

Reflex Testing

Introduction

General Laboratory Reflex Testing

Blood Bank and Coagulation Reflex Testing

Microbiology Reflex Testing

Introduction

Diagnostic Laboratory Services offers medically necessary reflex testing to facilitate effective and efficient patient care while remaining compliant with state and federal regulations governing the ordering of laboratory tests.

Reflexed tests are any test that automatically results in the order of one or more secondary tests based on preset criteria applied to the initial test. The secondary tests are almost always an additional charge above the initial test. When ordering a reflexed test, you must consider whether the secondary tests are medically necessary for the specific patient and for the specific situation in which the order is placed. If you consider the secondary tests unnecessary, order the initial test **without** the reflex.

Certain reflex testing has been predetermined based on specific criteria accepted as standard-of-care by the medical community. These tests will always reflex because the initial test result is not useful without the reflex test result and, therefore, individual components may not be available for ordering.

General Laboratory Reflex Testing

Order Code	Test Name
652	UA, Complete, w/ Reflex to C&S If dipstick is positive for leukocyte and/or nitrites or the microscopic shows WBC >5/hpf and/or bacteria >moderate, Urine Culture is performed.
637R	UA, Micro Only w/ Reflex to C&S If the microscopic shows WBC >5/hpf and/or bacteria >moderate, Urine Culture is performed.
636R	UA, w/o Micro, w/ Reflex to Microalb If urine protein is negative, microalbumin is performed.
634	Urine Screen w/ Reflex to C&S If dipstick is positive for leukocyte and/or nitrites, Urine Culture is performed.
142R	Cholesterol, Reflex to Lipid Profile If Cholesterol is >200 mg/dl, Lipid Profile is performed.
150R	CK-Total, Reflex to Troponin I Male: If Total CK is >308 IU/L, Troponin I is performed. Female: If Total CK is >192 IU/L, Troponin I is performed.
380R	TSH, w/ Reflex to Free T4 If TSH is <0.28 or >4.02, Free T4 is performed.
505R	PSA, Screen, w/ Reflex to Free PSA If Total PSA is 2.5 to 10.0 mg/ml, Free PSA is performed.
505RD	PSA, Diagnostic, w/ Reflex to Free PSA If Total PSA is 2.5 to 10.0 mg/ml, Free PSA is performed.
450R	HCG, Qual., Reflex to Quant. If hCG is positive, Quantitative hCG is performed.

502R	Hepatitis A Antiody, Reflex to IgM If total HAV Ab is positive, HAV IgM is performed.
839	HIV 1/2 Ab, Reflex to Western Blot If HIV Antibody is positive, Western Blot is performed.
411R	Serum Protein Electrophoresis Reflex to Immunofixation (SPE Reflex to IFE) If serum protein electrophoresis shows an atypical (gamma, beta, alpha-2) protein suggestive of a monoclonal protein and/or a monoclonal protein is present (gamma, beta, alpha-2 region), Immunofixation is performed.
59	VDRL, CSF If VDRL is reactive, sent to Hawaii Department of Health for confirmation.
509	VDRL, Serum If VDRL is reactive, sent to Hawaii Department of Health for confirmation.
695	RPR If RPR is reactive, sent to Hawaii Department of Health for confirmation.

Blood Bank and Coagulation Reflex Testing

Order Code	Test Name
13	Blood Group and Rh If there is a discrepancy in Blood Group and/or Rh type, the discrepancy will be investigated. Additional tests may include Antibody Screen and Direct Antiglobulin Test. See below for reflex testing if these additional tests are positive.
14	Antibody Screen If Antibody Screen is positive, Antibody Identification (ID) is performed. Additional tests may include: Antibody Identification Antibody ID (Absorption) Antibody ID (Inhibition) Antibody ID (Enzyme) Antibody ID (Special – Reference lab) RBC Antigens (1AG – 8AG) Rh Phenotype, Complete Direct Antiglobulin Test (IgG and C3) Antibody Titer
18	Direct Antiglobulin Test (IgG and C3) A positive Direct Antiglobulin Test will be further characterized to determine if it is IgG, complement or both. Additional tests may include Direct Antiglobulin Test (IgG), Direct Antiglobulin Test (C3), Antibody ID (Elution).
343	Lupus Anticoagulant Assay If no PT/PTT ordered, PT/PTT is performed. If only PTT ordered, PT is performed. If only PT ordered, PTT is performed. If LA screen is abnormal, LA confirm test is performed. If PT or PTT and LA screen are abnormal, LA screen mix test is performed. If LA screen is abnormal and LA confirm test does not correct, LA confirm mix test is performed.
5421	Inhibitor Screen, 1:1 mix If no PT/PTT ordered, PT/PTT is performed. If only PTT ordered, PT is performed. If only PT ordered, PTT is performed.

