

RADIOLOGY

National Referral Guidelines

MISSION STATEMENT

“To support the appropriate use of, and access to, radiology services for the benefit of all New Zealanders”.

Introduction

We hope that you find these guidelines useful. They are not intended to be fully comprehensive or binding but we hope they will support your clinical judgement.

Access

Primary Care is the point of first contact and offers continuous, comprehensive and co-ordinated care to the whole population. In order for comprehensive care to take place in primary care the GP requires access to a wide range of imaging services, within nationally accepted time-frames and using nationally accepted imaging standards. This enables the GP to investigate more patients without recourse to specialist services.

Priority of access to radiological services should be determined by comprehensive clinical assessment of the patient. **This priority should be as accurate as possible and justifiable to the radiology provider.** The following priorities are suggested: **immediate** (to be done as soon as possible, as discussed directly between GP and Radiologist), **urgent** (to be done within a week) and **routine** (within 2 months).

There must be resourcing of local radiology services to perform requested examinations or to refer to an alternative provider those patients whose examinations cannot be performed locally or within these accepted time frames.

Ensuring Appropriate use of Imaging

Amongst our greatest skills are those of history taking, examination and communication. The combination of these three skills helps us to enable our patients to make informed choices. Radiology services support our clinical judgement rather than replace it.

Access to radiology services must be accompanied by ongoing educational support and audit as we all strive to maximise the benefits and minimise the risks, both for the individual and for the population as a whole.

A useful investigation is one in which the result (positive or negative) will alter management or add confidence to the diagnosis.

The indications for radiology services are sometimes not clear-cut and the appropriate examination may change with advances in technology. In these cases, either a clinical review or discussion with the radiologist or other relevant specialists may be appropriate.

Key Questions When Considering an Investigation:

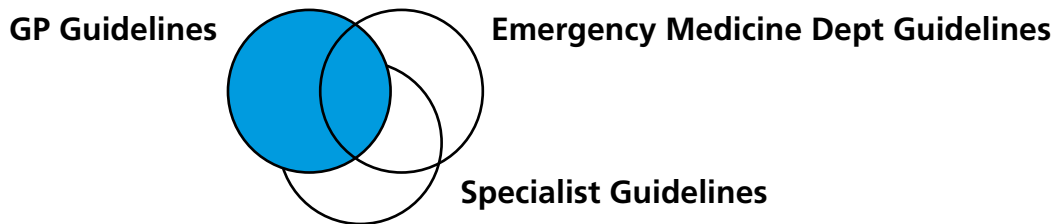
1. Is it needed?
2. Is it needed now?
3. Is it the best investigation?
4. Has it already been done?
5. Does this problem justify this priority?

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The Medico-Legal Position

No investigation should be requested unless it can be clinically justified, and its result (normal or abnormal) is likely to influence management of the patient. Proper clinical examination, note keeping and communication are the surest defences against litigation. These guidelines reflect accepted practices. Using them will further strengthen your position.

These guidelines strive to be consistent with other clinical guidelines creating a web of support.



We hope they will stimulate education, research and discussion.

Feedback / Future Editions

These guidelines will be updated annually in order to accommodate changes in evidence, clinical practice and consensus.

Your comments are important to help ensure that these guidelines are useful. You can contribute by sending your comments to the Radiology Services Working Party care of:

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| NATIONAL REFERRAL GUIDELINES : RADIOLOGY | | |
|--|--|---|
| Diagnosis | Comments | Referral Guidelines |
| HEAD | | |
| Acute/Severe Headache | <p>Red Flags</p> <hr/> <p>History Worst ever/atypical Sudden onset/thunderclap Trauma Associated symptoms</p> <ul style="list-style-type: none"> - Nausea/vomiting - Visual symptoms <hr/> <p>Exam Check vital signs T/P/BP Meningism (may not necessarily be present in subarachnoid haemorrhage) Fundal signs/focal neurology</p> | <p>Refer/discuss with specialist eg. neurologist</p> <hr/> <p>Admit for further investigation if red flags.</p> |
| Recent Onset Headache Worsening in Severity or Persistence | <p>History is the key and exam as above Check for temporal artery tenderness and Raised ESR in those over 50 years – i.e. temporal arteritis</p> | <p>Sinus XR Skull XR Cervical spine XR</p> <p style="margin-left: 150px;"> } Not routinely indicated</p> <p>If clinical progression or failure to respond to treatment CT or MRI indicated</p> |
| Chronic Headache (Tension/migraine are the commonest causes) | <p>History/Exam +/- ESR as Previous</p> <ul style="list-style-type: none"> • Address stress management or other psychological factors where applicable • Encourage regular exercise/other lifestyle changes • Avoid long term use of analgesics as these can perpetuate the problem (may necessitate gradual drug withdrawal e.g. 10% per week) • Try prophylactic therapy such as a tricyclic eg amitriptyline | <p>Sinus Skull Cervical spine</p> <p style="margin-left: 150px;"> } Not routinely indicated</p> <p>CT or MRI indicated if clinical progression or failure to respond to treatment</p> |
| CVA | | Admit urgently unless not clinically appropriate |
| First Seizure | <p>History is the key. Exclude syncope. Exam – vital signs/ neurological signs/fundi/heart rhythm/murmur/carotid bruit. Advise and document – no driving etc. Anticonvulsants not usually commenced unless a further i.e. 2nd seizure</p> | <p>Consult with specialist</p> <p>EEG/CT/MRI may be indicated (imaging may not be necessary if clearly alcohol related)¹</p> |

