



Bronson Laboratory Custom Panels and Reflex Testing

Version Number	Change Summary	Effective Date
7	Annual Review	02/11/2025

Bronson Custom Panels and Orders with Reflex Testing	Tests Included in Panels or Orders	Reflex Testing
ABO/Rh	ABO and Rh typing	Women of childbearing age identified as RHD variants or "weak D phenotypes" via serological testing with no previous RHD genotyping on file. Molecular RHD Genotyping sent out to Versiti if RH is <2+.
ABO/RH &Antibody Screen as part of Obstetrics (OB) Package	ABO, RH and Antibody Screen	<p>If antibody screen is positive, then an antibody identification will be performed. If identified antibody is clinically significant, then antibody identification with titer will be performed.</p> <p>If auto control is positive, reflex a polyspecific direct coombs (DAT). If polyspecific DAT is positive, reflex an IgG direct coombs (DAT).</p> <p>An Elution will be reflexed in the following situations:</p> <ul style="list-style-type: none"> • When the patient has received RBCs in the last 28 days AND the IgG DAT is first time positive or increased strength. • When performing an Antibody Identification AND the IgG is first time positive or increased strength.
Acid Fast Bacilli (AFB) Cultures	Acid Fast Bacilli cultures will contain PCR for Mycobacterium tuberculosis complex	Reflex testing not applicable with this order
ADAMTS13 Activity with Reflex Inhibitor Profile, Plasma	ADAMTS13 activity assay and ADAMTS13 interpretation.	Testing begins with the ADAMTS13 activity assay to evaluate the percent activity. If the ADAMTS13 activity is less than 30%, the inhibitor titer and ADAMTS13 profile interpretation will be performed.



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<p>Allergen Component Testing, Peanut, Milk or Egg</p>	<p>Peanut, Egg and Milk</p>	<p>If the whole allergen for Peanut (PEEAL), Milk (MILKAL) or Egg (EGGAL) are positive, the corresponding allergen component profile is reflexively ordered to provide additional diagnostic information.</p> <p>Peanut component allergen panel (Peanut Ara h 1 IgE, Peanut Ara h 2 IgE, Peanut Ara h 3 IgE, Peanut Ara h 8 IgE, and Peanut Ara h 9 IgE)</p> <p>Egg component allergen Panel (Ovomucoid IgE and Ovalbumin IgE)</p> <p>Milk component allergen Panel (casein Ige allergen component, alpha lactalbumin allergen component, beta lactoglobulin allergen component)</p>
<p>Allergen Panel, Childhood</p>	<p>Cat, Mold-Alternaria, Cockroach, Mold-Cladosporium, Codfish, Peanut, Dog, Shrimp, Dust Mite DF, Soybean, Dust Mite DP, Total IgE, Egg White, Walnut, Milk, Wheat and Mouse Urine</p>	<p>If the whole allergen for Peanut, Milk or Egg are positive, the corresponding allergen component profile is reflexively ordered to provide additional diagnostic information.</p> <p>Peanut component allergen panel (Peanut Ara h 1 IgE, Peanut Ara h 2 IgE, Peanut Ara h 3 IgE, Peanut Ara h 8 IgE, and Peanut Ara h 9 IgE)</p> <p>Egg component allergen Panel (Ovomucoid IgE and Ovalbumin IgE)</p> <p>Milk component allergen Panel (casein Ige allergen component, alpha lactalbumin allergen component, beta lactoglobulin allergen component)</p>
<p>Allergen Panel, Food</p>	<p>Almond, Sesame Seed, Cashew, Shrimp, Hazelnut, Soybean, Egg White, Total IgE, Milk, Walnut, Peanut, Wheat, Scallop, Codfish, Salmon, Tuna</p>	<p>If the whole allergen for Peanut, Milk or Egg are positive, the corresponding allergen component profile is reflexively ordered to provide additional diagnostic information.</p> <p>Peanut component allergen panel (Peanut Ara h 1 IgE, Peanut Ara h 2 IgE, Peanut Ara h 3 IgE, Peanut Ara h 8 IgE, and Peanut Ara h 9 IgE)</p> <p>Egg component allergen Panel (Ovomucoid IgE and Ovalbumin IgE)</p> <p>Milk component allergen Panel (casein Ige allergen component, alpha lactalbumin allergen component, beta lactoglobulin allergen component).</p>



