# Pre-simulation briefing

## Establishing a safe container for learning in simulation

**1 Clarify objectives, roles and expectations**

- Introductions
- Learning objectives
- Assessment (formative vs summative)
- Facilitators and learners' roles
- Active participants vs observers

**2 Maintain confidentiality and respect**

- Transparency on who will observe
- Individual performances
- Maintain curiosity

**3 Establish a fiction contract**

Seek a voluntary commitment between the learner and facilitator:

- Ask for buy-in
- Acknowledge limitations

**4 Conduct a familiarisation**

- Manikin/simulated patient
- Simulated environment
- Calling for help

**5 Address simulation safety**

Identify risks:

- Medications and equipment
- Electrical or physical hazards
- Simulated and real patients

Note: Adjust the pre-simulation briefing to match the demands of the simulation event, contexts or the changing of participant composition.

V2 Effective: 1/7/2021. Adapted from Rudolph, J., Raemer, D. and Simon, R. (2014). Establishing a Safe Container for Learning in Simulation. Simulation in Healthcare: Journal of the Society for Simulation in Healthcare, 9(6), pp.339-349.

CSDS Clinical Skills Development Service

Queensland Government

Queensland Trauma Education

Queensland Government

PRIMARY SURVEY

# Structured assessment in trauma

## C — Catastrophic haemorrhage

Rapidly assess, control haemorrhage

**Immediate management:** Application of direct pressure, consider tourniquet application, do not remove penetrating foreign objects, initiate large bore IV access and rapid fluid resuscitation.

**Life threats:** Exsanguinating external haemorrhage, blunt/penetrating thoracic and/or abdominal injury.

## A — Airway/C-spine

Rapidly assess, maintain or secure airway and C-spine

**Life threats:** Airway obstruction, blunt/penetrating neck injury.

## B — Breathing/ventilation

Rapidly assess, support ventilation/oxygenation

**Life threats:** Tension pneumothorax, massive haemothorax, open pneumothorax, flail chest, ruptured diaphragm.

## C — Circulation with haemorrhage control

Rapidly control, assess and support haemodynamics

**Life threats:** Exsanguinating external haemorrhage, cardiac tamponade, penetrating cardiac injury.

## D — Disability

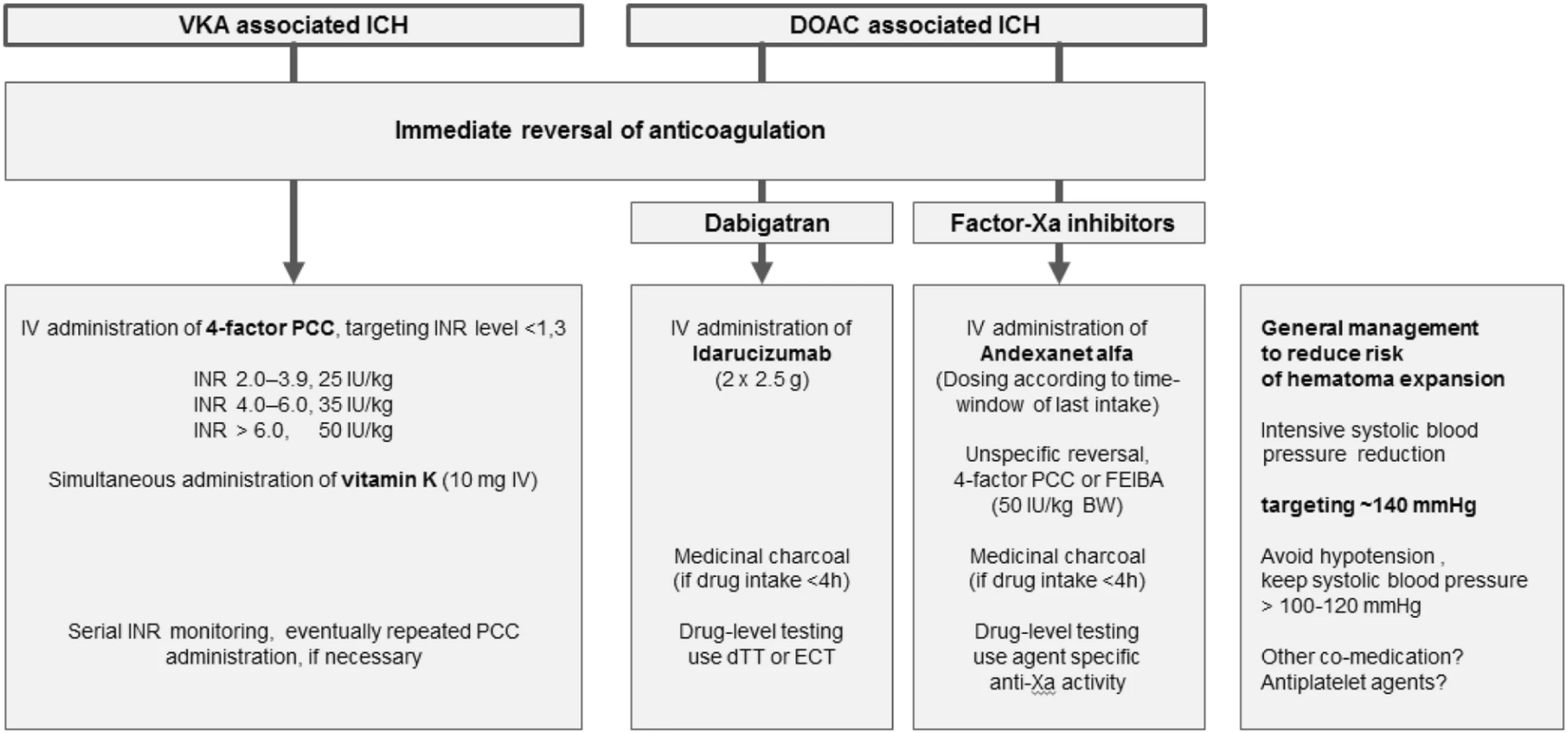
Rapidly assess and protect neurological status