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|---|---|--|
| Diagnosis | Comments | Referral Guidelines |
| Recurrent Seizures Persistant or progressive neurological sign/symptoms | | Consult with specialist |
| Sinus Disease | Check for teeth/ear/throat/nasal/oral pathology | Sinus XR not routinely indicated If symptoms chronic consider sinus CT or specialist consultation |
| Metallic Orbital Foreign Body (FB) | High index of suspicion if history of metal vs metal even if exam normal. Early removal of ocular FB improves outcome | Urgent ophthalmological review and referral for orbital XR |
| Temporo-Mandibular Joint (TMJ) Clicking/Problems | Consider dental review and/or trial of paracetamol/NSAID. If symptoms chronic consider referral to dental/maxillofacial/ENT, bite plate | TMJ XR not routinely indicated - rarely contributory unless history of trauma |
| Asymptomatic Carotid Bruit | Clear benefit of surgery over antiplatelet therapy (e.g. aspirin) not established. Carotid endarterectomy is currently recommended only for severe AND symptomatic stenoses i.e. >70% ¹ | Referral for carotid US not routinely indicated if isolated find |
| TIA (TIA and degree of carotid stenosis correlate poorly) | Assess/document BP/heart rhythm/rate/murmur/cardiac failure/carotid bruit. Exclude persistent neurological deficits. Ensure optimum management of CVS risk factors | Consult with physician Consider: a) Echo cardiography if murmur/arrhythmia/cardiac failure b) Carotid US if fit for carotid surgery |
| Multiple TIAs | As above | Consult with specialist urgently |
| NECK | | |
| Neck Swelling Goitre Thyroid Nodule | Red Flag if associated with: <ul style="list-style-type: none"> • Dysphagia • Respiratory embarrassment • Rapidly enlarging mass | Discuss individual cases with specialist |
| Stable Multi-Nodular Goitre | | Imaging not routinely indicated ² |
| CHEST | | |
| Chest Problems | History Examination Communication Documentation <div style="display: inline-block; vertical-align: middle; margin-left: 20px;"> } Key aspects </div> | CXR indications Many and varied at the clinician's discretion |
| Non Specific Ill Health | Consider clinical review and/or selective bloods first | CXR not routinely indicated Exceptions include: 1. Persistent or progressive symptoms 2. Respiratory signs or symptoms 3. Fever |

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|---|---|---|
| Diagnosis | Comments | Referral Guidelines |
| Uncomplicated Hypertension | Routine investigations for hypertension recommended are: a) Urine strip test for blood/protein b) Creatinine, Electrolytes, Glucose, Lipids c) ECG All hypertensive patients should have a thorough history and examination but need only a limited number of investigations ³ See also renal investigation for hypertension. | CXR not routinely indicated |
| Angina | | CXR not routinely indicated |
| Increasing Shortness Of Breath On Exertion | | CXR indicated (especially if history of smoking or on amiodarone) or other drugs |
| Cardiac Murmur | | Echocardiogram is the investigation of first choice. CXR for heart size |
| Heart Failure | | CXR and/or echocardiogram may be indicated. |
| BREAST | | |
| Breast Lump | History? Clinical nature? Patient age? Consider cyclical review | Refer specialist/mammography (If ? cyst or under 40 consider US). ⁴ Avoid FNA before mammogram because it makes interpretation difficult for up to 6 weeks. |
| Cyclical Mastalgia | | No imaging indicated |
| Screening Mammography | Please see screening section | |
| GASTROINTESTINAL SYSTEM | | |
| Dyspepsia and Symptoms of Gastro-oesophageal Reflux | Urea breath test H Pylori serology | Endoscopy or barium meal indicated, depending on availability, at clinician's discretion e.g. > 40-45, unresponsive to treatment, other symptoms/signs |
| Dysphagia | | Barium meal or endoscopy indicated |
| Lower Bowel Symptoms e.g. Change in Bowel Habit or Rectal Bleeding | Examine rectum to exclude low rectal tumour/identify other pathology | Barium enema and sigmoidoscopy, or colonoscopy indicated |
| Colo-rectal Cancer Screening | | See screening section Appendix 4 |
| Acute Abdomen | Considerations include peritonitis, obstruction, perforation, acute vascular event. | Admit / arrange assessment |

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|---|--|--|
| Diagnosis | Comments | Referral Guidelines |
| Persistent Right Upper Quadrant Pain | ? Gallstones | US indicated |
| Jaundice/Hepatitis | History/exam and biochemical findings help with likely diagnosis | US indicated |
| UROLOGICAL/ GENITO-URINARY | | |
| Persistent Painless Haematuria | Consider red cell morphology ? Glomerular/Nephrological ? Glomerulonephritis | IVU and cystoscopy indicated |
| Renal Colic WITH Haematuria | | CTU if available, otherwise IVU. |
| Renal Investigations for Hypertension | Consider investigating if: Personal / family history of renal problems unresponsive to therapy / renal mass / renal bruit / elevated creatinine or urine strip test / MSU abnormalities | Not routinely indicated Consult with physician |
| Renal Failure | Discuss with specialist. A normal US does not completely exclude obstruction | US + AXR indicated |
| Suspected Renal Mass | | US indicated |
| Prostatism/Bladder Outflow Symptoms | ? palpable bladder | Residual bladder volume US and US upper renal tracts indicated Transrectal US not routinely indicated |
| Prostate Malignancy? | Malignant prostate on PR or elevated PSA | Refer urologist or radiologist for biopsy |
| Scrotal Mass | <ul style="list-style-type: none"> • Transilluminate? • Exclude hernia Majority of testicular masses are malignant Majority of extra testicular masses are benign | US indicated dependent on clinical course |
| Suspected Torsion of Testis | Tender/swollen testis | Admit urgently |
| Persistent Female Urinary Symptoms | Infective requires more aggressive investigation than non infective | Consider US initially to assess post void residual and exclude pelvic mass |
| Adult UTI/Pyelonephritis | Treat more aggressively if higher index of suspicion | US plus pain abdo film not routinely indicated unless recurrent / complicated / persistent symptoms / clinical concern – or not settling after 24hrs antibiotics |

| NATIONAL REFERRAL GUIDELINES : RADIOLOGY | | |
|---|--|---|
| Diagnosis | Comments | Referral Guidelines |
| Children UTI Note there may be local paediatric variation | The diagnosis of UTI requires great care and skill. Clear evidence of UTI is essential. Laboratory reports - true UTI is likely with all the following findings: 1. White cells in urine > 10x10 ⁶ /L 2. Single organism 3. Colony count > 10 ⁵ /ml See Appendix 2 | US indicated Additional investigations are indicated if any of the following: a) < 3 years b) Recurrent UTI c) Family history of renal tract abnormality |
| OBSTETRIC | | |
| Suspected Ectopic | <ul style="list-style-type: none"> Diagnosis relies heavily on suspicion, radiological and biochemical evidence | Non-acute Ultrasound and Quantitative serum HCG (See Appendix 3) Discuss with specialist Obstetrician & Gynaecologist. |
| Routine Pregnancy | Indications for an earlier US include pain/bleeding or before amniocentesis ⁵ | US indicated 18-20 weeks (See Appendix 4) |
| GYNAECOLOGY | | |
| Dysmenorrhoea | <i>Note: current imaging modalities are not sensitive for endometriosis.</i> | US not routinely indicated, rarely gives diagnostic findings in the absence of clinical findings |
| Pelvic Mass? | | US indicated |
| Lost IUCD | | US indicated (if not seen by US then AXR may subsequently be indicated) |
| Recurrent Miscarriage | | US indicated |
| Menorrhagia⁶ No irregular bleeding | | US not routinely indicated. If high risk for endometrial hyperplasia transvaginal US or endometrial biopsy (pipelle) recommended eg: a) ≥ 45 years b) ≥ 90kg c) Nulliparity / infertility / family history |
| Infertility | | Not routinely indicated unless menstrual / ovulation disorders |
| Amenorrhoea Cessation of periods > 6 months | Consider: Weight loss / stress / galactorrhea / hirsutism / drugs Pregnancy test FSH / LH / TSH / Prolactin / Testosterone | US indicated Consider gynae / endocrine referral if appropriate |

