Chest drain observation chart

Purpose

Patients with a pleural drain need regular and accurate observations of the drainage system, tubing and insertion site to ensure the system is working appropriately and to rapidly identify complications.

A review of chest drain charts in use across NSW showed significant variation in measures used and guiding information.

ACI formed an expert nursing advisory group across both medical and surgical care settings to develop a chest drain observation chart and instructions.

The ACI Chest Drain Chart is available for sites as a reference resource or for local endorsement.

Acknowledgements

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Addressograph

Drain Side: ☐ L ☐ R **Site:** ☐ Basal ☐ Apical Other: _____

Intercostal catheter type: ☐ Intercostal catheter ☐ Pleural pigtail catheter ☐ Tunnelled catheter ☐ Other: _____

Drainage system type: ☐ Single or three-bottle system (underwater seal drain) ☐ Dry seal system (atrium)

Emergency equipment: ☐ Clamps ☐ Three-way tap

Depth of insertion *(Optional)* ☐ Number exposed markers on chest drain OR _____ cm from insertion site to hub

Guide to this chart

ALL parameters should be checked and recorded every time observations are performed

Constant accurate observation of air leak, oscillation and drainage is essential. Neglect or inaccurate observations may lead to serious complications.

- Chart applies to all drains above the diaphragm
- One chart for each drain
- Total cumulative drainage MUST also be recorded on the Fluid balance chart
- Use in conjunction with regular observations on the SAGO chart
- Any variance requires mandatory medical officer (MO) review AND documentation in progress notes
- All bottle changes or flushing should be recorded by a line and descriptor across the observation chart row (see example).

Frequency of chest drain observations

Immediately post insertion: Half-hourly for two hours, then hourly for minimum four hours and then four-hourly when haemodynamically stable

Routine: Minimum four-hourly or more frequently as per clinical need or MO orders

Date/ time	**Suction** (Kpa/ cm H_2O/ Nil)	**Air leak** (bubbling score)	**Oscillation /swing** (Y/N)	**Cumulative drainage** (mL)	*OPTIONAL* **Drainage amount** (mL)	**Drainage type** (HS/ HP/P/S/C)	**Surgical emphysema** (Y/N)	**Air entry** (R=L/ R>L/ L>R	**Connections taped/ secure/ tube not kinked** (Y/N)	*OPTIONAL* **Airvent** (Open/ On suction/ N/A)	**Nursing care** (e.g. Dressing, flush)	**Pain score** (VAS) At rest/ with movement	**RN / EEN** (Initial)

OPTIONAL: **Cumulative total drainage (this chart)**_____ **Previous cumulative total drainage (last 24 hours)** _____

Observations:

Suction: Must be ordered by MO
Record: _____kpa or _____cm H_2O or Nil
Check suction complies with medical order.
Thoraseal drain LOW WALL SUCTION UNIT ONLY (range 3–5 kpa)
Atrium drain Check suction dial e.g.: - 20cmH_2O (independent of level of suction from wall). Must ensure orange suction bellows are inflated to Δ mark. When off suction, suction tubing must be disconnected from the drain.

Air leak: Indicated by bubbling in underwater seal drain (UWSD) or drain chamber.
Record:
- Nil — no bubbling
- \+ — bubbling only on forced expiration/coughing
- ++ — talking or forced expiration/occasionally on a spontaneous or ventilated breath
- +++ — moderate amount of bubbling on every spontaneous expiration or positive ventilated breath
- ++++ — large amounts, bubbling all the time.

Oscillation: Indicates change in intra-pleural pressure.
Record: Y or N
Oscillation does not normally occur when suction is applied.
If oscillation is present, the drain is patent.
If oscillation is absent, it may indicate:
- tubing may be twisted, kinked, blocked, dislodged or disconnected
- lung may be re- expanded (CXR required to assess).

Thoraseal drain: a rise and fall of fluid in the tubing or UWSD.
Atrium drain: a rise and fall of the float ball in the water seal chamber.

Cumulative drainage: Total amount drained since bottle was last changed (mL)

OPTIONAL: **Drainage amount:** Amount drained since last measure (mL)

Drainage type:
Record:
- HS — haemo serous
- HP — haemo purulent
- P — purulent
- S — serous
- C — chyle

Surgical emphysema: Indicates air in the subcutaneous tissue. Must notify the MO immediately if newly present or increased.
Record: Y or N

Air entry: Assess by auscultation
Record: R=L or R>L or L>R

Connections/tubing: Check
Record: Y or N for:
- insertion site/depth of insertion
- connections are taped and secure
- tubing is not kinked
- drain is secured to patient.

OPTIONAL: **Air vent open**
Record: Open or On Suction
NB: Airvent must be uncapped in **Thoraseal 1 system** if not on suction.

Nursing care: For example, Dressing, flushing
Record: action completed

Pain score: **Record** VAS score (1-10) for pain related to the drain at rest (R) and with deep breathing and coughing (M).

Bottle changes: Should be performed when the bottle is: ¾ full (adults); ½ full (paediatrics); or as clinically indicated.
Record all bottle changes or flushing when completed on the chart and then draw a line across the observations row to indicate the action. NB: Bottles are disposable and must not be emptied.

Date/ time	**Suction** (Kpa/ cm H2O/ Nil)	**Air leak** (bubbling score)	**Oscillation /swing** (Y/N)	**Cumulative drainage** (mL)	*OPTIONAL* **Drainage amount** (mL)	**Drainage type** (HS/ HP/P/S/C)	**Surgical emphysema** (Y/N)	**Air entry** (R=L/ R>L/ L>R	**Connections taped/ secure/ tube not kinked** (Y/N)	*OPTIONAL* **Airvent** (Open/ On suction/ N/A)	**Nursing care** (e.g. Dressing, flush)	**Pain score** (VAS) At rest/ with movement	**RN / EEN** (Initial)
15/5/15 0600	-20cm	+	Nil	1250	100	HS	N	R=L	Y	n/a	Dressing & wound swab [√]	5	JS
1000	-20cm	++	Nil	1400	150	HS	N	R=L	Y	n/a		6	JS
1005	BOTTLE CHANGED												JS
1400	-10cm	Nil	Nil	1580	180	HS	N	R=L	Y	n/a	Connections retaped		JS
1800	FLUSH												JS
2215	-20cm	+	Nil	1700	120	HS	N	R=L	Y	n/a	3-way tap off for 15 minutes. BP = 73/123	5	JS
2230	-20cm	++	Nil	1795	95	HS	N	R=L	Y	n/a		6	JS