

## RECOMMENDED ORDER OF DRAW

### POLICY STATEMENT

All PathWest Laboratory Medicine WA (LMWA) specimen collectors will collect blood sample tubes in a recommended order of draw to avoid cross contamination of additives between tubes (see Appendix A and B).

### INTENT

To provide clarity and understanding to PathWest collection staff about the correct order of draw to be used when collecting blood samples while avoiding possible test error due to cross contamination of the sample by tube additives.

### SCOPE

Appendix A of the policy applies to all PathWest staff performing phlebotomy collections. Appendix B is provided to external clients who request the PathWest policy be used in their clinical setting. Appendix C provides a combined tube guide and order of draw to ward staff. Appendices can be found at:

<http://pathwest.health.wa.gov.au/HealthProfessionals/Pages/Collection-Guides.aspx>

### RESPONSIBILITIES

#### Employee

- Ensure they are familiar with the Order of Draw policy and how to access electronic or hardcopy information prior to performing specimen collection.
- To collect blood samples in the correct order prescribed by the Recommended Order of Draw policy to avoid cross contamination of additives between tubes.
- Read, sign and date document updates to acknowledge understanding of changes or amendments to the Order of Draw policy and forward acknowledgement to manager.

#### Pathology Specimen Collection Coordinator/Medical Scientist in Charge

- Ensure all staff have electronic or hardcopy access to the policy.
- Ensure all staff receive training and comply with the PathWest LMWA Recommended Order of Draw policy when collecting blood samples.
- Ensure the recommended order of draw is included in the staff annual competency assessment and records.
- Ensure all superseded documentation is replaced with the current version and staff are notified of any changes.













#### Document Author

- Undertake regular review, update documentation and maintain records of the notification date and the list of sites to which the documents are distributed.

#### Marketing


- Notify and inform external clients of changes to the policy including the distribution of updated documentation pertaining to the PathWest Recommended Order of Draw (Appendix A or Appendix C)
- Maintain register of external clients, including records for notification of updates i.e. date, reason for contact and name of PathWest staff member responsible for notifying clients.

**APPENDIX A**  
**PathWest Recommended Order of Draw**

Recommended Order of Draw	Cap Colour(s)
<b>Blood Cultures</b>	
<b>Sodium Citrate*</b>	
<b>Sodium Citrate (ESR tube)</b> N.B can be collected at the end of the draw as tests performed on this tube are not compromised by other additives.	
<b>ACD</b>	
<b>Serum</b> with or without clot activator, with or without gel	
<b>Rapid Serum Tube (RST)</b> N.B. For use in Regional labs only	
<b>Heparin</b> with or without gel plasma separator	
<b>QuantifERON :TB Gold Plus</b> Cellestis QuantifERON In Tube vials	 Order of collection for Quantiferon tubes: Grey, Green, Yellow Purple
<b>EDTA</b> with or without gel separator	
<b>PTH</b> (EDTA with gel)	
<b>Trace metals EDTA</b> If collecting for Chromium, Zinc and Cobalt, collect separately using a new luer adapter to avoid contamination	
<b>Fluoride Oxalate</b>	

\* Use of a winged collection set requires the collection of a discard tube if the first tube to be collected is a blue top Sodium Citrate tube. This discard tube will prime the tubing of the collection set and ensure that the correct anticoagulant/blood ratio is maintained. The discard tube should be a non-additive or light blue coloured tube and need not be filled.

**Collection details for blood gas syringes (not part of the order of draw):**

<p><b>Lithium Heparin Gas Syringe</b>                  For arterial / venous blood gas testing                  Collect separately using a new luer adapter to avoid contamination.                  Transport at room temperature and test within 30 minutes of collection.</p>	
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**NOTE: This document is uncontrolled after printing and may be subject to change.**






## APPENDIX B






## PathWest Specimen Tube Collection Guide in Recommended Order of Draw





## Notes

1. Blood gas syringes (arterial & venous) should be collected as per the procedure for Zinc collections.
2. **Haemolysis Warning** - Never inject blood into the collection tube through a needle from a syringe.
3. Always mix the blood with anticoagulants by gently inverting the tube 6-8 times.
4. Do **not** shake tubes (exception is Quantiferon)
5. Do **not** top up or transfer blood from one tube to another.
6. **Full patient identification** is required for all pathology specimens (i.e.: **full name and UMRN or full name and DOB**)
7. **This is a guide only. For all Point of Care Tests**, or if you have any queries or require further information, please refer to the PathWest Test Directory or contact your local laboratory prior to sample collection.