| NATIONAL REFERRAL GUIDELINES : RADIOLOGY | | |
|---|---|--|
| Diagnosis | Comments | Referral Guidelines |
| MUSCOLO-SKELETAL | <ul style="list-style-type: none"> Musculo-Skeletal indications for XR or US are many and varied. This section refers to a selection of common circumstances and is not intended to be comprehensive Children need special consideration and these recommendations do not apply to children Plain XR may be falsely reassuring (e.g. Osteomyelitis may not be identified for 2-3 weeks with plain XR) <p>As with all imaging, treat the patient not the investigation</p> | |
| Acute Uncomplicated Spinal Pain and Others including: Adult Torticollis (before Manipulation), Sacral Dimple | <p>Degenerative changes almost universal in middle age and often unrelated to symptoms. Consider CBC ESR as a first line investigation, if needed.</p> <p>EXCEPTIONS include:</p> <ol style="list-style-type: none"> Progressive neurological deficit or features of cauda equina syndrome (urinary retention, bilateral neurological symptoms and signs, saddle anaesthesia) Weight loss/fever Malignancy history IV drug use/chronic steroid use Significant trauma Children Persistent night pain | <p>XR not routinely indicated ⁷</p> <p>Defer XR for 6 weeks as may settle with time</p> <p>See Appendix 5 for back pain guidelines</p> <p>CT/MRI/bone scan may be more appropriate than lumbar spine XR</p> |
| Local Bony Pain | | XR indicated if symptoms persist |
| Local Bony Swelling | | XR indicated |
| Joint Pain e.g. Hip/Knee (excludes children) | | XR not routinely indicated unless locking/restricted movement/deformity |
| Hallux Vagus | | XR indicated if surgery contemplated |
| Heel Pain | Plantar spurs are common incidental findings | XR not routinely indicated |
| Suspected Rheumatoid Arthritis | | XR hands/feet indicated for initial assessment. Follow-up films rarely helpful except presurgical |
| Shoulder Impingement or Rotator Cuff Tear? | | US/XR indicated |
| Soft Tissue Swellings/Pathology | | Discuss with radiologist regarding most appropriate investigation |
| VASCULAR | | |
| Carotid Bruit TIA Stroke | See Head/Neck | |
| Abdominal Aortic Aneurysm? | 35-40mm check 6/12 40-50mm refer if fit for major surgery >50mm refer for surgical consideration | US indicated |
| ?DVT | | US indicated urgently or refer A & E dept |
| Ischaemic Leg | | Discuss with surgeon urgently |

| NATIONAL REFERRAL GUIDELINES : RADIOLOGY | | |
|---|---|---|
| Diagnosis | Comments | Referral Guidelines |
| TRAUMA | <p>This section refers to a selection of common circumstances, and is not intended to be comprehensive</p> <p>A detailed history of the event and subsequent course and assessment of deformity/swelling/loss of function/weight bearing is important</p> | |
| Head | <p>Detailed history and subsequent events social circumstances</p> <p>Assess Consciousness Vital signs Neurological signs</p> <p>Head Wound/contusion ? depressed#</p> | <p>Refer E.D. for neuro observation +/- investigation if:</p> <p>Amnesia/KO'd/Altered consciousness Increasing/atypical headache Vomiting twice or more Seizures Neuro signs Blood/CSF from nose/ear or Bony deformity or penetrating injury NAI/social situation</p> <p>CT or SXR may be indicated</p> |
| Nasal Trauma | Check for septal haematoma | XR nasal bones not routinely indicated or needed before manipulation under anaesthetic |
| Facial/Orbital Trauma | Check diplopia/full range of eye movements/alterd sensation or damage to bony contours | XR facial bones if clinically indicated |
| Jaw Trauma | Check for deformity and movements | XR mandible and/or TMJ if clinically indicated |
| Upper Limb | Red Flag | |
| Shoulder Dislocaton | Check for associated # | XR indicated |
| Suspected supra condylar fracture | Check for neural and/or vascular injury | XR indicated |
| Suspected scaphoid fracture | Scaphoid fracture may not show initially | Followup XR at 3 weeks if symptoms persist |
| Neck/Spine | Consider the possibility of a fracture and immobilise if necessary | XR indicated (should include C7/T1 with cervical views) |
| Coccyx | | XR not indicated in the absence of neuro symptoms/signs |
| Minor Chest Trauma | Identification of an uncomplicated rib # does not alter management | XR not indicated |
| Significant Chest Trauma | Consider spinal/aortic injury too | Urgent referral to A & E |
| Pulled Elbow | History gives the clue | XR not indicated |
| Knee Injury (Fall/blunt trauma) | Reg Flag - neurovascular bundle of the limb. | <p>Not routinely indicated ⁸</p> <p>EXCEPTIONS INCLUDE:</p> <ul style="list-style-type: none"> - Inability to weight bear - Pronounced tenderness at fibula head or patella - Inability to flex to 90° - Ankle swelling/haemarthrosis |

