

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
59	VDRL, CSF If VDRL is reactive, sent to Hawaii Department of Health for confirmation.
142R	Cholesterol, Reflex to Lipid Profile If Cholesterol is >200 mg/dl, Lipid Profile is performed.
380R	TSH, w/ Reflex to Free T4 If TSH is <0.28 or >4.02, Free T4 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.
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.
634	Urine Screen w/ Reflex to C&S If dipstick is positive for leukocyte and/or nitrites, Urine Culture is performed.
636R	UA, w/o Micro, w/ Reflex to Albumin, UR If urine protein is negative, quantitative Urine Albumin 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.
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.
695R	RPR, Reflex to Titer If RPR is reactive, Titer is performed and sent to DOH for confirmation.
915R	Lipid Profile w/Reflex LDL-D If Triglycerides is >400 mg/dL, Direct LDL is performed.
4983R	Cryptococcus Ag, CSF, Rflx Culture If CSF Cryptococcus Antigen testing is positive, Fungus Culture is performed.
5688	HIV-1/2 Ag/Ab with Reflex If HIV 1/2 Ag/Ab is positive, Geenius HIV 1/2 Supplemental assay is performed.
6853R	Milk, IgE, Reflex Component Panel If Milk Specific IgE is greater than or equal to 0.1 kU/L, Milk Component Panel is performed.
6866R	Peanut, IgE, Reflex Component Panel If Peanut Specific IgE is greater than or equal to 0.1 kU/L, Peanut Component Panel is performed.
6898R	Egg White, IgE, Reflex Comp. Panel If Egg White Specific IgE is greater than or equal to 0.1 kU/L, Egg Component Panel is performed.

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).

5486	Coagulation Mixing Study 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. If PTT is abnormal, Thrombin Time is performed. If Thrombin Time is abnormal, Fibrinogen is performed.
6674	Lupus Anticoagulant DRVVT If no PT/PTT ordered, PT/PTT is performed. If only PTT ordered, PT is performed. If only PT ordered, PTT is performed. If DRVV Screen Ratio is abnormal, DRVV Confirm Ratio is performed. If DRVV Screen Ratio is abnormal, DRVVT Mix is performed. If DRVV Screen Ratio is abnormal, Thrombin Time is performed. If PTT is abnormal, Thrombin Time is performed.

Microbiology Reflex Testing

Order Code	Test Name
N/A	Unusually resistant or atypical sensitivity patterns • 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 • 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).
93	Lower Resp Tract Cult w/Gram Stain • 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" is done. - Disk method

308	Vibrio Stool Culture • 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 • If growth suspicious for Yersinia is present, identification is done and charged if growth is identified as Yersinia sp. • ID test code per isolate
616	Throat Culture • If beta strep present, further identification is done and charged. • ID test code per isolate.
618	MRSA Culture Screen • 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	Blood Culture • 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). - Agar Dilution method - Disk method - Microtiter MIC method • If Staph aureus sensitivity shows Erythromycin Resistant/Clindamycin Sensitive pattern, a "D-Test for Clindamycin Resistance" is done. - Disk method
620	CSF Culture & Gram Stain • 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). - Agar Dilution method - Disk method - Microtiter MIC method • If Staph aureus sensitivity shows Erythromycin Resistant/Clindamycin Sensitive pattern, a "D-Test for Clindamycin Resistance" is done. - Disk method
621	Anaerobic Culture • If growth present, identifications are done and charged on all anaerobic isolates. • ID test code per isolate.
624	Miscellaneous Culture • 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). - Agar Dilution method - Disk method - Microtiter MIC method • If Staph aureus sensitivity shows Erythromycin Resistant/Clindamycin Sensitive pattern, a "D-Test for Clindamycin Resistance" is done. - Disk method
625	GC Screen • If growth suspicious for GC is present, identification is done and charged if growth is identified as GC. • ID test code per isolate.
626	Urine Culture • 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). - Agar Dilution method - Disk method - Microtiter MIC method • If Staph aureus sensitivity shows Erythromycin Resistant/Clindamycin Sensitive pattern, a "D-Test for Clindamycin Resistance" is done. - Disk method
626C	Cath Urine Culture • 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). - Agar Dilution method - Disk method - Microtiter MIC method • If Staph aureus sensitivity shows Erythromycin Resistant/Clindamycin Sensitive pattern, a "D-Test for Clindamycin Resistance" is done. - Disk method
639	Organism ID/Sensitivity, Aerobic • 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). - Agar Dilution method - Disk method - Microtiter MIC method • If Staph aureus sensitivity shows Erythromycin Resistant/Clindamycin Sensitive pattern, a "D-Test for Clindamycin Resistance" is done. - Disk method
645	Fungus Culture • 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) are sent to a reference lab for confirmatory testing and identification.
646	AFB Blood/Bone Marrow 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, MALDI-TOF identification is done. • If identification by MALDI-TOF is acceptable, sample referred to reference lab for sensitivity testing. • If identification by MALDI-TOF is unacceptable, sample referred to reference lab for further ID/sensitivity testing.
651	Acid Fast Smear and Culture If growth is isolated, further testing 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, MALDI-TOF identification is done. • If identification by MALDI-TOF is acceptable, sample referred to reference lab for sensitivity testing. • If identification by MALDI-TOF is unacceptable, sample referred to reference lab for further ID/sensitivity testing.