	If PT is abnormal, PT mix test is performed. If PTT is abnormal, PTT mix test is performed.
553	Inhibitor Screen, 4:1 mix If no PT/PTT ordered, PT/PTT is performed. If only PTT ordered, PT is performed. If only PT ordered, PTT is performed. If PT is abnormal, PT mix, incubated PT, and incubated PT mix is performed. If PTT is abnormal, PTT mix, incubated PTT, and incubated PTT mix is performed.

Microbiology Reflex Testing

Order Code	Test Name
93	Lower Resp Tract Cult w/Gram Stain <ul style="list-style-type: none"> • If growth present, pathogens are identified and sensitivities done on each pathogen. All IDs and sensitivities are charged. (Work-ups limited to six isolates.) • ID test code per isolate. • If unable to identify isolate, identification by 16S rRNA sequencing is performed. • If isolate identified as Staph aureus, and patient is an inpatient, an "MRSA, Rapid Test" may be done (dependent on sufficient growth). • Sensitivity test code per isolate (dependent on method used). <ul style="list-style-type: none"> Agar Dilution method Disk method Microtiter MIC method • If Staph aureus sensitivity shows Erythromycin Resistant/Clindamycin Sensitive pattern, a "D-Test for Clindamycin Resistance" will be done. <ul style="list-style-type: none"> Disk method
251	Respir. Virus Cult, Rapid/Reflex ID If screen culture positive, further testing (for ID) to be done against 7 viruses.
302	E. coli O157 Stool Culture <ul style="list-style-type: none"> • If growth suspicious for E. coli O157 is present, identification is done and charged if growth is identified as E. coli O157. • ID test code per isolate.
308	Vibrio Stool Culture <ul style="list-style-type: none"> • If growth suspicious for Vibrio is present, identification is done and charged if growth is identified as Vibrio sp. • ID test code per isolate.
311	Yersinia Stool Culture <ul style="list-style-type: none"> • If growth suspicious for Yersinia is present, identification is done and charged if growth is identified as Yersinia sp. • ID test code per isolate
614	Organism ID: Uricult <ul style="list-style-type: none"> • If growth present, identifications are done on predominant and/or significant organisms and sensitivities are also done if these organisms are pathogens. All IDs and sensitivities are charged. Culture itself is not charged as these are submitted as pre-cultured specimens, but there will be a handling fee for mixed cultures. • ID test code per isolate. • If isolate identified as Staph aureus, and patient is an inpatient, an "MRSA, Rapid Test" may be done (dependent on sufficient growth). • Sensitivity test code per isolate (dependent on method used). <ul style="list-style-type: none"> Agar Dilution method

	<p>Disk method Microtiter MIC method</p> <ul style="list-style-type: none"> • If Staph aureus sensitivity shows Erythromycin Resistant/Clindamycin Sensitive pattern, a "D-Test for Clindamycin Resistance" will be done. <p>Disk method</p>
616	<p>Throat Culture</p> <ul style="list-style-type: none"> • If beta strep present, further identification is done and charged. • ID test code per isolate.
618	<p>MRSA Culture Screen</p> <ul style="list-style-type: none"> • If growth suspicious for Staph species is present, identification is done and charged if growth is identified as Methicillin Resistant Staph Aureus. • ID test code per isolate.
619	<p>Blood Culture</p> <ul style="list-style-type: none"> • All growth is identified and charged. Sensitivities are charged on all growth for which susceptibility testing standards are available. • ID test code per isolate. • ID test code per anaerobic isolate. • If unable to identify isolate, identification by 16S rRNA sequencing is performed. • If isolate identified as Staph aureus, an "MRSA, Rapid Test" may be done (dependent on sufficient growth). • Sensitivity test code per isolate (dependent on method used). <ul style="list-style-type: none"> Agar Dilution method Disk method Microtiter MIC method • If Staph aureus sensitivity shows Erythromycin Resistant/Clindamycin Sensitive pattern, a "D-Test for Clindamycin Resistance" will be done. <p>Disk method</p>
620	<p>CSF Culture & Gram Stain</p> <ul style="list-style-type: none"> • All growth is identified and charged. Sensitivities are charged on all growth for which susceptibility testing standards are available. • ID test code per isolate. • ID test code per anaerobic isolate. • If unable to identify isolate, identification by 16S rRNA sequencing is performed. • If isolate identified as Staph aureus, and patient is an inpatient, an "MRSA, Rapid Test" may be done (dependent on sufficient growth). • Sensitivity test code per isolate (dependent on method used). <ul style="list-style-type: none"> Agar Dilution method Disk method Microtiter MIC method • If Staph aureus sensitivity shows Erythromycin Resistant/Clindamycin Sensitive pattern, a "D-Test for Clindamycin Resistance" will be done. <p>Disk method</p>
621	<p>Anaerobic Culture</p> <ul style="list-style-type: none"> • If growth present, identifications are done and charged on all anaerobic isolates. • ID test code per isolate.
622	<p>Stool Culture</p> <ul style="list-style-type: none"> • If growth suspicious for <i>Salmonella</i>, <i>Shigella</i> and <i>Campylobacter</i> is present, identification is done and charged if growth is identified as a stool pathogen. • ID test code per isolate. • Upon receipt in lab, if stool is observed as being bloody, an E. coli O157 culture is added if not already requested.

