



ACI NSW Agency
for Clinical
Innovation

CLINICAL GUIDELINES

Pleural procedures

**Guidance for assessing competency
in pleural procedures for advanced
trainees and specialist nurses**

ACI Respiratory Network

Acknowledgements

The Agency for Clinical Innovation (ACI) recognises the unique position of Aboriginal people in the history and culture of NSW. The ACI would like to acknowledge the traditional owners of the lands referred to in this report. We would also like to acknowledge and pay respect to elders of the communities covered in this report.

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Pleural procedures that involve the insertion of intercostal catheters into the pleural cavity incur a high risk of adverse outcomes, including death. A review of 185 adverse incidents related to pleural drains in NSW in 2010–11) found that the majority (69%) were attributable to suboptimal clinical management. Incidents related to pleural drains occurred in both metropolitan and regional facilities, and within diverse settings including operating theatres, critical care units, emergency departments, specialised surgical and medical wards, general wards and medical imaging departments.

The *Guidance for assessing competency in pleural procedures for advanced trainees and specialist nurses* resource has been developed by members of the ACI Pleural Procedures Education Group, made up of respiratory physicians, respiratory nurses and managers from metropolitan and regional facilities across NSW.

The aim of the resource is to reduce the risks associated with pleural procedures in adults within all NSW hospitals. The resource defines a consistent standard for education, training and assessment of procedural and clinical skills. It applies to designated medical and nursing staff across clinical streams who are responsible for the insertion of pleural drains and care of adult patients with a pleural drain.

This resource is intended to be used in conjunction with *ACI Pleural drains in adults: a consensus guideline*, which is available from ACI website (<http://www.aci.health.nsw.gov.au/networks/respiratory/pleural-drains>)

The resource is available online for local health districts, special health Networks and clinical streams to review, adopt and endorse as per local requirements. Implementation of the recommendations will need to be tailored to align with the specific casemix and workforce as determined by local clinical streams and managers.

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Section 1

About ACI

The Agency for Clinical Innovation (ACI) works with clinicians, consumers and managers to design and promote better healthcare for NSW.

ACI Clinical Networks, Taskforces and Institutes provide a unique forum for people to collaborate across clinical specialties and regional and service boundaries to develop successful healthcare innovations.

A priority for the ACI is identifying unwarranted variation in clinical practice and working in partnership with healthcare providers to develop mechanisms to improve clinical practice, patient care and outcomes (www.aci.health.nsw.gov.au).

Section 2

Background

Accumulation of fluid or air within the pleural space is common and frequently requires drainage and/or other interventions. Significant and avoidable adverse events related to pleural drainage procedures have been identified via NSW Health clinical incident monitoring systems, of which the majority relate to suboptimal clinical management.

The ACI convened a Pleural Procedures Working Group (comprising clinical expert respiratory physicians and nurses) to lead the development of *Pleural drains in adults: a consensus guideline*. The guideline underwent extensive consultation prior to endorsement and release to the NSW Health system in May 2014.

To support statewide implementation of the guideline within NSW hospitals, the working group members identified the need to develop formal and consistent processes to determine competency for relevant advanced trainees and specialist nurses who are required to insert pleural drains and care for adult patients with a pleural drain.

Section 3

Purpose

The recommendations define a standard for training and assessment of the knowledge and skills clinicians require in order to perform pleural procedures and provide ongoing pleural drain management. The primary targets are advanced trainees and respiratory nurses.

The recommendations relate to a range of pleural procedures including: needle thoracocentesis; closed pleural biopsy; insertion of small and large pleural catheters via Seldinger or blunt dissection technique; medical thoracoscopy; and indwelling (tunnelled) pleural catheters.

While it is recognised that other clinical specialties (including emergency care, critical care, interventional radiology, surgical specialties and paediatrics) may use specialty-specific credentialing processes, this set of recommendations is available for other clinical specialties to freely adopt or adapt for their own use.

The recommendations are intended for use in conjunction with the *Pleural drains in adults: a consensus guideline*, available at <http://www.aci.health.nsw.gov.au/networks/respiratory/pleural-drains>.