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Allergen Panel, Respiratory	Alternaria, Cat, Dust mite(DF & DP), Dog, Roach, Aspergillus, Bermuda Grass, Red Cedar, Cladosporium, Cottonwood, Timothy Grass, Mouse Urine, Mulberry, Nettle, Penicillium, Russian Thistle, Birch, Elm, Maple, Marsh Elder, Ragweed, Oak, Total IGE.	Reflex testing not applicable with this order.
Allergen Panel, Venom	Venom from honey bee, paper wasp, white faced hornet, yellow hornet, yellow jacket	Reflex testing not applicable with this order.
Anaerobe Culture	Anaerobe Culture	Aerobic culture will be added on all orders that do not already have an aerobic culture ordered on the same specimen.
Antibody Identification	Antibody identification	<p>If auto control is positive, a IgG direct coombs (DAT) will be reflexed.</p> <p>An Elution will be reflexed in the following situations:</p> <ul style="list-style-type: none"> • When the patient has received RMCs in the last 28 days AND the IgG DAT is first time positive or increased strength. • When performing an Antibody Identification AND the IgG is first time positive or increased strength.
B-Cell Phenotyping Profile for Immunodeficiency and Immune Competence Assessment, Blood	QN Lymphocyte Subsets: T, B, and NK. Immune Assessment B Cell Subsets, B.	Reflex testing not applicable with this order.
Bilirubin Panel	Total Bilirubin, Direct Bilirubin, Calculated Indirect Bilirubin	Reflex testing not applicable with this order.
Blood Gas and Electrolytes	Includes O2 saturation, pCO2, pH, pO2, calculated CO2 content, base excess, sodium, potassium, chloride and screening hemoglobin.	Reflex testing not applicable with this order.
Blood Gas Electrolytes and Ionized Calcium	Includes O2 saturation, pCO2, pH, pO2, calculated CO2 content, base excess, sodium, potassium, chloride, ionized calcium and screening hemoglobin.	Reflex testing not applicable with this order
Blood Gas Electrolytes, ionized Calcium and Lactic acid	Includes O2 saturation, pCO2, pH, pO2, calculated CO2 content, base excess, sodium, potassium, chloride, ionized calcium, lactic acid and screening hemoglobin.	Reflex testing not applicable with this order
Blood Gas, Arterial	Includes O2 saturation, pCO2, pH, pO2, calculated CO2 content, base excess, and screening hemoglobin.	Carboxyhemoglobin is reported if elevated
Blood Parasite Smear	Provides detection and species identification of malarial and non-malarial blood parasites	Preliminary positive for blood parasite will reflex to Pathologist review to follow for confirmation.



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<p>Body Fluid Cell Count and Differential</p>	<p>Type, volume, color, appearance, red cell count, total nucleated cell count, polymorphonuclear %, mononuclear %, lymphocyte %, eosinophil % and fluid comment</p>	<p>Body fluid specimens that fulfill criteria listed in Pathologist Review</p>
<p>Bone Marrow Analysis</p>	<p>Flow, chromosomes hematologic and pathology (Clot section, Core Biopsy, Aspirate Smear and Peripheral Blood Smear evaluation.)</p> <p>May also include orders for DNA/RNA extract and hold.</p>	<p>All newly diagnosed patients with Acute Myeloid Leukemia, unless otherwise specified by physician. (Bone Marrow or whole blood) Chromosomes Hematologic, appropriate FISH and molecular panels, as approved by the Bronson Molecular guideline document.</p> <p>All newly diagnosed patients with B-Cell Lymphomas with features concerning possible lymphoplasmacytic, unless otherwise specified by physician. MYD88 L265P mutation testing with CXCR4 reflex if positive, on bone marrow aspirate.</p> <p>Bone Marrow samples with clinical indications for possible myeloma: Flow with plasma cells and possibly plasma cell proliferative disorder FISH, either thru MSMRT or individually.</p> <p>Bone marrow to evaluate for MPN. Chromosomes hematologic, flow and appropriate molecular panels, to match with where patient is in Bronson Cancer Center algorithm.</p> <p>Bone marrow to evaluate for MDS. Flow, Chromosomes hematologic; MDS FISH – if chromosomes results have difficulties, DNA possibly RNA extract and hold and/or heme molecular sequencing depending on situation.</p> <p>All Diffuse Large B-cell Lymphoma/other B-cell Lymphoma with aggressive or high grade features, unless otherwise specified by clinician. High grade B-cell FISH, “double hit” FISH.</p> <p>All newly diagnosed patients with Acute Lymphoblastic Leukemia, unless otherwise specified by physician. (Bone Marrow). Chromosomes hematologic, appropriate FISH and/or molecular panels, as approved by the Bronson Molecular guideline document.</p>