**Life threats:** Catastrophic cerebral haemorrhage.

## E — Exposure

Expose patient, assess for further injuries, maintain normothermia

## Reversal of oral anticoagulation in patients with acute intracerebral haemorrhage




Source: Kuramatsu, J.B., Sembill, J.A. & Huttner, H.B. Reversal of oral anticoagulation in patients with acute intracerebral haemorrhage. Crit Care 23, 206 (2019). https://doi.org/10.1186/s13054-019-2492-8

## Warfarin reversal: Victorian Agency for Health Information/ Safer Care Victoria

# Warfarin Reversal

With bleeding

Australian Red Cross Lifeblood

**Management of patients on warfarin therapy with bleeding**

| INR | Bleeding risk | Warfarin | Vitamin K | PTX-VF | FFP | Check INR | Comments |
|---|---|---|---|---|---|---|---|
| **INR ≥ 1.5 with life-threatening (critical organ) bleeding** | | Cease | 5–10 mg IV[1] | 50 IU/kg | 150–300 mL **If PTX-VF not available** administer FFP 15 mL/kg | In 20 mins | Resume warfarin when bleeding has ceased and adjust dose to maintain INR within therapeutic range |
| **INR ≥ 2.0 with clinically significant bleeding (not life-threatening)** | | Cease | 5–10 mg IV[1] | 35–50 IU/kg | **If PTX-VF not available** administer FFP 15 mL/kg | In 20 mins | |
| **Any INR with minor bleeding** | Low | Cease | | | | In 24 h | Resume warfarin at reduced dose when INR reaches the therapeutic range |
| *or* **INR > 4.5 with minor bleeding** | High | Cease | Consider 1–2 mg PO or 0.5–1 mg IV[2] | | | | |

[1]Child: 0.3 mg / kg IV (max 10 mg) [2]Child: 0.03 mg / kg IV (max 1 mg)

transfusion.com.au Version 10.0 29 August 2019

Source: Victorian Agency for Health Information, https://www.bettersafercare.vic.gov.au/resources/clinical-guidance/emergency-care/warfarin-reversal

Queensland Government

# Guidelines for Anticoagulation using Warfarin - Adult

Reviewed by Queensland Health Statewide Anticoagulant Working Party
(membership includes representatives from GPQ, SNP and QML)

Contact: medicationsafety@health.qld.gov.au

DO NOT WRITE IN THIS BINDING MARGIN

## 1. Prescribing principles

- Consider if the benefits of anticoagulation outweigh the risks (e.g. bleeding) for each patient (see section 4).
- Ensure pre-treatment INR, platelets and liver function tests are normal. If not, seek senior / specialist advice.
- Warfarin should only be prescribed in the designated area of the medication chart.
- The initiating team must complete target INR, indication, initial dose and consider duration of therapy.
- If admitted on warfarin, an INR must be performed within 24 hours of admission, then every 2 to 3 days and documented in warfarin section of medication chart. If an INR has not been performed within 24 hours of admission, warfarin is not to be administered until an INR is available to guide dosing decisions.
- Check the patient has received education and **warfarin leaflets** before discharge. Ask your pharmacist to assist.

## 2. Starting warfarin therapy

- Acute DVT or PE: Start warfarin on same day as therapeutic UFH / LMWH* and overlap for a minimum of 5 days, until target INR reached for at least 2 consecutive days.
- **Chronic AF:** Start **warfarin alone** (may overlap with prophylactic heparin).
- **New mechanical or bioprosthetic valve**: as per treating team - SEEK ADVICE
- **Post-operative patients:** Restart with their 'normal' pre-operative maintenance dose - DO NOT RE-LOAD.

NB: High loading doses, such as 10 mg, should not be used due to an increase in the risk of bleeding.