Section 4

Aims

The recommendations aim to:

- ensure pleural procedures are performed safely, effectively and without adverse events
- define a standard process for demonstrating that clinicians have undertaken the pleural procedural training and attained the clinical skills required across the range of pleural procedures
- help Local Health Districts and Special Health Networks adopt formal processes to ensure that relevant clinicians have undertaken appropriate pleural procedural training and demonstrated the clinical skills required to perform pleural procedures and care for patients following a pleural procedure
- enhance the pleural procedural experience for both patients and operators.

Some facilities, especially regional hospitals, may lack the full range of sub-specialty clinical services, including respiratory. In this instance, a facility may decide that

the best means of achieving the recommendations is by creating a 'pleural team' or a 'chest drain team' whose members across a range of specialties have the appropriate experience and expertise in pleural procedures. A 'pleural team' may take on the role of auditing pleural procedures and monitoring patient outcomes within the facility.

In circumstances where appropriate expertise is not available within a hospital, formal telemedicine arrangements may be developed between a hub centre and its feeder peripheral hospital which would enable the hub centre to provide an on-call pleural procedure support service.

Section 5

Recommendations for assessing competency in advanced trainees

Each facility is responsible for accrediting advanced trainees for pleural/chest drain management in line with their scope of practice.

Each facility is responsible for ensuring patients undergoing any pleural procedure are managed in a safe clinical environment where medical officers and specialist nurses deemed competent to insert and manage pleural drains are available at all times.

The competency recommendations aim to ensure that all NSW facilities follow a consistent process for educating and training advanced trainees and demonstrating that they have attained competency.

5.1 Advanced trainee pleural drain competency

The essential elements in the process of demonstrating pleural procedural competency are:

- the trainee gaining theoretical knowledge and becoming familiar with the equipment in use
- the trainee learning the physical skills and techniques required to complete the specific procedure
- the supervisor assessing the trainee's competency in pleural procedures
- the trainee participating in quality assurance processes.

5.1.1 Gaining theoretical knowledge and familiarisation with equipment

The advanced trainee should demonstrate satisfactory theoretical knowledge of, and be familiar with, the specific equipment in use before progressing to the practical aspects of procedural training.

This may be achieved by a combination of:

- the supervisor quizzing the advanced trainee to assess their knowledge of anatomy, physiology and pleural disease
- the advanced trainee completing one or more pleural procedure training courses, which include an assessment component (such as those provided by the Thoracic Society of Australia and New Zealand (TSANZ) and the Clinical Training and Evaluation Centre, University of Western Australia)
- the supervisor directing the advanced trainee to access recommended online resources (see section 6.4 E-learning resources).

5.1.2 Learning the procedural technique

Procedural training should occur via incremental experience, beginning with simulation, progressing to practise using models and eventually to performing procedures on patients under supervision.

Competency in less invasive procedures (such as thoracocentesis) should be gained before more complex procedures (such as pleural catheter insertion) are attempted. At each stage, the advanced trainee should demonstrate proficiency before progressing to a subsequent stage.

The emphasis should be on safe and effective technique, rather than on the absolute number of procedures performed. For all procedures, more than one supervised attempt is recommended.

It is expected that, with the variety and increasing complexity of procedures practised and the variable rate of skill acquisition by individual advanced trainees, multiple supervised attempts will be required before proficiency is achieved.

5.1.3 Assessing procedural competency in an advanced trainee

Proficiency and/or competency are not rigidly defined but depend on the supervisor's judgement as to whether the advanced trainee is capable of performing the specific pleural procedure independently.

This judgement will entail specific consideration of all aspects of the pleural procedure, including:

- the decision to perform the procedure
- choice of an appropriate location and timing for the procedure
- obtaining consent for the procedure
- appropriate administration of sedation, topical anaesthesia and analgesia
- completion of Clinical Procedure Level 2 Safety Checklist
- interpretation of contemporaneous imaging
- use of bedside ultrasound to assist a pleural procedure
- maintenance of aseptic technique throughout the procedure
- the procedural technique, including hand-eye coordination
- adherence to local policies and guidelines
- leadership skills and respectful interaction with the assisting staff
- accurate and appropriate documentation
- management of pleural drain complications and emergencies
- use of an appropriate procedure for removal of the pleural drain.