624	<p>Miscellaneous Culture</p> <ul style="list-style-type: none"> • If growth present, identifications are done and charged according to source type. Sensitivities are done and charged on pathogens. (Work-ups limited to three isolates.) • ID test code per isolate. • ID test code per anaerobic isolate. • If unable to identify isolate and from a critical source, identification by 16S rRNA sequencing is performed. • If isolate identified as Staph aureus, and patient is an inpatient, an "MRSA, Rapid Test" may be done (dependent on sufficient growth). • Sensitivity test code per isolate (dependent on method used). <ul style="list-style-type: none"> Agar Dilution method Disk method Microtiter MIC method • If Staph aureus sensitivity shows Erythromycin Resistant/Clindamycin Sensitive pattern, a "D-Test for Clindamycin Resistance" will be done. <ul style="list-style-type: none"> Disk method
625	<p>GC Screen</p> <ul style="list-style-type: none"> • If growth suspicious for GC is present, identification is done and charged if growth is identified as GC. • ID test code per isolate.
626	<p>Urine Culture</p> <ul style="list-style-type: none"> • If growth present, identifications are done on predominant and/or significant organisms and sensitivities are also done if these organisms are pathogens. All IDs and sensitivities are charged. • ID test code per isolate. • If isolate identified as Staph aureus, and patient is an inpatient, an "MRSA, Rapid Test" may be done (dependent on sufficient growth). • Sensitivity test code per isolate (dependent on method used). <ul style="list-style-type: none"> Agar Dilution method Disk method Microtiter MIC method • If Staph aureus sensitivity shows Erythromycin Resistant/Clindamycin Sensitive pattern, a "D-Test for Clindamycin Resistance" will be done. <ul style="list-style-type: none"> Disk method
639	<p>Organism ID/Sensitivity, Aerobic</p> <ul style="list-style-type: none"> • If growth present, identifications are done and charged according to source type. Sensitivities are done and charged on pathogens. (Work-ups limited to three isolates.) Culture itself is not charged as these are submitted as pre-cultured specimens, but a handling fee will be assessed if mixed isolates are received. • ID test code per isolate. • If unable to identify isolate and from a critical source, identification by 16S rRNA sequencing is performed. • If isolate identified as Staph aureus, and patient is an inpatient, an "MRSA, Rapid Test" may be done (dependent on sufficient growth). • Sensitivity test code per isolate (dependent on method used). <ul style="list-style-type: none"> Agar Dilution method Disk method Microtiter MIC method • If Staph aureus sensitivity shows Erythromycin Resistant/Clindamycin Sensitive pattern, a "D-Test for Clindamycin Resistance" will be done. <ul style="list-style-type: none"> Disk method