TUBE CONTENT	VOLUME	TESTS / DETERMINATIONS	INSTRUCTIONS
 Blood Cultures	8 -10 mls in each container	Blood cultures Investigation of a systemic bacterial or fungal infection	Must be collected using strict aseptic technique. First collect aerobic (grey/blue top) container followed by the anaerobic (purple/pink top)
 Sodium Citrate	2.7 ml	INR, Prothrombin Time, APTT, Coagulation profile. ( 2.0 ml and 1.8 ml size tubes also available)  <b>NB. Please refer to your local testing laboratory for D-Dimer collection requirements.</b>	Fill to the clear fill line marked on the tube. Send to the Lab within 4 hours of collection otherwise separate the centrifuged plasma within 4 hours of collection and transport chilled.
 Sodium Citrate	1.36 ml	Erythrocyte Sedimentation Rate (ESR)  (Note: 1.8 ml tubes are used at regional PathWest laboratories and cannot be forwarded to the QE11 Nedlands laboratory for testing)	Must fill tube to midway between marked lines <b>N.B</b> can be collected at the end of the draw as tests performed on this tube not compromised by other additives.
 ACD	9.0 ml	HLA Typing – please check on line Specimen collection Manual before collection	Store at room temperature.

 Serum (+clot activator CAT)	6.0 ml	Therapeutic drug levels, antibiotic assays and drugs of abuse  <b>Note</b> - a red top non-gel serum tube is preferred when collecting <b>outside</b> the metropolitan area. For collections in the metropolitan area please use a lithium heparin (dark green top – see below)  <b>Lithium assays can only be performed on a serum (red top) tube</b>	Record the time of last dose on the request form and the collection date and time for all antibiotic assays & drug levels
 Serum (+clot activator CAT)  <b>OR</b>  Serum with Gel (+clot activator - SST II)	6.0 ml  -----  8.5 ml	Vitamin B12, Serum Folate For collection requiring Thiamine or Red Cell Folate, additional samples will be required – please refer to EDTA  -----  Syphilis serology , Hepatitis serology, HIV, Viral serology, RRV, Arbovirus, CMV, Murray Valley Encephalitis, Q Fever, EBV, ANF, ASOT, RAST, Anti-DNaseB, TFT (T4 + TSH), PSA, Rheumatoid Factor (RF), , BHCG (Qualitative/Quantitative), Autoantibodies, Protein Electrophoresis, Most Hormones (FSH, LH, E2 etc), IM Screen (Monospot).	-----           N/A
 Rapid Serum Tube (RST)	6.0 ml	The RST tube is for HCG and Troponin when done in Regional labs and is required for PathWest’s new biochemistry instrumentation.	<b>N.B.</b> RST tube may be used for chemistry and immunoassays at participating Regional sites. <b>N.B. Not to be used for Drug levels</b>
 Lithium Heparin (LH)	4.0 ml	Therapeutic drug levels, antibiotic assays and drugs of abuse <b>Note:</b> A dark green top non-gel lithium heparin tube is preferred for samples collected <b>within</b> the metropolitan area. For samples collected outside the metropolitan area please use a serum (red top tube – see above)  <b>Do NOT collect Lithium Heparin (Green top) tubes for Lithium assays.</b> <b>Do NOT collect gel tubes for Troponin or D-Dimer assays</b> Troponin I– Please collect a separate tube. Note:-proBNP– will also require a separate tube if tested in non-metropolitan laboratory.  <b>NB. Please refer to your local testing laboratory for D-Dimer collection requirements.</b>	Record the time of last dose on the request form and the collection date and time for all antibiotic assays & drug levels  <b>Do not spin and</b> separate samples for Troponin, NT-proBNP or D-Dimer.

