Maher CG, Ostelo RW, de Vet HC, Macaskill P and Irwig L. Red flags to screen for malignancy in patients with low-back pain. Cochrane Database Syst Rev 2013. 2013; 2.
- Henschke N, Maher C and Refshauge K. Screening for malignancy in low back pain patients: a systematic review. Eur Spine J. 2007; 16: 1673-9.

Clinician resources

- Download the Managing your acute low back pain - symptomatic management pad. A helpful tool for health professionals to use with their patients available from the NPS MedicineWise website
- Find the RANZCR Appropriate Use of Medical Imaging App on the GooglePlay Store.
- Find the RANZCR Appropriate Use of Medical Imaging App on iTunes.
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  - Targeting Cancer (for radiation oncology):http://www.targetingcancer.com.au/

5. Don't request imaging of the cervical spine in trauma patients, unless indicated by a validated clinical decision rule.

Cervical spine imaging of every trauma patient is costly and results in significant radiation exposure to a large number of patients, very few of whom will have a spinal column injury. Clinical decision rules have been developed that identify patients who can safely be managed without imaging. These rules include the Canadian C-Spine rule or Nexus Low Risk Criteria. The Canadian C-Spine Rule provides higher specificity and lower imaging requirements, and should be used if possible.

This is a joint recommendation with Australasian College for Emergency Medicine (ACEM).

Recommendation released April 2015, reviewed April 2016.

Supporting evidence

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- Hoffman JR, Wolfson AB, Todd K, Mower WR. Selective cervical spine radiography in blunt trauma: methodology of the National Emergency X-Radiography Utilization Study (NEXUS). Ann Emerg Med. 1998; 32(4): 461-9.
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rule in the UK emergency department setting. Emerg Med J. 2011; 28(10): 873-6.
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Paediatric Specific References

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6. Don't request computed tomography (CT) head scans in patients with a head injury, unless indicated by a validated clinical decision rule.

Most head injuries presenting to emergency departments will be minor and do not require immediate neurosurgical intervention or inpatient care. Mild head injury patients can be risk stratified into 'low' or 'high' risk groups based on the presence or absence of identified clinical risk factors. Current validated clinical decision rules include the Canadian CT Head Rule (for adults) or the PECARN (Paediatric Emergency Care Applied Research Network) Tool (for children). These rules can safely identify patients who can be discharged home, without CT scanning.

This is a joint recommendation with Australasian College for Emergency Medicine (ACEM).

Recommendation released April 2015, reviewed April 2016.

Supporting Evidence

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Paediatric Specific References

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7. Don’t initiate whole-breast radiation therapy as a part of breast conservation therapy in women age ≥50y with early-stage invasive breast cancer without considering shorter treatment schedules.

Whole-breast radiation therapy decreases local recurrence and improves survival of women with invasive breast cancer treated with breast conservation therapy. Most studies have utilised "conventionally fractionated" schedules that deliver therapy over 5-6 weeks, often followed by 1-2 weeks of boost therapy. Recent studies, however, have demonstrated equivalent tumor control and cosmetic outcome in specific patient populations with shorter courses of therapy (~4 weeks). Patients and their physicians should review these options to determine the most appropriate course of therapy.

Recommendation released October 2016

Supporting Evidence

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Clinician resources

- Additional website that would be useful to include for both health consumers and medical practitioners include:
  - Targeting Cancer (for radiation oncology): http://www.targetingcancer.com.au

8. Don't initiate management of low risk prostate cancer without discussing active surveillance.

Patients with prostate cancer have a number of reasonable management options. These include surgery and radiation, as well as conservative monitoring without therapy in appropriate patients. Shared decision making between the patient and the physician can lead to better alignment of patient goals with treatment and more efficient care delivery. ASTRO has published patient-directed written decision aids concerning prostate cancer and numerous other types of cancer. These types of instruments can give patients confidence about their choices, improving compliance with therapy.

Recommendation released October 2016

Supporting Evidence

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Clinician resources

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9. Don’t routinely use extended fractionation schemes (>10 fractions) for palliation of bone metastases.

Don’t routinely use extended fractionation schemes (>10 fractions) for palliation of bone metastases. Studies suggest equivalent pain relief following 30 Gy in 10 fractions, 20 Gy in 5 fractions, or a single 8 Gy fraction. A single treatment is more convenient but may be associated with a slightly higher rate of retreatment to the same site. Strong consideration should be given to a single 8 Gy fraction for patients with a limited prognosis or with transportation difficulties.

Recommendation released October 2016

Supporting Evidence

- Lutz S, Berk L, Chang E, et al. Palliative radiotherapy for bone metastases: an ASTRO evidence-based guideline. Int J Radiat Oncol Biol Phys 2011;79(4):965-76.
- •Expert Panel on Radiation Oncology-Bone Metastases: Lutz ST, Lo SSM, Chang EL, et al. ACR Appropriateness Criteria® non-spine bone metastases. J Palliat Med 2012;15(5):521-26.
- Chow E, Zheng L, Salvo N et al. Update on the systematic review of palliative radiotherapy trials for bone metastases. Clin Oncol 2012;24(2):112-24.