## 3. Recommended starting nomogram for patients with no risk factors for increased sensitivity to warfarin

| Day of Initiation | INR | Dose |
|---|---|---|
| 1 | Less than 1.4 | 5 mg |
| 2 | Less than 1.8 | 5 mg |
| | 1.8–2 | 1 mg |
| | Greater than 2 | Nil |
| 3 | Less than 2 | 5 mg |
| | 2–2.5 | 4 mg |
| | 2.6–2.9 | 3 mg |
| | 3–3.2 | 2 mg |
| | 3.3–3.5 | 1 mg |
| | Greater than 3.5 | Nil |
| 4 | Less than 1.4 | 10 mg |
| | 1.4–1.5 | 7 mg |
| | 1.6–1.7 | 6 mg |
| | 1.8–1.9 | 5 mg |
| | 2–2.3 | 4 mg |
| | 2.4–3 | 3 mg |
| | 3.1–3.2 | 2 mg |
| | 3.3–3.5 | 1 mg |
| | Greater than 3.5 | Nil |
| After Day 4, dose is based on clinical judgement | | |

## 4. Risk factors for increased sensitivity to warfarin

- Age greater than 75 years
- History of bleeding or falls
- Baseline INR greater than 1.4
- Concomitant drugs affecting warfarin metabolism (see section 9)
- Co-morbidities i.e. hypertension, cerebrovascular disease, ischaemic stroke, heart disease, renal insufficiency, hepatic impairment or low platelets, malignancy
- Major surgery within the preceding 10 to 14 days

If risk factors, consider a smaller loading dose (2–4 mg) and seek senior / specialist advice.

If no risk factors, follow the recommended nomogram and monitor INR daily.

## 5. Recommended target INR ranges and minimum duration

To remain in end-of-bed folder

| Indication | Target INR Range | Minimum Duration |
|---|---|---|
| Valve repairs; Bioprosthetic valve | 2–3 | 6 weeks post op |
| DVT / PE | 2–3 | 3 months |
| AF; Irreversible, clinically hyper-coagulable states; Mechanical AVR with no risk factors[∞] | 2–3 | Life-long, balanced against risks |
| High risk mechanical heart valves; Mechanical MVR; Mechanical AVR with risk factors[∞] | 2.5–3.5 | Life-long, balanced against risks |

[∞]Risk factors: AF, previous VTE, hypercoagulable state, left ventricular dysfunction or older generation AVR

## 6. Perioperative thromboembolism risk stratification

| Thrombosis risk | Indication for Warfarin Therapy | | |
|---|---|---|---|
| | Mechanical valve | **Atrial fibrillation** | Venous thromboembolism |
| Low<br>Bridging unlikely to be required | Present - discuss with cardiologist | • AF and no history of cardiac embolism<br>• $CHA_2DS_2$–VASc score of 0–4[Ω] | • One DVT or PE more than three months ago<br>• Prior VTE and low risk thrombophilia (heterozygous Factor V Leiden or prothrombin gene mutation) |
| Moderate to High<br>Consider bridging | Present - discuss with cardiologist | • Rheumatic AF (mitral valve disease stenosis / regurgitation)<br>• AF with history of cardiac embolism or mechanical heart valve in any position<br>• $CHA_2DS_2$–VASc score 5–9[Ω] | • VTE within the past three months or very strong family history<br>• High risk thrombophilia: Deficiency of protein C, protein S or antithrombin III; homozygous Factor V Leiden mutation; antiphospholipid antibody syndrome; more than one laboratory thrombophilic defect (compound heterozygotes)<br>• Two or more arterial or idiopathic venous thromboembolic events |

[Ω]There is uncertainty with $CHA_2DS_2$-VASc scores 4–6 and an individualised approach may be required

## 7. Managing warfarin therapy during invasive procedures

The decision to withhold, bridge and resume therapeutic anticoagulation in surgical patients should be made on a case-by-case basis in consultation with the surgeon, treating physician and anaesthetist, with careful consideration of the risk of thromboembolism and bleeding.