| NATIONAL REFERRAL GUIDELINES : RADIOLOGY | | |
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| Diagnosis | Comments | Referral Guidelines |
| Ankle | An important # is usually associated with swelling and bony tenderness | XR not routinely indicated EXCEPTIONS: – Elderly – Swelling and bony pain – Inability to weight bear – Exercise caution in athletes where stress # be present |
| Foot Injury | Demonstration of a # may influence management eg. sports, work | XR not routinely indicated XR of foot and ankle together is rarely indicated. Clinical problems usually either/or |
| Heels | Consider lumbar spine injury if fall from height | XR indicated |
| Soft Tissue Foreign Body | Glass / metal / painted wood Wood / plastic not radio opaque foreign body | XR indicated US indicated |
| PAEDIATRICS | Imaging is rarely indicated without specialist consultation apart from: a) Musculoskeletal/trauma b) Chest c) Urinary tract imaging as per guidelines d) Suspicion re non accidental injury Where there is clinical need discuss with specialist | |
| Acute Chest Infection | | CXR not routinely indicated. Exceptions include persistent symptoms/signs or severely ill child ⁹ |
| Follow-Up of Simple Consolidation on Previous CXR | | CXR not routinely indicated unless collapse present on initial films or persistent symptoms/signs |
| Chronic Cough/Wheeze | ?Infection/asthma/FB/other e.g. cystic fibrosis | CXR not routinely indicated unless atypical presentation (eg FB) or a failure to respond to treatment ¹⁰ |
| Swallowed Foreign Body a) Smooth / small / inert e.g. coin Sharp / poisonous e.g. battery | Bronchoscopy may be needed if history of inhalation of non radio opaque FB Must be located | AXR Neck XR CXR May be indicated if concern re inhalation Consider inspiration/expiration films or fluoroscopy XR indicated. |
| Murmur | | CXR not routinely indicated. Specialist referral if persistent murmur/clinical concerns |
| PUO | Consider chest/urinary tract infection | Consider CXR to exclude pneumonia |
| Pulled Elbow | | XR not routinely indicated |
| Pain Over the Tibial Tubercle +/- Some Enlargement/Local Tenderness (Osgood Schlatter) | Usually boys 11-14 years. May be bilateral | XR not routinely indicated if clinical presentation classic for OS |

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| Diagnosis | Comments | Referral Guidelines |
| Congenital Spinal Deformity | | Discuss with specialist |
| Limb/Specific Joint/Spinal /Bony Pain | | Discuss with specialist |
| Non Specific Abdominal Pain | A careful history and examination is sufficient in most cases | Discuss with specialist if progressive/persistent symptoms, or clinical signs. |
| Constipation | | AXR not routinely indicated |
| Nocturnal Eneuresis | | US Not indicated |
| Daytime Eneuresis | | Consider specialist referral if persistent ¹¹ |
| UTI | See UTI section | |
| SCREENING | | |
| Osteoporosis | <p>Population based screening not recommended ¹²</p> <p>Indications for assessment of bone density (DEXA scan) include:</p> <p>(a) high risk ¹³</p> <ul style="list-style-type: none"> - Women with early menopause or prolonged amenorrhoea - Personal history of # following only minor incident - Corticosteroid long term use - Family history of osteoporosis <p>(b) to monitor treatment</p> | |
| Mammography Genetic markers (BRCA genes) may be beneficial in future but at present they are not readily available | AGE | RECOMMENDATION¹⁴ |
| | < 40 | Not currently recommended |
| | 40 – 50 | <ul style="list-style-type: none"> • Currently no clinical consensus • Annual screening mammography recommended by RANZCR • Annual screening mammography recommended only if higher risk by RNZCGP |
| | 50 – 64 | 2 yearly screening mammography |
| | 65 – 74 | 2 yearly screening mammography should be considered |
| | 75+ | Not recommended |
| | Pre HRT | Consider baseline mammography |

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Colorectal Cancer (CRC) Screening

APPENDIX 1

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|---|--|
| 1. Population based screening is NOT currently recommended¹⁵ | |
| 2. Family history of CRC | |
| CRC OF UNCERTAIN BASIS | |
| a) Diagnosis at > 55 years in one first degree* relative (X 2 risk) | Offer Faecal Occult Blood annually from age 50 Colonoscopy if positive |
| b) Diagnosis at < 55 years in one first degree relative or diagnosis in 2 first degree relatives (X 6 risk) | Offer sigmoidoscopy and Ba enema or colonoscopy every 5 years from 50 or 5 years earlier than youngest age at diagnosis. Stop at age 75 |
| CRC OF GENETIC BASIS | |
| a) Familial Adenopolypoidal CRC (~ 60% risk) | Intensive surveillance. Discuss with specialist. |
| b) Hereditary Non-Polypoidal CRC (~ 50% risk) | Colonoscopy 2 yearly from age 25 or 5 years younger than earliest cancer in family |
| 3. Past Personal History of CRC / Large Adenoma / Ulcerative Colitis | |
| Colonoscopy every 3-5 years to 75 years then stop if colon clear | |

* First Degree Relative = Parent / Sibling / Child

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Guidelines – Diagnosis of Urinary Tract Infection (UTI) in Children

APPENDIX 2

Paediatric Urinary Collection is often imperfect and contamination is likely. An incorrect diagnosis will subject the patient to unnecessary and invasive investigations.

Laboratory reports - True UTI is UNLIKELY without all of the following findings:

1. White cells in urine > 10 x 10⁶/L
2. Single organism
3. Colony count > 10⁵/ml
> 10⁸/litre

Failure to meet all of these criteria means that there is doubt about the diagnosis. Further attempts should be made to obtain a "clean catch" specimen or the child referred to a colleague experienced in bladder stabs or catheterisation of young children.

Confirmation of a UTI is essential in a child under the age of 3 years as a positive finding must lead to further investigation. If a UTI is suspected a urine specimen should be obtained by bladder stab in an infant less than 2 years, or by catheter in those up to the age of 3 years.

UTI in children in the first year of life should be seen in the paediatric service and acute admission considered.

Methods of collection, in ranked order of reliability:

| | | |
|---|---|--|
| 1 | Bladder Stab – usually hospital based. | Suitable only up to 2 years of age, and requires competence in the procedure. |
| 2 | Catheter Urine – usually hospital based. | Requires competence in the procedure. |
| 3 | Clean Catch – recommended method for general practice. | Somewhat prone to contamination from foreskin or labia. Should collect directly into sterile collection container, rather than non-sterile container (potty). Cleanse perineum/foreskin with warm water in cotton ball/gauze. |
| 4 | Bag Urine – only if other methods cannot be safely performed in general practice. | Contamination is very likely. Cleanse perineum/foreskin with warm water in cotton ball/gauze. At least 2 urine collections by this method with consistent results are needed, prior to starting antibiotics. |

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Ectopic Pregnancy

APPENDIX 3

An intra-uterine gestational sac should be seen with abdominal US when HCG level is above 2000mIU/ml. If a transvaginal probe is used a gestational sac should be seen if the level is above 1000mIU/ml.

If not and the patient is >6 weeks pregnant there is a 95% chance of ectopic.