 Lithium Heparin (LH)  OR   Lithium Heparin Plasma with Gel (LH PST II)	8.0 ml	Biochemistry: UEC, LFT, Cardiac Enzymes, Lipids (Chol/Trig), HDL, Gamma GT, Calcium, Bicarbonate, Magnesium, Lipase, Uric Acid, Phosphate, CRP, Protein.  NOTE: Iron Studies (Fe), Thyroid Studies (TFT), Hormones, PSA, Alcohol and some therapeutic drug levels can also be performed on this tube.	<p><b>Calcium – Avoid venous occlusion during collection by releasing tourniquet ASAP.</b></p> <p>The UEC and Phosphate must be performed within 4 hours of collection otherwise separate the centrifuged plasma within 4 hours of collection then store and transport chilled. Unseparated samples <b>should not</b> be refrigerated but kept at room temperature until analysed.</p>
 EDTA (K2E)	4.0 ml	Haematology; FBC, Hb, Platelets, WCC, Reticulocytes, Glycated Hb (HbA1c), Malarial Parasites, G6PD Screen, Red Cell Folate, Cyclosporin, Hb electrophoresis. Heavy Metal Screen (2 tubes for mercury), FK506. Thiamine  BNP will require EDTA plasma if tested at Nedlands. (Note Pro-BNP can be tested in some non-metropolitan laboratories. Please check with your local laboratory before collection).	<p><b>Do not separate</b></p> <p>For Thiamine – please consult your local laboratory for collection requirements.</p> <p>Separate for BNP</p>
 or	2 x 4.0 ml or 6.0 ml or 9.0 ml	Blood Group, Maternal antibody screen, Rhesus (Rh), Cross-match, Antibody Screen, Group & Hold, FMH, Kleihauer, Direct Coombs Test, Cord blood, PCR Studies	<p>Specimen labels and request forms <b>must</b> have identical patient identification and include the collector's signature, date and time of collection.</p> <p>A formal declaration printed on the request form <b>must</b> be signed by the collector.</p> <p><b>Samples that do not meet these requirements will be discarded.</b></p>
	4 x Cellestis QuantiFERON In Tube vials	First-line Interferon-gamma release assay against tuberculosis-specific antigens, and used for the diagnosis of latent tuberculosis.	<p>For each patient, collect 1ml of blood by venipuncture directly in to each of the QFT-                  Order of collection for Quantiferon tubes:                  Grey, Green, Yellow Purple</p>

 EDTA Gel (K2E)	6.0 ml	<p>Parathyroid Hormone (PTH)</p> <p>If an EDTA Gel tube is not available, please contact your local testing laboratory for further advice.</p>	<p>Do not confuse with PTH related protein (PTHrp) which requires a special tube. Please contact your local laboratory.</p>
 EDTA Trace Metal	6.0 ml	<p>If an EDTA Trace Metal tube is not available, please contact your local testing laboratory for further advice.</p> <p>Zinc <b>must</b> be collected separately using a new luer adapter (see instructions) to reduce the risk of trace metal contamination from rubber bungs in other tubes.</p> <p>If other tubes are required the following instructions must be followed to avoid a double venepuncture:</p>	<p>For collections requiring a Trace Metal tube, please use a Winged Infusion Set (Butterfly Needle) and prepare a second (replacement) luer adapter. The first luer adapter must be changed immediately prior to collecting the Trace Metal tube to prevent contamination. Subsequent tubes can then continue to be collected as per the recommended order of draw.</p> <p>Please consult your local specimen collection team if assistance is required.</p>
 Fluoride	2.0 ml	<p>Glucose only                  (Can be used for Glycated Hb)</p>	<p>Fill only to the mark. Do <b>not</b> separate.</p>
 Lithium Heparin Blood Gas Syringe	1.5 ml	<p>Arterial / Venous Blood Gas testing.</p>	<p>Collect separately using a new luer adapter to avoid contamination. Transport at room temperature and test within 30 minutes of collection.</p>
<p>For all other tests or enquiries, please refer to your local PathWest laboratory or the online PathWest Specimen Collection Manual as special procedures may apply.</p> <p>For transportation requirements, please refer to your local testing laboratory.</p> <p><b>NOTE: This document is uncontrolled after printing and may be subject to change.</b></p>			