| Thrombosis risk | Before surgery | After surgery |
|---|---|---|
| Low | • Withhold 4 daily doses of warfarin before surgery<br>• Night before surgery: If INR greater than 2, give 3 mg vitamin K[#] IV or oral<br>• Day of surgery:<br>» If INR less than or equal to 1.5, surgery can proceed<br>» If INR greater than 1.5, defer surgery or, if urgent give Prothrombinex™-VF 15–30 units/kg depending on initial and target INR or, if Prothrombinex™-VF not available, give FFP 10–15 mL/kg<br>» Employ pre-operative thromboprophylaxis as per hospital policy | • Start warfarin on the day of surgery at the previous 'normal' maintenance dose as long as there is no evidence of bleeding<br>• Employ thromboprophylaxis as per hospital policy |
| Moderate to High | Option 1: Planned surgery<br>• Withhold 4 daily doses of warfarin before surgery<br>• 2 to 3 days before surgery: When INR is less than 2 commence treatment dose of LMWH* subcutaneously or UFH IV:<br>» If using LMWH*, last dose should be given at least 24 hours before surgery<br>» If using UFH IV, cease infusion 4 to 6 hours before surgery<br>Option 2: Planned surgery with stable INR in preceding weeks<br>• Night before surgery: If INR is stable at 2–3 in the 2 to 4 weeks preceding surgery, give 3 mg vitamin K[#] IV or oral<br>• Day of surgery:<br>» If INR less than or equal to 1.5, surgery can proceed<br>» If INR greater than 1.5, defer surgery or, if urgent give Prothrombinex™-VF 15–30 units/kg depending on initial and target INR or, if Prothrombinex™-VF not available, give FFP 10–15 mL/kg<br>Option 3: Urgent surgery<br>• For urgent surgery, check INR before surgery and give Prothrombinex™-VF 15–30 units/kg depending on initial and target INR<br>• For procedures with low risk of bleeding, warfarin may not need to be ceased | • Recommence warfarin as soon as possible at the previous 'normal' maintenance dose as long as there is no evidence of bleeding - DO NOT RE-LOAD<br>• Consider bleeding risk against thrombosis<br>• Start LMWH* or UFH 12 to 24 hours postoperatively:<br>» If using LMWH*, begin with prophylactic dose<br>» If using UFH IV, avoid bolus and aim to prolong APTT as recommended by your site<br>• Consider delaying resumption of therapeutic LMWH* for 48 to 72 hours after major surgery<br>• Continue LMWH* or UFH for minimum of 5 days and cease 48 hours after target INR is reached<br>• In surgery with high risk of bleeding, consider using prophylactic dose LMWH* or UFH IV only and cease 48 hours after target INR is reached |