645	<p>Fungus Culture</p> <ul style="list-style-type: none"> • All fungal isolates are identified and charged. • ID test code per isolate, yeast. • ID test code per isolate, mold. • Dimorphic fungi (e.g. <i>C. immitis</i>, <i>Blastomyces</i>, <i>Histoplasma</i>) to be reflexed to a DNA Probe Test.
646	<p>AFB Blood/Bone Marrow</p> <p>If growth is isolated, further testing is done as follows:</p> <ul style="list-style-type: none"> • TB DNA probe is done. • If TB DNA probe is positive, TB sensitivity is done. NOTE: sensitivity is charged for each of 4 drugs tested. • If TB sensitivity is resistant to 1 drug: Isolate is referred to reference lab for single drug MIC testing. If drug is Rifampin, isolate is referred to reference lab for secondary drug panel. If drug is PZA, isolate is referred to reference lab for Mycobacterial MIC testing. • If TB sensitivity is resistant to 2 or more drugs: Isolate is referred to reference lab for primary drug panel. If isolate is resistant to Rifampin, isolate is also referred for a secondary drug panel. • If TB DNA probe is negative, MAI DNA probe is done. • If MAI DNA probe is positive, sample referred to reference lab for sensitivity testing. • If MAI DNA probe is negative, sample referred to reference lab for further ID/sensitivity testing.
651	<p>Acid Fast Smear and Culture</p> <p>If growth is isolated, further testing done as follows:</p> <ul style="list-style-type: none"> • TB DNA probe is done. • If TB DNA probe is positive, TB sensitivity is done. NOTE: sensitivity is charged for each of 4 drugs tested. • If TB sensitivity is resistant to 1 drug: Isolate is referred to reference lab for single drug MIC testing. If drug is Rifampin, isolate is referred to reference lab for secondary drug panel. If drug is PZA, isolate is referred to reference lab for Mycobacterial MIC testing. • If TB sensitivity is resistant to 2 or more drugs: Isolate is referred to reference lab for primary drug panel. If isolate is resistant to Rifampin, isolate is also referred for a secondary drug panel. • If TB DNA probe is negative, MAI DNA probe is done. • If MAI DNA probe is positive, sample referred to reference lab for sensitivity testing. • If MAI DNA probe is negative, sample referred to reference lab for further ID/sensitivity testing.
661	<p>VRE Culture Screen</p> <ul style="list-style-type: none"> • If growth suspicious for Enterococcus is present, identification is done and charged if growth is identified as Vancomycin Resistant Enterococcus. • ID test code per isolate.

662	<p>Acid Fast Culture Only</p> <p>If growth is isolated, further testing done as follows:</p> <ul style="list-style-type: none"> • TB DNA probe is done. • If TB DNA probe is positive, TB sensitivity is done. NOTE: sensitivity is charged for each of 4 drugs tested. • If TB sensitivity is resistant to 1 drug: Isolate is referred to reference lab for single drug MIC testing. If drug is Rifampin, isolate is referred to reference lab for secondary drug panel. If drug is PZA, isolate is referred to reference lab for Mycobacterial MIC testing. • If TB sensitivity is resistant to 2 or more drugs: Isolate is referred to reference lab for primary drug panel. If isolate is resistant to Rifampin, isolate is also referred for a secondary drug panel. • If TB DNA probe is negative, MAI DNA probe is done. • If MAI DNA probe is positive, sample referred to reference lab for sensitivity testing. • If MAI DNA probe is negative, sample referred to reference lab for further ID/sensitivity testing.
665	<p>Lower Respiratory Tract Culture (Client performs gram stain.)</p> <ul style="list-style-type: none"> • If growth present, pathogens are identified and sensitivities done on each pathogen. All IDs and sensitivities are charged. (Work-ups limited to six isolates.) • ID test code per isolate. • If unable to identify isolate, identification by 16S rRNA sequencing is performed. • If isolate identified as Staph aureus, and patient is an inpatient, an "MRSA, Rapid Test" may be done (dependent on sufficient growth). • Sensitivity test code per isolate (dependent on method used). Agar Dilution method Disk method Microtiter MIC method • If Staph aureus sensitivity shows Erythromycin Resistant/Clindamycin Sensitive pattern, a "D-Test for Clindamycin Resistance" will be done. Disk method
666	<p>CSF Culture (Client performs gram stain.)</p> <ul style="list-style-type: none"> • All growth is identified and charged. Sensitivities are charged on all growth for which susceptibility testing standards are available. • ID test code per isolate. • If unable to identify isolate, identification by 16S rRNA sequencing is performed. • If isolate identified as Staph aureus, and patient is an inpatient, an "MRSA, Rapid Test" may be done (dependent on sufficient growth). • Sensitivity test code per isolate (dependent on method used). Agar Dilution method Disk method Microtiter MIC method • If Staph aureus sensitivity shows Erythromycin Resistant/Clindamycin Sensitive pattern, a "D-Test for Clindamycin Resistance" will be done. Disk method
4105	<p>Bone Marrow Culture</p> <ul style="list-style-type: none"> • All growth is identified and charged. Sensitivities are charged on all growth for which susceptibility testing standards are available. • ID test code per isolate. • If unable to identify isolate, identification by 16S rRNA sequencing is performed.