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Cardiolipin Antibodies	Anticardiolipin IgG & IgM	Reflex testing not applicable with this order
Celiac Disease Cascade, Celiac Screen	Tissue transglutaminase IgA antibody and gliadin deaminated IgA antibody	If the IgA screen shows low or absent values, Tissue transglutaminase IgG and gliadin deaminated IgG antibody are performed
Clostridium difficile PCR with reflex to toxin A/B	Clostridium difficile target DNA sequence detection by PCR	Positive results will automatically reflex to C. difficile A/B toxin assay testing.
Coagulation Genetic Testing	Factor II (G20210A) and Factor V Leiden (G1691A) mutations	Reflex testing not applicable with this order
Coagulation Inhibitor Screen	Thrombin time, unfractionated heparin Xa, prothrombin time with INR and activated partial thromboplastin time	Potential reflex testing based on initial results: unfractionated heparin Xa with hepzyme, dilute Russell viper venom test, dilute Russell viper venom test (drvvt) with total ratio, drvvt confirm with total ratio, Silica clotting time (sct) screen, sct confirm with total ratio, drvvt screen mix, drvvt confirm mix with total ratio, sct screen mix, sct confirm mix with total ratio.
Complete Blood Count (CBC)	CBC without and with differential are panels offered. White Blood Count, Red Blood Count, Hemoglobin, Hematocrit, Mean Corpuscular Volume, Mean Corpuscular Hemoglobin, Mean Corpuscular Hemoglobin Concentration, Red Cell Distribution width, Platelet Count, Mean Platelet Volume, Nucleated Red Blood Cells, Absolute Nucleated RBC, Differential Type, Polynucleated Neutrophils, Immature Granulocytes, Lymphocytes, Monocytes, Eosinophils, Basophils, Absolute Neutrophils, Absolute Immature Granulocytes, Absolute Lymphocytes, Absolute Eosinophils, Absolute Basophils	Orders for combinations of individual CBC component tests which include a differential will be converted to CBC with differential to ensure adequate specimen quality assessment per policy. Slide review by technologist will be performed when reflexed based on defined criteria, smear review by technologist. In addition, pathology consultation, peripheral smear, will be reflexed based on further defined criteria.
Connective Tissue Disease Cascade	Anti-nuclear antibody (ANA) and Anti-cyclic citrullinated peptide (CCP)	If initial test result of ANA is 1:160 or greater, a reflex order for testing to include titer and pattern will be performed. If ANA titer is greater than or equal to 1:160, DSDNA and extractable nuclear antigen panel is reflexed. The extractable nuclear antigen panel includes chromatin, riboprotein P, Ro (SSA), LA(SSB), centromere, smith, smith-rnp, rnp, scl70, and jo-1.
COVID, Influenza and RSV Panel	SARS-CoV, Influenza A, Influenza B and RSV	Reflex testing not applicable with this order.
Cryoglobulin and Cryofibrinogen panel, Serum and Plasma	Cryoglobulin S and Cryofibrinogen P	If cryoglobulin has a positive result after 1 or 7 days, then immunofixation will be performed at an additional charge. Positive cryoglobulins of 0.1 mL or above of precipitate will be typed once.