If < 6 weeks and no intra-uterine pregnancy or ectopic is seen repeat the HCG in 2 days (provided the patient's condition remains stable) HCG should increase by at least 80% in established pregnancy

If repeat HCG has increased by > 80% rescan in 10 days

If repeat HCG has fallen or increased by <80% discuss obstetrician

If clinical symptoms/signs worsen at any stage : admit

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Part G : Indications for Ultrasound Scanning

APPENDIX 4

The following is a list identifying recognised and accepted indications for diagnostic ultrasound and other imaging in pregnancy. The listed conditions should not be considered as mandatory indications nor are they all inclusive. Clinical circumstances must be addressed by the responsible Practitioner and a decision made about appropriate timing and number of examinations. This may be best achieved on discussion with an imaging Specialist in some cases.

It is recognised that clinical approaches to obstetric problems continue to evolve, as does ultrasound technology. This may result in variations to the list of accepted indications from time to time.

The alphabetical code corresponding to the relevant indication for a given scan or procedure should be stated on the referral form in addition to other appropriate clinical and demographic data. In the case of "MU" (Miscellaneous Ultrasound), this should most often be used only following discussion.

Referral codes - please add 1,2,3, for trimester or 4 for postpartum after the letters when entering code on the referral form. For example, a threatened abortion in the first trimester would be coded as TA1; in the second trimester, as TA2.

| 1. Ultrasound | |
|---|---|
| First Trimester | |
| TA Threatened Abortion | Scan at time of bleeding. Serial scans may be necessary if bleeding persists. |
| AV Assess Viability | Where the fetal heart cannot be detected by Doppler on a routine examination. Where an initial scan for any reason has not been able to confirm either viability or non-viability. This should only occur on the recommendation from a previous scan or from a Specialist. |
| RA Recurrent Abortion (>2 previous spontaneous abortions) | Scan at 6-10 weeks. Repeat as clinically indicated. |
| EP Suspected Ectopic Pregnancy | e.g. Previous tubal surgery, PID or ectopic. Suggestive symptoms (e.g. abdominal pain). |
| OS Pregnancy following ovarian stimulation | |
| PM Pelvic mass in pregnancy | Any palpable abnormality in early pregnancy. |
| CI Evaluation of Cervical Incompetence | With history of prior mid-trimester abortion, previous terminations or clinical suspicion. |
| UD Uterus not equal to dates | If discrepancy greater than 4 weeks. Smaller discrepancies will be corrected at anatomy scan. |
| HG Hyperemesis gravidarum | Of sufficient severity to warrant clinical concern. |
| BA Prior to booking CVS or amniocentesis | If any doubt about dates or geographical considerations |
| HR Very High risk pregnancy | Severe rhesus disease, diabetes, previous IUGR, previous premature labour, hypertension or other maternal medical disease. Known uterine anomaly. |

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| FA Previous fetal abnormality | <ol style="list-style-type: none"> Dates vital: e.g. microcephaly, dwarfism. Diagnosable and recurrent: e.g. neural tube defect (Best done 10 - 12 weeks). |
| CT Consideration of termination | Require confirmation of dates and in utero implantation. |
| EE Early Evaluation for Chromosomal Abnormality | e.g. Nuchal thickness assessment at 10 - 12 weeks. |
| 2. Second and Third Trimesters | |
| AN Anatomy | To assess fetal anatomy, firmly establish dates and placental position. Exclude multiple gestation. Should ideally be performed at 18 - 20 weeks. |
| AF Anatomy follow-up | To reassess an abnormality seen or suspected on an earlier scan. Includes fetal echocardiography. |
| MF Multiple pregnancy | Consider repeat scans at around 26 and 34 weeks. More often in the case of monochorionic twins at risk of twin-twin transfusion or other clinical concern. |
| PI Previous IUGR or stillbirth | Scan before time of previous problem or at 32-24 weeks. |
| GR Suspected IUGR | If no clinical or objective growth of the fetus over a four week period or a significant decrease in liquor. |
| MG Monitor growth | To monitor the progress of a fetus where IUGR or macrosomia has been diagnosed or suspected on a previous scan. |
| PO Clinical polyhydramnios | Fundal height >4cm above mean for dates or clinical suspicion of increased liquor. |
| PL Check placenta | Scan at 32-34 weeks if placenta low on an earlier scan. |
| MI Maternal illness | Moderate/severe hypertension, pre-eclampsia or toxemia. Significant renal disease, diabetes, cardiac disease, asthma etc. |
| AH Antepartum haemorrhage | May need serial scans due to risk of preterm labour and IUGR. |
| AP Abdominal pain | Where significant complication of pregnancy is suspected (e.g. abruption). |
| SR Spontaneous Rupture of Membranes | May need serial scans to assess liquor volume and fetal growth and well-being. |
| AP Malpresentation | After 36 weeks. |
| BR Planned trial of breech delivery | To assess fetal size and position. |
| FC Suspected fetal compromise | Significant reduction of fetal movements. Biophysical Profile may be appropriate. Prolonged/post-term pregnancy. |
| FD Suspected intrauterine fetal death | |
| MU Miscellaneous Ultrasound | For a clinically indicated scan not conforming to any of the above, but necessary after discussion with the Specialist and annotated accordingly. May include fetal echocardiography (eg if family history). |
| 3. Post-Partum Ultrasound | |
| PP Maternal | eg Suspected retained products, postpartum haemorrhage, and pelvic haematoma. |
| NU Neonatal | To assess an abnormality diagnosed during the pregnancy e.g. dilated renal tract, mass, cyst etc. |

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Acute Lower Back Pain

APPENDIX 5

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| <ul style="list-style-type: none"> • Introduction • Background • Evidence • Natural History • Initial Assessment • Red Flags • Investigations • Assurance and Explanation • Activity Alteration and Work Activities • Symptom Control • Advice on Staying Active | <ul style="list-style-type: none"> • Education • Review • Yellow Flags • Referral • Leg Pain • Surgery • Full reassessment • Comment on Multidisciplinary Teams • Who might be in the Multidiscipline Teams? • What is the role of Multidisciplinary Teams? • Recommended Treatment Options |
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Introduction

This guide provides an evidence-based approach to the assessment and treatment of acute low back pain, for the prevention of chronic pain and disability. It follows an extensive review of the international literature, and wide consultation with professional groups in New Zealand. The guide is to be used in conjunction with the **Guide to Assessing Psychosocial Yellow Flags in Acute Low Back Pain: Risk Factors for Long-Term Disability and Work Loss**.