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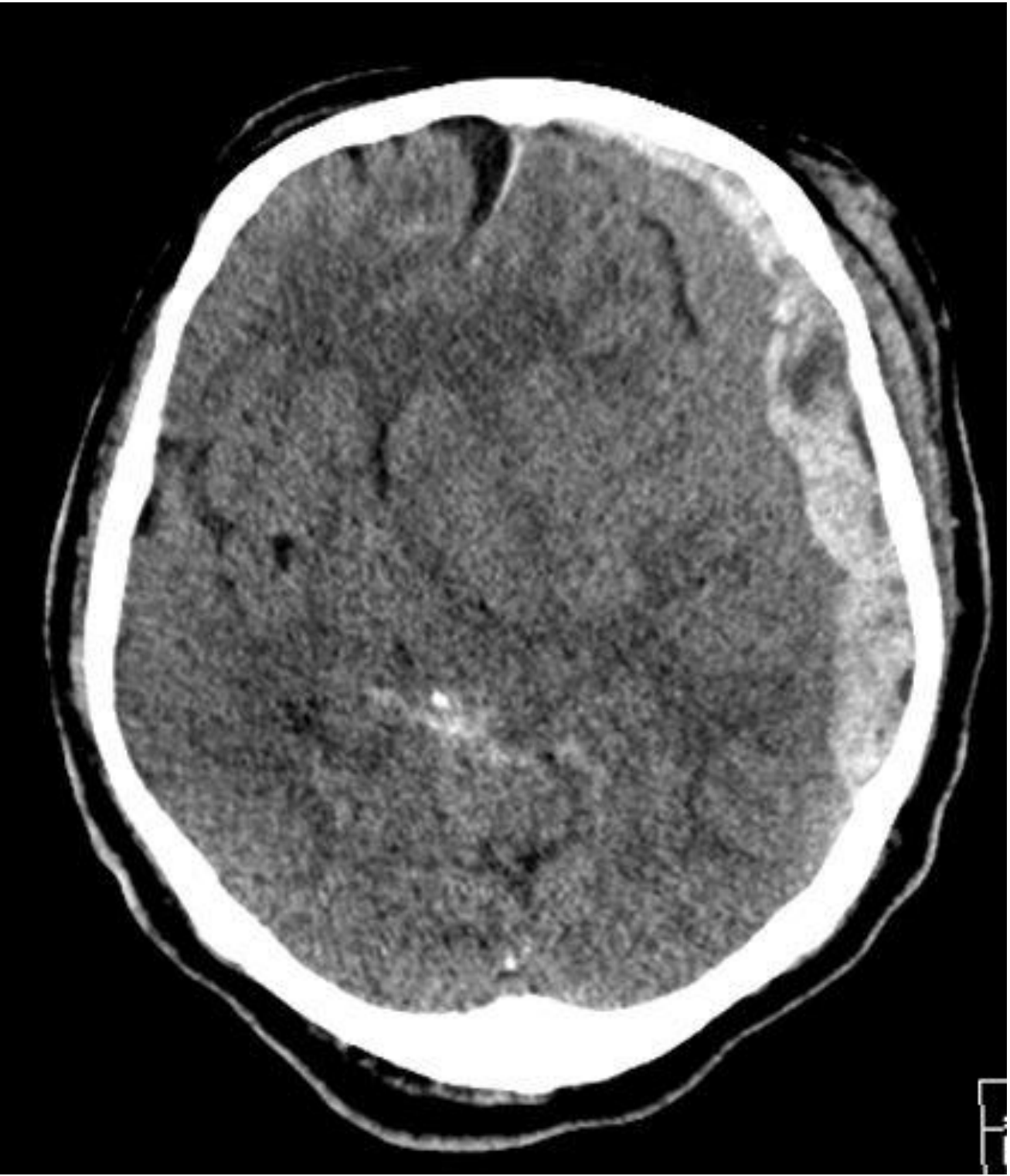