5.1.4 Quality assurance

The advanced trainee requires insight into their own skill mix and limitations to ensure they know when to seek help and/or abandon a procedure to ensure a safe outcome for the patient. Recording evidence of participation in quality assurance processes, including self-reflection, completion a Pleural Procedure Training log (see ACI Pleural Drain in Adults Appendix 5), quality audit and critical incident monitoring is recommended throughout the training process.

Once deemed competent to perform a specific procedure, the advanced trainee will be formally credentialed for the specific pleural procedure in line with local facility processes.

5.2 Maintenance of procedural skills

Given insufficient evidence on which to base recommendations as to the number and frequency of procedures required each year to maintain clinical competency, this document relies on consensus expert opinion (ACI Pleural Procedures Working Group).

The working group recommends that each year the advanced trainee performs at least one supervised procedure and one procedure performed independently without adverse events.

Involvement in quality assurance processes is also recommended.

5.3 Supervisor roles and responsibilities

The supervisor is a medical officer deemed competent by the healthcare organisation governance bodies to perform pleural procedures.

The role of the supervisor is to:

- ensure that the advanced trainee has acquired appropriate theoretical knowledge
- ensure physical procedural skills are adequate and the advanced trainee is able to demonstrate procedural technique as required
- supervise and observe each procedural attempt until procedural competence is attained, which includes provision of timely and constructive feedback as required
- oversee quality assurance processes and monitor logbook entries
- maintain their own pleural procedural performance skills by periodically updating via peer review, pleural courses or similar means, sufficient to intervene (when necessary) while undertaking a supervisory role.

5.4 Advanced trainee roles and responsibilities

The advanced trainee is responsible for:

- attaining background theoretical knowledge prior to attempting any procedural techniques
- acquiring incremental procedural experience, starting with simulation, models and simple procedures before progressing to complex procedural techniques or applying procedures to patients
- practising pleural procedural techniques with the goal of achieving procedural competence and developing appropriate quality assurance processes
- completing procedures under direct supervision/ observation following the Royal Australasian College of Physicians' training requirements
- documenting procedures and keeping a procedural log book
- accepting and using supervisor feedback to achieve continuous improvement in performance
- maintaining procedural performance skills once credentialed via supervised procedures, independent procedures and assuming the supervisor role for other advanced trainees.

5.5 Inability to achieve competency

Some advanced trainees may not achieve procedural competency by the completion of their training period. Should such a trainee wish to undertake pleural procedures, further supervised training is required. This scenario may increase in frequency as pleural procedures become more specialised and complex.

At present, all NSW respiratory advanced trainees are required to achieve competency in specific procedural techniques and will fail to satisfy training requirements if they do not.

The Guide for assessing competency in pleural procedures for advanced trainees and specialist nurses aligns with:

- Clinical Procedure Safety Standards, NSW Health (PD 2014_36) <http://www.cec.health.nsw.gov.au/programs/clinical-procedure-safety>
- Royal Australian College of Physicians Adult Respiratory Medicine Advanced Training Curriculum. Physician Readiness for Expert Practice (PREP) Training Program. [http://cms.racp.edu.au/docs/default-source/default-document-library/respiratory-medicine-\(adult\)-advanced-training-curriculum-\(pdf\).pdf?sfvrsn=0](http://cms.racp.edu.au/docs/default-source/default-document-library/respiratory-medicine-(adult)-advanced-training-curriculum-(pdf).pdf?sfvrsn=0)

Section 6

Pleural drain education for respiratory advanced trainees

6.1 Pleural Drain Lung School

A dedicated annual NSW Pleural Drain Lung School supported by the Thoracic Society of Australia and New Zealand NSW Branch commenced in 2015. It is recommended that all first-year respiratory advanced trainees attend this training. Training includes background knowledge, quality assurance and practical sessions covering blunt dissection, Seldinger technique, aspirating a pneumothorax and talc pleurodesis.

6.2 Thoracic ultrasound

It is recommended advanced trainees participate in formal thoracic ultrasound training in their first year to attain the skills required to perform real time ultrasound guidance during pleural drain insertion in line with ACI *Pleural drains in adults: a consensus guideline* (<http://www.aci.health.nsw.gov.au/networks/respiratory/pleural-drains>).