	<ul style="list-style-type: none"> • If isolate identified as Staph aureus, and patient is an inpatient, an "MRSA, Rapid Test" may be done (dependent on sufficient growth). • Sensitivity test code per isolate (dependent on method used). Agar Dilution method Disk method Microtiter MIC method • If Staph aureus sensitivity shows Erythromycin Resistant/Clindamycin Sensitive pattern, a "D-Test for Clindamycin Resistance" will be done. Disk method
4106	<p>Catheter Tip Culture</p> <ul style="list-style-type: none"> • If growth present, identifications are done and charged on all isolates. Sensitivities are done and charged on all pathogens and all non-pathogens showing a significant colony count. (Work-ups limited to six isolates.) • ID test code per isolate. • If unable to identify isolate, identification by 16S rRNA sequencing is performed. • If isolate identified as Staph aureus, and patient is an inpatient, an "MRSA, Rapid Test" may be done (dependent on sufficient growth). • Sensitivity test code per isolate (dependent on method used). Agar Dilution method Disk method Microtiter MIC method • If Staph aureus sensitivity shows Erythromycin Resistant/Clindamycin Sensitive pattern, a "D-Test for Clindamycin Resistance" will be done. Disk method
4533	<p>Organism ID – Fungal</p> <ul style="list-style-type: none"> • All fungal isolates are identified and charged. Culture itself is not charged as these are submitted as pre-cultured specimens, but a handling fee will be assessed if mixed isolates are received. • ID test code per isolate, yeast. • ID test code per isolate, mold. • Dimorphic fungi (e.g. C. immitis, Blastomyces, Histoplasma) to be reflexed to a DNA Probe Test.
4534	<p>Organism ID – AFB</p> <ul style="list-style-type: none"> • All mycobacterial isolates are identified and charged. Culture itself is not charged as these are submitted as pre-cultured specimens, but a handling fee will be assessed if mixed isolates are received. • If growth is isolated, further testing is done as follows: • TB DNA probe is done. • If TB DNA probe is positive, TB sensitivity is done. NOTE: sensitivity is charged for each of 4 drugs tested. • If TB sensitivity is resistant to 1 drug: Isolate is referred to reference lab for single drug MIC testing. If drug is Rifampin, isolate is referred to reference lab for secondary drug panel. If drug is PZA, isolate is referred to reference lab for Mycobacterial MIC testing. • If TB sensitivity is resistant to 2 or more drugs: Isolate is referred to reference lab for primary drug panel. If isolate is resistant to Rifampin, isolate is also referred for a secondary drug panel. • If TB DNA probe is negative, MAI DNA probe is done. • If MAI DNA probe is positive, sample referred to reference lab for sensitivity testing. • If MAI DNA probe is negative, sample referred to reference lab for further ID/sensitivity testing.

4535	Organism ID – Anaerobic <ul style="list-style-type: none"> • All anaerobic isolates are identified and charged. Culture itself is not charged as these are submitted as pre-cultured specimens, but a handling fee will be assessed if mixed isolates are received. • ID test code per isolate. • If unable to identify isolate, identification by 16S rRNA sequencing is performed.
5647R	Influenza A/B Antigen, Reflex RT-PCR <ul style="list-style-type: none"> • If Influenza A negative and Influenza B negative, Influenza A/B Real-Time PCR will be performed.
6233	Fungus Culture, Hair/Nail/Skin <ul style="list-style-type: none"> • All fungal isolates are identified and charged. • ID test code per isolate, yeast. • ID test code per isolate, mold. • Dimorphic fungi (e.g. C. immitis, Blastomyces, Histoplasma) to be reflexed to a DNA Probe Test.
N/A	Unusually resistant or atypical sensitivity patterns <ul style="list-style-type: none"> • Supplemental testing may be performed (test code dependent on method used). • Agar diffusion method, per plate. • Microtiter MIC method. • Referral to a Reference Laboratory for Broth Dilution or confirmatory testing.
N/A	Unusual or difficult identifications <ul style="list-style-type: none"> • Supplemental testing may be performed (test code dependent on method used). • Bacterial ID by DNA Sequencing. • Referral to a Reference Laboratory (dependent on whether isolate is a bacteria, yeast, mold or AFB).

Revised 6/2011