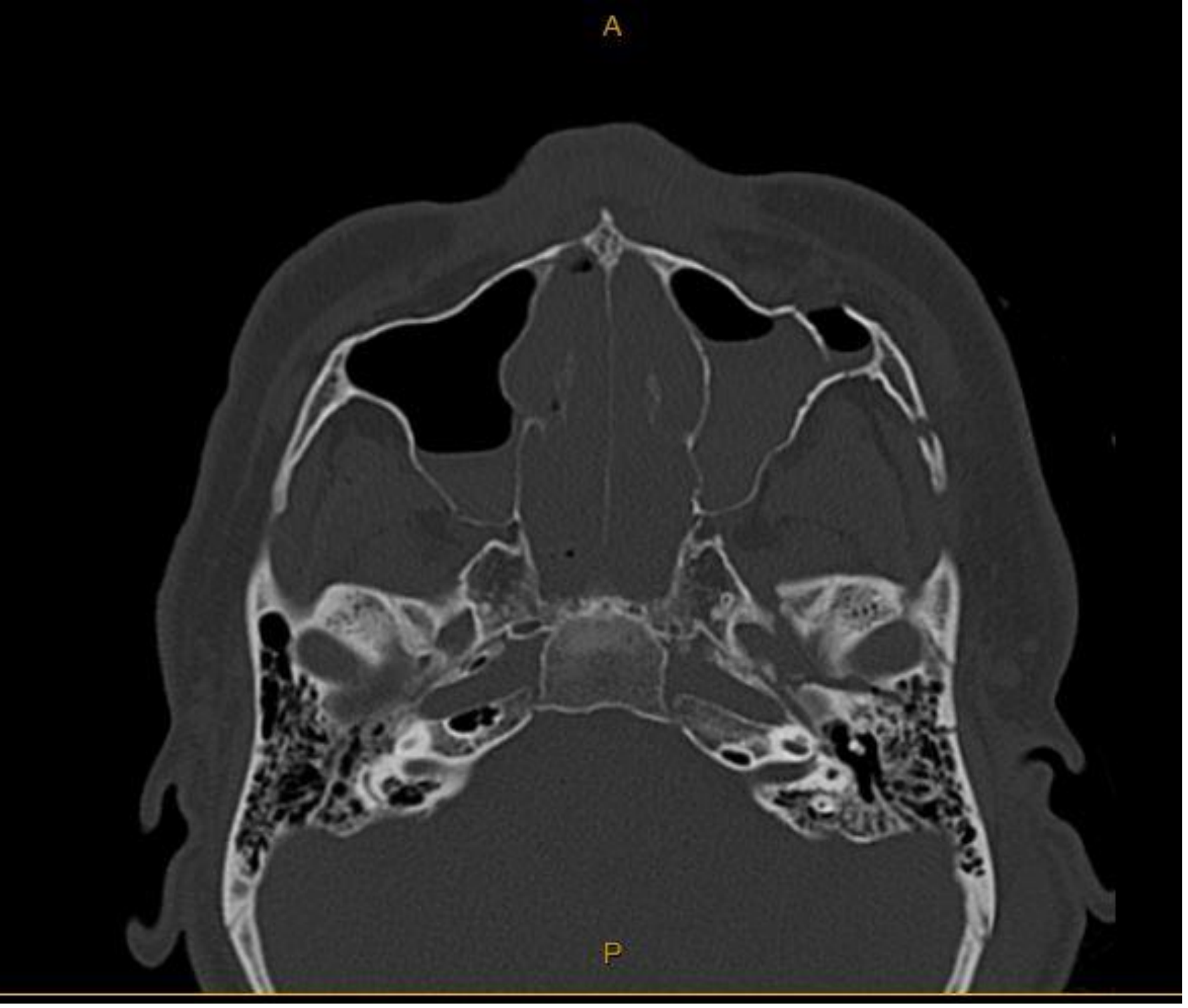
**CT Brain**