Background

This guide has been developed from the comprehensive publication Clinical Practice Guideline - Acute Low Back Problems in Adults: Assessment and Treatment, which was distributed by ACC and the National Health Committee in January 1996. The participation of various professional groups, through submissions and a health professionals' hearing, enabled an expert panel to develop this guide. The guide reflects current best practice in New Zealand and will be reviewed, as new evidence becomes available. The expert panel recommends that this guide should have its first review within 2 years of publication.

Any further comments and submission of new evidence for the National Health Committee and ACC should be made through the appropriate professional association.

No references are provided in this document. Comprehensive lists of references are available in the documents detailed in the acknowledgement at the end of this guide.

Acute low back pain is

- common
- self-limiting in most people
- best managed by good assessment, explanation (and reassurance), advice about staying active and expecting recovery
- best managed (where necessary) with simple analgesics and/or manipulation
- best managed by advice against bed rest for more than 2 days

Recurrent low back pain is

- fairly common
- probably best treated in a similar way to acute low back pain episodes

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Chronic low back pain is

- a major cause of disability that can leave a person miserable and unemployable
- very difficult to treat
- almost certainly easier to prevent than treat
- often associated with psychosocial risk factors

This guide:

- promotes better management of acute low back pain to prevent chronicity simplifies the history and examination of people with acute low back pain making it easier to identify:
 - people without signs of serious disease, who should be reassured, treated symptomatically and encouraged to remain active
 - people who should be referred for appropriate specialist opinion on the basis of Red or Yellow Flags
 - suggests time frames for recovery from an acute episode of low back pain, so that people not fitting this 'normal' pattern can be identified identifies psychosocial risk factors for chronic back pain
 - suggests strategies for better management for people at risk of chronic low back pain or those not recovering as expected
- aims to change the attitudes of treatment providers and the public about acute low back problems. Excess disability can result from:
 - reliance on a narrow medical model of pain
 - discouragement of self care strategies and failure to instruct the patient in self management
 - sanctioning of disability and not providing interventions that will improve function
 - over-investigation and perpetuation of belief in the 'broken part hypothesis'.

Evidence

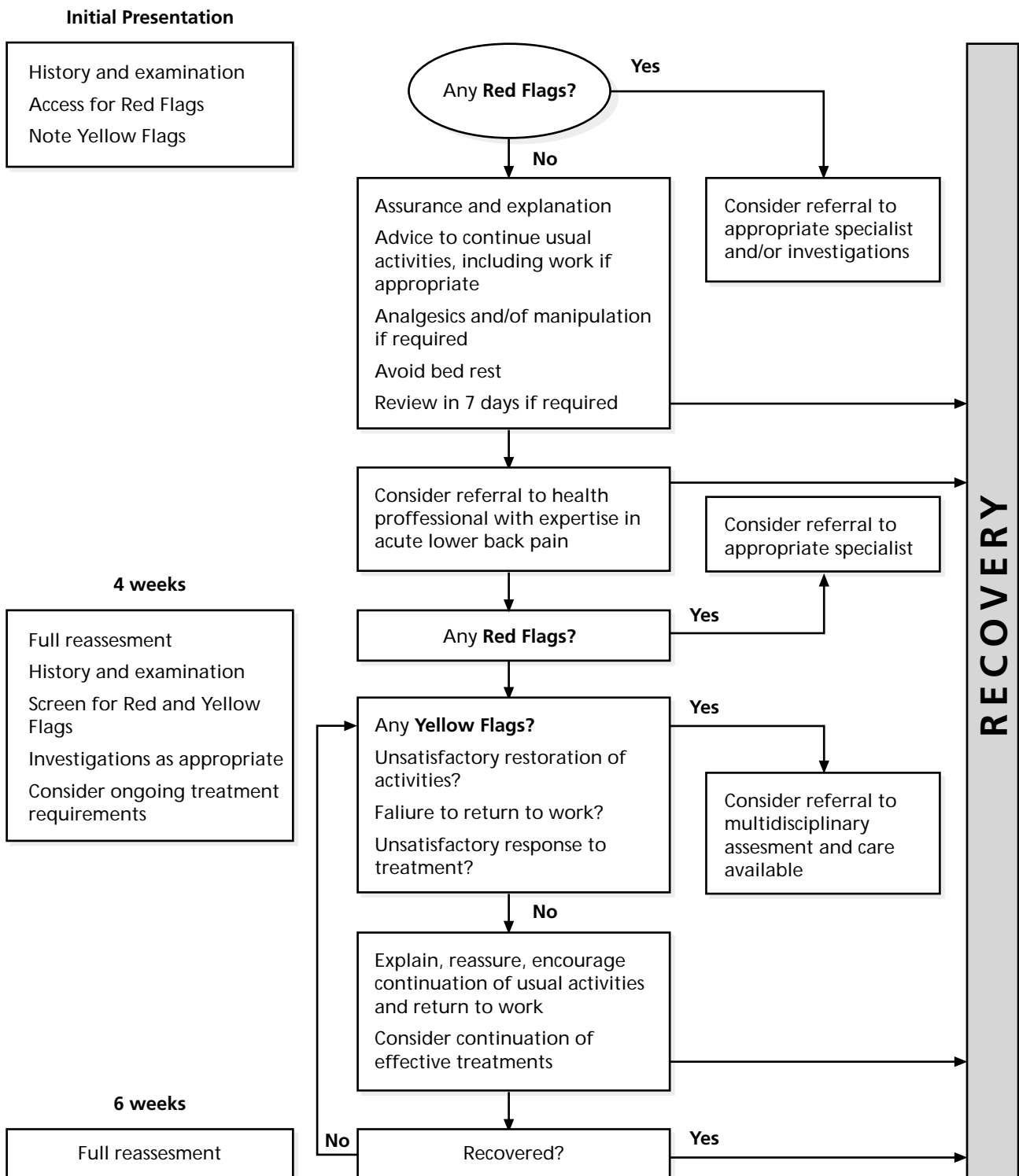
This guide is based on a review of the best available scientific evidence for improved clinical outcomes, in accordance with the approach to systematic reviews recommended by the international Cochrane Collaboration.

The advice in the guide is based on 'at least moderate research evidence', where moderate research evidence is defined as one relevant high quality scientific study or multiple adequate scientific studies of an acceptable design. Randomised controlled trial studies of therapy or prospective cohort studies of assessment and natural history, meeting specific criteria, are internationally recognised as acceptable evidence.