6.3 Practical aspects of pleural disease for doctors

The Clinical Training and Evaluation Centre, University Western Australia, provides simulated hospital training experience (<http://www.ctec.uwa.edu.au/>).

6.4 E-learning resources

Recommended online resources include:

- Queensland Chest Drain online resource package (available from TSANZ website; members only): <http://www.thoracic.org.au>
- British Thoracic Society *Pleural disease guidelines 2010*: <https://www.brit-thoracic.org.uk/guidelines-and-quality-standards/pleural-disease-guideline/>
- ACI *Pleural drain in adults: a consensus guideline*: <http://www.aci.health.nsw.gov.au/networks/respiratory/pleural-drains>
- ACI Video insertion of pleural drain by Seldinger technique: <http://www.aci.health.nsw.gov.au/networks/respiratory/pleural-drains>

6.5 Workplace clinical skills training

Clinical supervisors provide trainees with incremental and individually tailored knowledge and procedural skills training, plus support opportunities for reflective practice and participation in quality assurance processes.

Section 7

Recommendations for assessing competency in nurses

Patients with a pleural drain should be managed in a clinical environment where nurses deemed competent to manage chest/pleural drains are available at all times.

Each facility is responsible for accrediting designated nurses for pleural/chest drain management in line with their scope of practice. The competency recommendations aim to ensure that a consistent process is undertaken for nursing education, training and attaining competency in management of pleural drains within NSW.

7.1 Registered nurse/endorsed enrolled nurse pleural drain competency

Assessment of competency will entail specific consideration of all aspects required for the management of patients with a pleural drain and drainage devices.

7.1.1 Demonstrates an understanding of the fundamental principles of normal breathing and pleural drainage, including:

- intrathoracic pressures
- regulatory mechanisms
- indications for insertion and removal of a pleural drain
- principles of chest/pleural drainage systems.

7.1.2 Competently assesses patient and drainage system, including:

- drainage type and amount
- oscillation
- air leak
- patent tube and secure connections
- dressing correct and intact
- appropriate use of suction
- need for bottle change.

7.1.3 Identifies cardinal signs of pleural drain complications and emergencies, including:

- tension pneumothorax
- surgical emphysema
- blocked chest drain
- dislodgement of chest drain
- haemorrhage.

7.1.4 Demonstrates ability to set up equipment, prepare and appropriately manage a patient undergoing a pleural procedure, including:

- understanding the role of an RN assisting the procedure
- obtaining valid consent
- maintaining Clinical Procedure Level 2 Safety Checklist Aseptic techniques and hand hygiene
- pain assessment and ensuring adequate analgesia is ordered
- educating patient and family
- selecting appropriate equipment and assembling it correctly
- recognising and managing complications
- taking pre-, peri- and post-procedural observations
- requirements for transfer and handover.

7.1.5 Displays knowledge of equipment required, current guidelines and procedure for:

- clamping
- flushing
- correct dressing
- changing bottles
- performing observations according to risk and/or the patient's condition
- managing a dislodged pleural drain
- unblocking a blocked drain
- removing a pleural drain.

7.1.6 Maintains effective communication with patient, staff and others, including:

- explaining procedures and interventions to patient and family
- discussing and reporting adverse findings to the medical officer or senior nurses
- appropriately documenting assessment findings on a chest drain chart and within progress notes
- sharing information related to interventions and management of drainage system with colleagues at handover and when clinically relevant.

Section 8

Pleural drain education for nurses

8.1 E-learning and face-to-face

Recommended resources include:

- ACI Pleural Drain in Adults Consensus Guideline and ACI Video Insertion of Pleural Drain by Seldinger technique: <http://www.aci.health.nsw.gov.au/networks/respiratory/pleural-drains>
- Queensland Chest Drain online resource package (Thoracic Society of Australia and New Zealand website; members only)
- local health district or facility policy or guidelines
- local health district or facility workshops
- ward in-services.

8.2 Practical skills

Practical skills can be gained by:

- observing pleural drain insertion/observations/removal procedures
- simulating pleural drain techniques (if available)
- performing actions under supervision until deemed competent.

8.3 Quality assurance

Opportunities are available for participation in audits, incidence information management system (IIMS) review and feedback.