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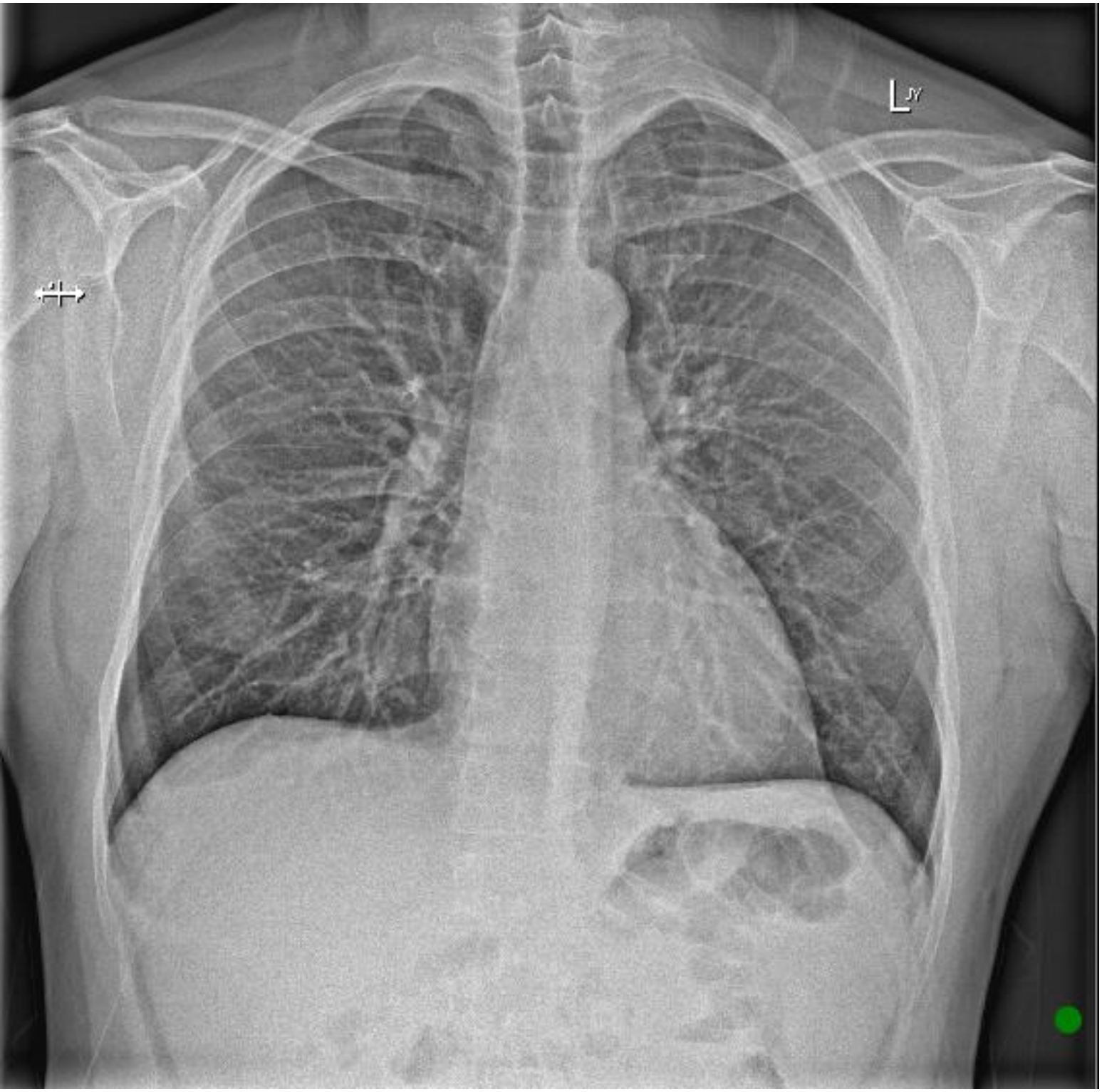
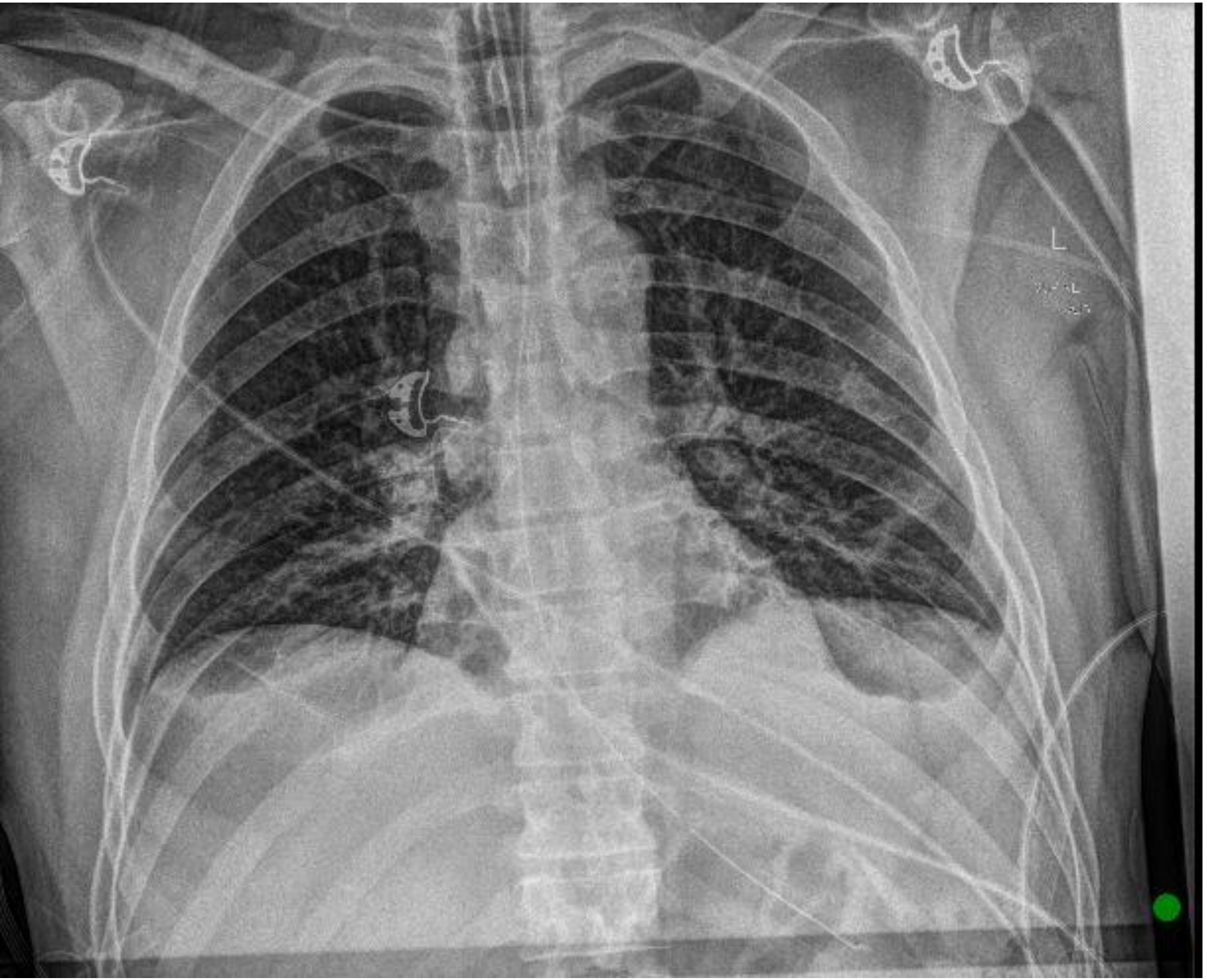
**CXR 1**