661	VRE Culture Screen • 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.
4105	Bone Marrow Culture • 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" is done. - Disk method
4106	Catheter Tip Culture • 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" is done. - Disk method
4533	Organism ID – Fungal • 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) are sent to a reference lab for confirmatory testing and identification.
4534	Organism ID – AFB • 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, MALDI-TOF identification is done. • If identification by MALDI-TOF is acceptable, sample referred to reference lab for sensitivity testing. • If identification by MALDI-TOF is unacceptable, sample referred to reference lab for further ID/sensitivity testing.
4535	Organism ID – Anaerobic • 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.
5512	Genital Culture • If growth present, identifications are done and charged according to source type. Sensitivities are done and charged on pathogens in significant numbers. (Work-ups limited to three isolates.) • ID test code per isolate. • If unable to identify isolate, identification by 16S rRNA sequencing may be 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" is done. - Disk method
5519	Abscess Culture • 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. • If unable to identify isolate, identification by 16S rRNA sequencing may be 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" is done. - Disk method

5521	Aspirate Culture • 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. • If unable to identify isolate, identification by 16S rRNA sequencing may be 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" is done. - Disk method
5535	Wound Culture • 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. • If unable to identify isolate, identification by 16S rRNA sequencing may be 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" is done. - Disk method
5631	Stool Culture for Aeromonas species • If growth suspicious for Aeromonas species is present, identification is done and charged if confirmed as Aeromonas. • ID test code per isolate. • If unable to identify isolate, identification by 16S rRNA sequencing may be performed.
5647R	Influenza A/B Antigen, Reflex RT-PCR If Influenza A negative and Influenza B negative, Influenza A/B Real-Time PCR is performed.
5782R	Direct Grp-A Strep, Reflex Culture If Direct Group-A Strep is negative, Strep Culture is performed.
5823	Prostatitis Culture • If growth present, identifications are done on all organisms with colony counts >1,000 organisms/ml 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). - Agar Dilution method - Disk method

	Microtiter MIC method • If Staph aureus sensitivity shows Erythromycin Resistant/ Clindamycin Sensitive pattern, a "D-Test for Clindamycin Resistance" is done. Disk method
6204R	GBS Screen, DNA NAAT w/Reflex Sensi If GBS Screen is positive, a no charge culture for isolation of GBS for susceptibility testing by Microtiter MIC method is performed.
6222	Stool Culture with Shiga Toxin • If growth suspicious for <i>Salmonella</i>, <i>Shigella</i>, <i>Campylobacter</i>, or <i>E. coli</i> 0157 is present, identification is done and charged if growth is identified as a stool pathogen. • ID test code per isolate.
6233	Fungus Culture, Hair/Nail/Skin • 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>) are sent to a reference lab for confirmatory testing and identification.
7123	C difficile GDH/Toxin reflex NAAT If GDH/Toxin results are discrepant (neg/pos or pos/neg), <i>C.difficile</i> NAAT molecular test is performed.