## APPENDIX C: Combined Tube Guide / Order of Draw for Ward Staff

Hemogard™ Closure & Tube	TESTS & Information	SPECIAL INSTRUCTIONS
 Blood Cultures	Blood Culture	Fill the Aerobic Bottle [Blue] first, then the Anaerobic Bottle [Purple] Pink top is Pediatric Recommend at least 2 sets from a single site for routine collections, or 3 sets from 3 sites for ?Endocarditis
 Citrate	Coagulation Testing eg INR, APTT, Coag Screen, D Dimer, Protein C/S, ATIII <b>NOTE: BLUE TOPS <u>must</u></b> be filled to the frosted band at the top of the tube or a recollection will be required.	Send to the lab within 4 hours of collection, or spin & separate plasma and transport chilled.
 Sodium Citrate [4NC]	ESR	FILL TO THE TOP
 ACD	HLA Studies	
 Clot Tubes	Therapeutic Drug Levels [Use EDTA for Anti-Rejection Drugs]	NOTE Time & Date of Last Dose, Dosage and Collection Date & Time on the request form
 SST [with Gel]	All Referred Biochemistry [ie tests that take >1day for a result] All Viral Serology Immunology All Hormones	
 RST [with Gel]	The RST tube is for HCG and Troponin when test is assayed in regional laboratories	<b>N.B.</b> RST tube may be used for chemistry and immunoassays at participating Regional sites. <b>N.B. Not to be used for Drug levels</b>
 Heparin	Troponin I & Creatinine [A&E ISTAT <u>ONLY</u> ]	<b>DO NOT SPIN</b> <b>DO NOT REFRIGERATE</b>
 PST [with Gel]	Locally Performed Biochemistry [eg UEC, LFT, Lipids, CK, Lipase, CRP, Ca <sup>2+</sup> , Phos, Mg <sup>2+</sup> , LDH, NT proBNP]	Tests must be performed within 4 hours of collection for valid K <sup>+</sup> , or centrifuge tubes and store as per local guidelines."
 Cellestis QuantIFERON In Tube vials	First-line Interferon-gamma release assay against tuberculosis-specific antigens, and used for the diagnosis of latent tuberculosis	Order of collection for Quantiferon tubes: Grey, Green, Yellow Purple
 EDTA	Blood Count: FBC, FBP, CBC, WCC, Hb, Plt Glycated Hb: HbA <sub>1c</sub> Malaria Blood Lead & Other Heavy Metals Anti Rejection Drugs [eg Tacrolimus, Sirolimus]	Do not separate
 or EDTA For crossmatch	Cross Matching and all related blood bank tests [eg Group & Hold, antibody screening, blood group] <b>REMINDER: <u>Minimum</u> labelling for TM is FULL NAME &amp; DOB, TIME &amp; DATE of COLLECTION, and COLLECTORS SIGNATURE/ INITIALS on both form &amp; tube. The signature/Initials on the tube and form must match</b>	<b>TUBE <u>MUST</u> BE SIGNED &amp; HAVE TIME + DATE OF COLLECTION ON IT.</b> <b>UNSIGNED TUBES WILL BE DISCARDED AND A RECOLLECTION REQUIRED.</b>
 Fluoride Oxalate	Blood Sugar	Fill to halfway mark
 Blood Gas Syringe	Venous or Arterial Blood Gases For venous /arterial blood gas testing.	Collect separately using a new luer adapter to avoid contamination. Transport at room temperature and test within 30 minutes of collection.

SPECIMENS MUST BE LABELLED WITH PATIENTS SURNAME, FIRST NAME AND DATE OF BIRTH.

MIX ALL TUBES THOROUGHLY BY GENTLE INVERSION 5 – 6 TIMES.

FOR ANY OTHER TESTS PLEASE CONTACT THE LABORATORY

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