**CXR 2**



**VBG**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Venous | | | Temp. | 37.0 | Degree C | Na | 141 | mmol/L |
| Airway | | | Corr pH | 7.41 | | K | 3.9 | mmol/L |
| FIO2 | 0.21 | | Corr pCO2 | 39 | mmHg | Cl | 108 | mmol/L |
| pH | 7.41 | | Corr pO2 | 38 | mmHg | Anion Gap | 9 | mmol/L |
| pCO2 | 39 | mmHg | Total Hb | 108 L | g/L | Creatinine | | umol/L |
| pO2 | 38 C | mmHg | Oxy Hb | 66 | % | Ca (Ionised) | 1.16 | mmol/L |
| O2 Sat. | 67 | % | Carboxy H | 0.9 | % | Glu | 5.8 | mmol/L |
| p50 | 29.6 H | mmHg | Met Hb | 0.2 | % | Lact | 1.7 | mmol/L |
| HCO3- | 24 | mmol/L | Sulph Hb | | | | | |
| ABE | 0.0 | mmol/L | | | | Bili (Total) | | umol/L |
| | | | | | | Fetal Hb | | % |
| Comp. Val. Yes | | | MODE 1 | | | MODE 2 | | |
| COMMENT: | | | | | | | | |

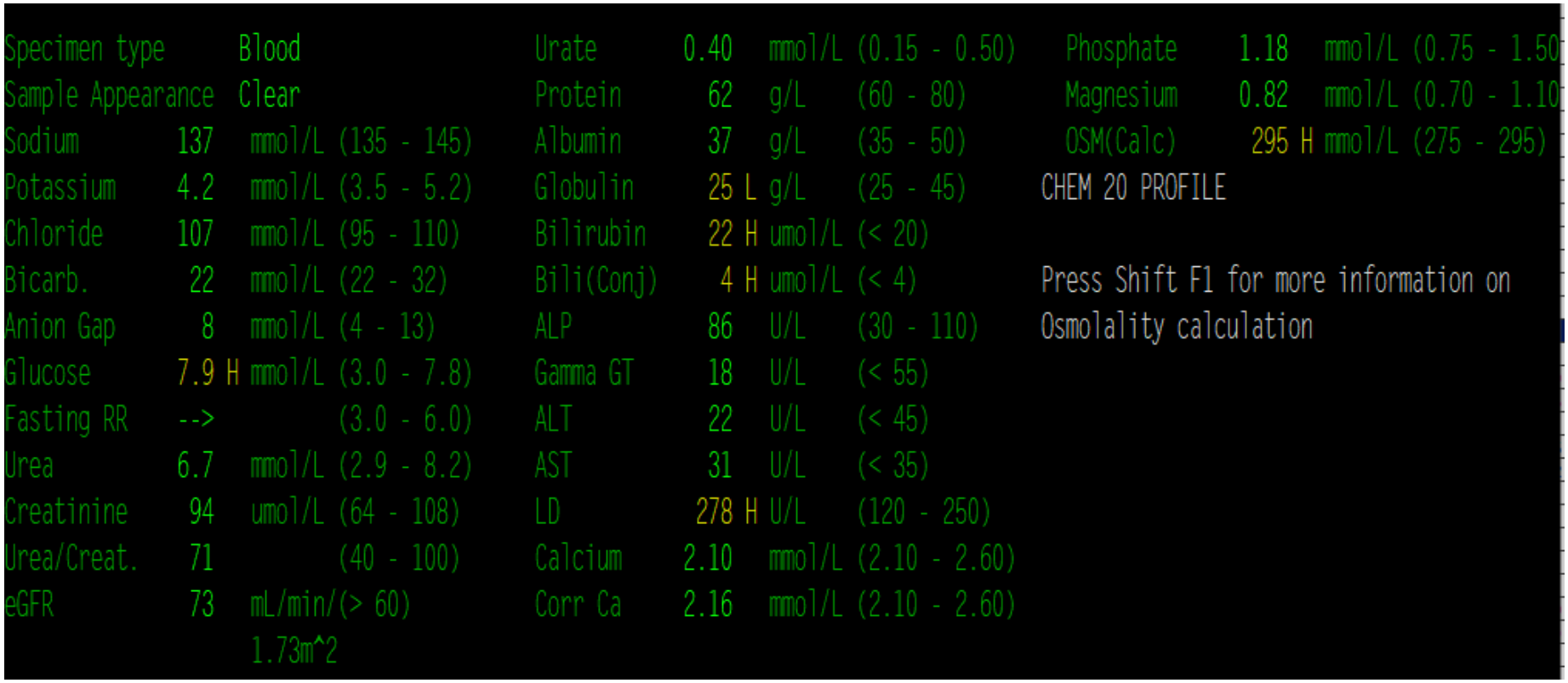
**FBC**

```
Diff: Automated    Specimen: Blood
Hgb :  113       WBC    :  5.8
PLT :  260               :
RBC : 4.16       HCT    : 0.37
MCV :   89       MCH    : 27.2 L
RDW :            MCHC   :          Press shift-insert to view reference ranges
Neut  ( 64  %):  3.68
Lymph ( 22  %):  1.27
Mono  ( 12  %):  0.66
Eosin (  2  %):  0.10
Baso  (  1  %):  0.04
NRBC          /100 WBC
```

**Coagulation profile**

```
GENERAL COAGULATION (page 1 of 2)       Specimen: Blood
INR                          3.2 H
Prothrombin Time              37 H
```

## Chem20



| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Specimen type | | Blood | | Urate | 0.40 | mmol/L | (0.15 - 0.50) | Phosphate | 1.18 | mmol/L | (0.75 - 1.50 |
| Sample Appearance | | Clear | | Protein | 62 | g/L | (60 - 80) | Magnesium | 0.82 | mmol/L | (0.70 - 1.10 |
| Sodium | 137 | mmol/L | (135 - 145) | Albumin | 37 | g/L | (35 - 50) | OSM(Calc) | 295 H | mmol/L | (275 - 295) |
| Potassium | 4.2 | mmol/L | (3.5 - 5.2) | Globulin | 25 L | g/L | (25 - 45) | CHEM 20 PROFILE | | | |
| Chloride | 107 | mmol/L | (95 - 110) | Bilirubin | 22 H | umol/L | (< 20) | | | | |
| Bicarb. | 22 | mmol/L | (22 - 32) | Bili(Conj) | 4 H | umol/L | (< 4) | Press Shift F1 for more information on | | | |
| Anion Gap | 8 | mmol/L | (4 - 13) | ALP | 86 | U/L | (30 - 110) | Osmolality calculation | | | |
| Glucose | 7.9 H | mmol/L | (3.0 - 7.8) | Gamma GT | 18 | U/L | (< 55) | | | | |
| Fasting RR | --> | | (3.0 - 6.0) | ALT | 22 | U/L | (< 45) | | | | |
| Urea | 6.7 | mmol/L | (2.9 - 8.2) | AST | 31 | U/L | (< 35) | | | | |
| Creatinine | 94 | umol/L | (64 - 108) | LD | 278 H | U/L | (120 - 250) | | | | |
| Urea/Creat. | 71 | | (40 - 100) | Calcium | 2.10 | mmol/L | (2.10 - 2.60) | | | | |
| eGFR | 73 | mL/min/1.73m^2 | (> 60) | Corr Ca | 2.16 | mmol/L | (2.10 - 2.60) | | | | |