Evidence for some treatment options such as biofeedback is unlikely to become available in view of their cost and limited application to the management of acute low back pain. Acceptable evidence may become available for some other treatment options and will be described in future editions of the guide.

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Figure 1: Management of Acute Lower Back Pain



Best practice advice

The 'best practice' advice given in the Management of Acute Low Back Pain Flowchart (Figure above) and in the **Summary of Management Options** is not intended to be read as a rigid prescription. The advice is intended to offer flexibility and choice, so that clinical judgement can be made according to patients' circumstances, supported by the best available evidence for improved clinical outcome.

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Definitions

Acute low back problems: activity intolerance due to lower back or back and leg symptoms lasting less than 3 months

Chronic low back problems: activity intolerance due to lower back or back and leg symptoms lasting more than 3 months

Recurrent low back problems: episodes of acute low back problems lasting less than 3 months but which recur after an interval free of low back symptoms sufficient to restrict activity or function.

Natural History

Most severe back pain and severe activity limitation improves considerably in a few days or at most a few weeks, but milder symptoms may persist longer, often for a few months.

Initial Assessment

A good history must be taken to identify:

- the risk factors for serious disease (Red Flags, see next page)
- how limiting the symptoms are
- similar previous episodes
- any factors that might limit an early return to usual activities, including work (this includes screening for Yellow Flags - see page 7 and accompanying booklet)

The clinical examination aims to identify any neurological deficit (note that over 90% of all clinically significant lower limb radiculopathy due to disc herniation involves the L5 or S1 nerve root at the L4/5 or L5/S1 disc level). Pointers in the history may indicate the need for a more general examination, particularly if Red Flags for serious or systemic disease (such as cancer) are suspected.

Red Flags

The following approach to investigations and referral is recommended:

- Patients with persistent neurological deficit and pain should be referred to the appropriate specialist.
- Patients with Red Flags should be investigated appropriately and referred if investigations are abnormal. Referral may still be appropriate at 4 weeks, even if investigations are normal.
- Patients with no Red Flags and normal neurological examination should only have full blood count, ESR and plain X-rays of the lumbar spine if they have not recovered at 4 - 6 weeks or if there are other indications.
- Abnormal investigations may justify referral to an appropriate specialist.
- At 6 weeks, patients with no Red Flags, normal investigations and persistent symptoms should be referred to a specialist or specialist team if available. Multidisciplinary Teams may be more effective in preventing pain and disability.

Intervention between 4 and 8 weeks after acute low back problems start is most likely to help prevent chronic low back problems. Patients with low back symptoms persisting beyond 12 weeks have a rapidly reducing rate of return to normal activity.

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Table 1: Red Flags for potentially serious conditions

- Features of cauda equina syndrome (especially urinary retention, bilateral neurological symptoms and signs, saddle anaesthesia) - this requires very urgent referral
- Significant trauma
- Weight loss
- History of cancer
- Fever
- Intravenous drug use
- Steroid use
- Patient aged over 50 years
- Severe, unremitting night-time pain
- Pain that gets worse when patient is lying down

Note: *Yellow Flags* It may be useful to conduct a preliminary screening for important psychosocial factors (*Yellow Flags*) at the time of initial presentation. Potential *Yellow Flags* should be more comprehensively and formally assessed at the 4 and 6 week full reassessments, if the patient is not making expected progress. Refer to page 7 and the booklet, 'Guide to Assessing Psychosocial Yellow Flags in Acute Low Back Pain'.

Investigations

A full blood count and ESR should be performed only if there are any Red Flags. Other tests may be indicated depending on the clinical situation.

Plain X-rays of the lumbar spine are indicated if any of the Red Flags are present but not otherwise in the first 4 weeks. The value of plain X-rays to some treatment providers in developing a management plan must be balanced against the radiation exposures involved.

As 30% of people without low back symptoms will have significant abnormalities on MRI and CT scans of the lumbar spine, these investigations should be reserved for people being worked up for surgery or where a specific pathology (such as cancer or infection) is strongly suspected.

Assurance and Explanation

It is important to let the patient know that, if a full history and examination have uncovered no suggestion of serious problems, no further investigations are needed. They should be advised to stay as active as possible and continue usual daily activities.

Activity Alteration and Work Activities

Bed rest for more than 2 days should be discouraged, as it has been shown to impair recovery. It is recommended that patients should increase physical activity progressively according to a timetable rather than be guided by pain level. Activities and postures may need to be modified in the short term, and suitable advice provided.

It is important to discuss work activities, especially those involving heavy lifting, bending or twisting, that may have contributed to the original problems. Alternative duties and/or workplace design may need to be discussed with the worker and/or employer.

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Symptom Control

Effective interventions to control symptoms of acute low back pain include:

- **Analgesics**

If patients need their pain symptoms controlled paracetamol and non-steroidal anti-inflammatory drugs have been shown to be effective.

- **Manipulation**

Manual loading of the spine using short or long leverage methods is safe and effective in the first 4-6 weeks of acute low back symptoms. Treatments to relieve low back pain that do not include an appropriate emphasis on return to usual activity may inadvertently encourage the patient to fear moving or using their back. It is important to combine symptom control with encouragement to promote activity, including returning to work.

Advice on Staying Active

Advice to continue ordinary activity usually results in more rapid symptomatic recovery from an acute episode, and leads to less chronic disability and less time off work when compared to 'traditional' medical treatment. Traditional medical treatment has inappropriately focused on analgesics only as required, advice to rest and 'let pain be your guide' for return to usual activity. All of these have been shown to delay recovery.

Progressive reactivation over a short period of days or a few weeks, combined with behavioural management of pain, makes little difference to the rate of initial recovery of pain and disability, but leads to less chronic disability and work loss.

Advice on a planned return to normal work within a short time may lead to shorter periods of work loss and less time off work.

Education

Educating patients about low back symptoms provides assurance. This can lead to improved feelings of well-being, reduced health service use and improved use of self-management strategies. Education as part of a 'back school' at the workplace may be effective. The efficacy of back schools in non-occupational settings has yet to be demonstrated by randomised controlled trials.

Review

The clinician is responsible for making sure that the episode resolves as expected. Follow-up will depend on the clinical situation, including the severity of symptoms, the presence of any neurological deficit, history of previous episodes and other medical and/or psychosocial factors. A reasonable approach for most patients is a review by the end of the first week, unless symptoms have completely resolved. It may be appropriate to arrange an earlier review, to reinforce the message to keep active and avoid

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Yellow Flags

Yellow Flags and Red Flags can be thought of as:

- Yellow Flags = psychosocial risk factors
- Red Flags = physical risk factors

Yellow Flags are factors that may increase the risk of developing, or perpetuating, long-term disability and work loss associated with low back pain. Identification of risk factors can inform appropriate cognitive and behavioural management strategies to achieve functional outcome goals.