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CSF Cell Count and Differential	CSF Character, CSF color, CSF volume, number of tubes, total nucleated cell count, total red blood cell count, % polymorphonuclear cells, % mononuclear cells, % lymphocytes, % eosinophils, CSF comments	Reflex CSF evaluation by Pathologist based on defined criteria.
CSF Cell Count and Differential with Reflex to Flow	CSF Character, CSF color, CSF volume, number of tubes, total nucleated cell count, total red blood cell count, % polymorphonuclear cells, % mononuclear cells, % lymphocytes, % eosinophils, CSF comments, flow	If total nuclear cell count is >5, test will be sent for flow.
Culture, Bacterial, Aerobic	Gram Stain will be performed on all tissue and normally sterile body fluids. Includes preparation, staining, and microscopic examination of the smear, including quantitative evaluation of relevant cells and microorganisms. May include concentration of normally sterile fluids using Cytospin technique. Gram stain is automatically ordered by laboratory on cultures submitted from sputum, Broncho alveolar lavage, sterile body fluids, tissue, all surgically collected specimens, & abscess/pus material	<p>Additional charges for tissue processing and concentration may be added depending on specimen type submitted.</p> <p>Definitive identification and susceptibility testing on all clinically significant pathogens. Includes a semi-quantitative culture of catheter tip.</p>
Culture, Blood	Aerobic and anaerobic bacterial culture for adults aerobic culture for pediatrics, antimicrobial removal culture	<p>Gram stain of all positive cultures, Identification, and susceptibility testing of clinically significant pathogens. All initial positive blood cultures will have Rapid Blood Culture ID PCR performed. Subsequent positive blood cultures do not unless there is a different Gram stain morphology identified.</p> <p>Positive blood cultures reflex to PCR panel to detect <i>Enterococcus faecalis</i>, <i>Enterococcus faecium</i>, <i>Listeria monocytogenes</i>, <i>Staphylococcus</i> species, <i>Staph aureus</i>, <i>Staphylococcus epidermidis</i>, <i>Staphylococcus lugdunensis</i>, <i>Streptococcus</i> species, <i>Strep agalactiae</i>, <i>Strep pneumoniae</i>, <i>Strep pyogenes</i>, <i>Acinetobacter calcoaceticus-baumannii</i> complex, Enterobacterales Order, <i>Enterobacter cloacae</i> complex, <i>Escherichia coli</i>, <i>Klebsiella aerogenes</i>, <i>Klebsiella pneumoniae</i> group, <i>Klebsiella oxytoca</i>, <i>Proteus</i> species, <i>Serratia marcescens</i>, <i>Salmonella</i> species, <i>Haemophilus influenzae</i>, <i>Neisseria meningitidis</i>, <i>Pseudomonas aeruginosa</i>, <i>Stenotrophomonas maltophilia</i>, <i>Candida albicans</i>, <i>Candida auris</i>, <i>Candida glabrata</i>, <i>Candida krusei</i>, <i>Candida parapsilosis</i>, <i>Candida tropicalis</i>, <i>Cryptococcus neoformans/gattii</i> and the ten resistance genes, KPC (carbapenemase), CTX-M (Extended Spectrum Beta-Lactamase) <i>mecA/C</i> (methicillin resistance in Non-<i>Staphylococcus aureus</i>), <i>mecA/C</i> and MREJ (methicillin resistance in <i>Staphylococcus aureus</i>), NDM (carbapenemase), IMP (carbapenemase), OXA-48-like (carbapenemase), VIM (carbapenemase) and <i>vanA/B</i> (vancomycin).</p>