10. Don't routinely add adjuvant whole-brain radiation therapy to stereotactic radiosurgery for limited brain metastases.

Randomised studies have demonstrated no overall survival benefit from the addition of adjuvant whole brain radiation therapy (WBRT) to stereotactic radiosurgery (SRS) in the management of selected patients with good performance status and brain metastases from solid tumors. The addition of WBRT to SRS is associated with diminished cognitive function and worse patient-reported fatigue and quality of life. These results are consistent with the worsened self-reported cognitive function and diminished verbal skills observed in randomised studies of prophylactic cranial irradiation for small cell or non-small cell lung cancer. Patients treated with radiosurgery for brain metastases are at higher risk of developing metastases elsewhere in the brain. Careful surveillance and the judicious use of salvage therapy at the time of brain relapse allow appropriate patients to enjoy the highest quality of life without a detriment in overall survival. Radiation oncologists should discuss these options with patients, including participation in appropriate clinical trials.

Recommendation released October 2016

Supporting Evidence

- Soffietti R, Kocher M, Abacioqlu UM, et al. A European organisation for research and treatment of cancer phase III trial of adjuvant whole-brain radiotherapy versus observation in patients with one to three brain metastases from solid tumors after surgical resection or radiosurgery: quality-of-life results. J Clin Oncol 2013;31(1):65-72.
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radiosurgery or radiosurgery plus whole-brain irradiation: a randomized controlled trial. Lancet Oncol 2009;10(11):1037-44.

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- Brown PD, Asher AL, Ballman KV, et al. NCCTG N0574 (Alliance): A phase III randomized trial of whole brain radiation therapy (WBRT) in addition to radiosurgery (SRS) in patients with 1 to 3 brain metastases. J Clin Oncol 2015;33(18): suppl LBA4.

11. Don’t routinely use extensive locoregional therapy in most cancer situations where there is metastatic disease and minimal symptoms attributable to the primary tumour.

In the past, extensive local regional therapies (e.g., surgery) were often provided in patients with metastatic disease, regardless of the symptomatology of the primary tumour. However, recent evidence has suggested that in many cases these therapies do not improve outcome and, at times, delay the more important treatment of metastatic disease (e.g., chemotherapy). In general, patients with metastatic disease from solid organ malignancies and a relatively asymptomatic primary tumour should be considered for systemic therapy as a priority; the delay in systemic therapy and potential additional morbidity arising from extensive locoregional therapies should be avoided in these patients.

Recommendation released October 2016

Supporting Evidence

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Clinician resources

- Additional website that would be useful to include for both health consumers and medical practitioners include:
  - Targeting Cancer (for radiation oncology):http://www.targetingcancer.co.nz

How was this list created?

Clinical radiology recommendations 1-6 (April 2015)

A team of five Lead Radiologists were nominated to guide RANZCR's Choosing Wisely contribution. These Lead Radiologists analysed previous work completed by RANZCR, in particular a series of Education Modules for Appropriate Imaging Referrals.

These modules had been developed from an extensive evidence base and with multiple stakeholder input. Using the evidence from the Education Modules, the Lead Radiologists developed a draft recommendations list, which was then further developed and endorsed by RANZCR's Quality and Safety Committee, before being circulated to the RANZCR membership for consultation with a request for alternative recommendations. Member feedback was reviewed by the Lead Radiologists prior to ratification of the final recommendations by the Faculty of Clinical Radiology Council. The final six items selected were those that were felt to meet the goals of Choosing Wisely, i.e. those which are frequently requested or which might expose patients to unnecessary radiation.

Due to the fundamental role of diagnostic imaging in supporting diagnosis across the healthcare system, RANZCR worked closely with other Colleges throughout the project via the Advisory Panel. Following identification of two common recommendations with the Australasian College for Emergency Medicine, it was agreed by both Colleges to present these items jointly.

Radiation oncology recommendations 7-12 (October 2016)

Recommendations relating to radiation oncology from the Choosing Wisely and Choosing Wisely Canada were circulated around the Faculty of Radiation Oncology Council to determine which recommendations were applicable to the Australian and New Zealand context. The selected recommendations were then put to the Quality Improvement Committee and the Economics and Workforce Committee, with each being asked to rank the recommendations.

The five highest ranked recommendations were then put to the radiation oncology membership for consultation prior to being formally approved by the Faculty of Radiation Oncology Council.

Recommendations 7-10 are adapted from the American Society for Radiation Oncology (ASTRO) 2013 and 2014 lists. Recommendation 11 is adapted from Choosing Wisely Canada's Oncology list. Each organisation was approached for—and subsequently granted—approval to adapt these recommendations as part of the Choosing Wisely Australia campaign.

Recommendations from the Royal Australian and New Zealand College of Radiologists on (1) imaging for ankle trauma, deep venous thrombosis (DVT), pulmonary embolism (PE), low back pain, cervical spine trauma and head injury, and (2) whole-breast radiation therapy, prostate cancer, bone metastases, whole-brain radiation therapy and locoregional therapy.