The accompanying *Guide to Assessing Psychosocial Yellow Flags in Acute Low Back Pain* provides:

- a method of screening for psychosocial factors that are likely to increase the risk of an individual with acute back pain developing prolonged pain and disability causing work loss and associated loss of quality of life
- a systematic approach to assessing psychosocial factors, including a screening questionnaire
- suggested strategies for better management by primary care treatment providers for those with acute back pain who are At Risk

The primary aim of management is to control pain and prevent disability. Identifying At Risk individuals makes prevention of long-term problems possible in most cases, with benefits far outweighing the risks of over-identification.

The presence of psychosocial risk factors does not mean that the back pain is any less real nor does it reduce the need for symptom control.

Most At Risk individuals can be effectively managed by their usual treatment provider, without the need for referral to a psychologist. These patients will require strategies that are effectively integrated with requirements for analgesia and physical modalities to enable them to remain active and return to ordinary activities.

Table 2: Psychosocial Yellow Flags - main categories

Clinical assessment of Yellow Flags may identify the risk of long-term disability, distress and work loss due to:

- Attitudes and beliefs about back pain
- Emotions
- Behaviours
- Family
- Compensation issues
- Work
- Diagnostic and treatment issues

Referral

All patients with symptoms and/or signs of cauda equina syndrome should be referred urgently to an appropriate specialist. The presence of Red Flags and/or abnormal tests indicates the need to consider referral or at least fuller investigation. Certain Red Flags (such as severe pain at night or weight loss) should lead to full investigation and/or referral being considered, even if the tests are normal.

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Leg Pain

Patients with pain radiating from the back down one leg as far as the ankle, with or without neurological signs, have a higher chance of a disc herniation as the cause of their low back problems. Nevertheless, the natural history of back-related leg pain is benign in most patients and these patients should be managed as shown in Figure 1 unless there is unremitting, severe pain or increasing neurological deficit. Caution should be exercised in advising manipulation if there is any neurological deficit.

Surgery

Surgery is not indicated for non-specific low back pain. Where there is no improvement, some patients with back-related leg pain and a defined disc lesion may recover more rapidly with surgery. Note that the long-term results of surgery for back-related leg pain are no better than conservative management. Patient preferences will be important in any decision about surgical intervention.

Full Reassessment

Most patients with episodes of acute low back pain should have largely recovered within 4 weeks. Some studies suggest that as many as 90% of affected people will have resumed their normal activities in this time. All patients who have not regained usual activity after 4 weeks should be formally reassessed and again at 6 weeks. The assessment should include retaking the history and examination, looking for Red or Yellow Flags, neurological deficit and any evidence of systemic disease. Treatment providers must consider whether continuing treatment will accelerate recovery or simply prolong the 'traditional' medical model.

Comment on Multidisciplinary Teams

There is clear evidence that Multidisciplinary Teams or networks are effective in managing chronic back pain. The evidence for their effectiveness in unresolved episodes of acute low back pain is yet to be determined. The expert panel has recommended the use of Multidisciplinary Team management for episodes of acute low back pain unresolved at 6 weeks in line with international opinion.

Who Might be in the Multidisciplinary Teams?

They might include health professionals with appropriate training in musculoskeletal disorders, psychosocial assessment, vocational management and other relevant specialities. These teams may not be embodied in a discrete organisation, but may reflect a close collaborative team approach for the assessment and comprehensive management of At Risk patients by professionals from various disciplines with specific skills working together. This is particularly true of rural areas where access to specialist teams would otherwise be a treatment barrier to those needing prompt specialist intervention.

What is the Role of Multidisciplinary Teams?

The lead treatment provider may require support from a multidisciplinary team to integrate all components of the comprehensive evaluation and management plan. This support could provide input into key clinical decisions and promote service co-ordination. Multidisciplinary Teams are able to:

1. make an objective review of progress to date and a comprehensive evaluation of the presenting problem, emphasising the early identification of barriers to progress that have so far gone unnoticed.
2. develop a comprehensive management plan including:
 - integration of all components of the evaluation into the decision-making process
 - an outline of expected milestones with time frames
 - incorporation of strategies for dealing with any barriers that are identified
 - options for continued lack of progress.
3. provide treatment, only for the most complex or resistant cases.

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Recommended Treatment Options

Table 3a and 3b provide a summary of management options based on the available evidence for improved clinical outcomes. The evidence was reviewed by an expert panel who felt that it was more helpful to focus on the availability of evidence rather than to make recommendations about the treatments that must or must not be used.

Caution should be exercised in recommending treatment options for which the evidence of improved clinical outcomes is lacking or inconclusive. Treatment providers who wish to provide best practice care can now choose treatments for which there is good evidence for improved clinical outcomes.

Table 3a. Summary of management options for an episode of acute low back pain based on the evidence available at present

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| At least moderate research evidence for improvement in clinical outcomes |
| <ul style="list-style-type: none"> • Advice to stay active and continue usual activities • Paracetamol • NSAIDs (non-steroidal anti-inflammatory drugs) • Manipulation – in the first 4 to 6 weeks only |
| At least moderate research evidence for improvement in clinical outcomes |
| <ul style="list-style-type: none"> • Bed rest for no more than 2 days • TENS (= transcutaneous electrical nerve stimulation) • Traction • Specific back exercises • Education pamphlets about low back symptoms |
| At least moderate research evidence of potential harm from the treatments below which should not be used for an episode of acute low back pain |
| <ul style="list-style-type: none"> • Use of narcotics or diazepam (especially for more than 2 weeks) • Bed rest with traction • Manipulation under general anaesthesia • Plaster jacket |

Table 3b. Insufficient research evidence for any improvement in clinical outcomes

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| <ul style="list-style-type: none"> • Conditioning exercises for the trunk muscles • Aerobic conditioning • Epidural steroid injections • Workplace back schools • Acupuncture • Shoe lifts • Corsets • Biofeedback • Physical agents and passive modalities (includes ice, heat, short wave diathermy, massage, ultrasound) |
|--|

- Purpose of the Guideline
- About the Guideline
- Guideline Team
- Documentation
- Guideline Information
- Algorithm: Management of Acute Low Back Pain
- Full Guideline
- References
- Patient Information: Screening Questionnaire

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