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Culture, Blood	Aerobic and anaerobic bacterial culture for adults, aerobic culture for pediatrics, antimicrobial removal culture, Gram stain of all positive cultures, and identification and susceptibility testing of clinically significant pathogens.	<p>All initial positive blood cultures will have Rapid Blood Culture ID PCR performed. Subsequent positive blood cultures do not unless there is a different Gram stain morphology identified.</p> <p>Positive blood cultures reflex to PCR panel to detect <i>Enterococcus faecalis</i>, <i>Enterococcus faecium</i>, <i>Listeria monocytogenes</i>, <i>Staphylococcus</i> species, <i>Staph aureus</i>, <i>Staphylococcus epidermidis</i>, <i>Staphylococcus lugdunensis</i>, <i>Streptococcus</i> species, <i>Strep agalactiae</i>, <i>Strep pneumonia</i>, <i>Strep pyogenes</i>, <i>Acinetobacter calcoaceticus-baumannii</i> complex, Enterobacterales Order, <i>Enterobacter cloacae</i> complex, <i>Escherichia coli</i>, <i>Klebsiella aerogenes</i>, <i>Klebsiella pneumoniae</i> group, <i>Klebsiella oxytoca</i>, <i>Proteus</i> species, <i>Serratia marcescens</i>, <i>Salmonella</i> species, <i>Haemophilus influenza</i>, <i>Neisseria meningitides</i>, <i>Pseudomonas aeruginosa</i>, <i>Stenotrophomonas maltophilia</i>, <i>Candida albicans</i>, <i>Candida auris</i>, <i>Candida glabrata</i>, <i>Candida krusei</i>, <i>Candida parapsilosis</i>, <i>Candida tropicalis</i>, <i>Cryptococcus neoformans/gattii</i> and the ten resistance genes, KPC (carbapenemase), CTX-M (Extended Spectrum Beta-Lactamase) <i>mecA/C</i> (methicillin resistance in Non-<i>Staphylococcus aureus</i>), <i>mecA/C</i> and MREJ (methicillin resistance in <i>Staphylococcus aureus</i>), NDM (carbapenemase), IMP (carbapenemase), OXA-48-like (carbapenemase), VIM (carbapenemase) and <i>vanA/B</i> (vancomycin).</p>
Culture, Respiratory	Includes Gram stain and semi quantitative culture with identification and susceptibility testing of all clinically significant bacterial pathogens	<p>Documented cystic fibrosis patient cultures include <i>Burkholdaria cepacia</i> screen culture and appropriate antibiotic susceptibility testing.</p> <p>Note: Bronchial aspirate specimen submitted for bacterial culture will be processed as a quantitative culture per Laboratory policy.</p> <p>Sputum Culture ordered. If Gram Stain is unsuitable, "culture" is cancelled.</p>
Cytology, Thin Prep Pap test with reflex High Risk HPV DNA if ASC	Includes routine cytological evaluation of a monolayer smear preparation by Thin Prep method of genital specimens	Cervical Cytology with diagnosis of ASCUS, will reflex to include Human Papillomavirus (HPV) DNA High Risk with 16/18 genotyping.
DIC Screen	D-Dimer, fibrinogen, partial thromboplastin time, platelet count, prothrombin time, and peripheral blood review by technologist for the presence of schistocytes	Reflex testing not applicable with this order



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Diabetes Mellitus Type 1 Evaluation, Serum	Diabetes Interpretation, GAD65 Antibody Assay, Insulin Antibodies, IA-2 antibody and ZnT8 antibody	Reflex testing not applicable with this order
Direct coombs (DAT), polyspecific with reflex to IgG	Polyspecific direct coombs (DAT)	A positive polyspecific direct coombs (DAT) will automatically reflex to an IgG direct coombs (DAT). Note: Compliment will be reflexed if ordered with a transfusion reaction workup or can be ordered individually.
Extractable Nuclear Antibody (ENA) Panel w/reflex if indicated	ENA Panel (Anti-chromatin, anti-riboprotein p, anti-Ro(SSA), anti-La(SSB), Anti-Centromere, Anti-Smith, Anti-Smith RNP, Anti-RNP, Anti-SCL70, Anti-Jo-1) and anti-double stranded DNA (dsDNA)	A positive ENA panel screen interpretation will always reflex a dsDNA when the analytes of the original ENA panel are all negative.
Epstein Barr Antibody Panel	EBV Early Antigen EA, Heterophile Ab, Nuclear Antigen NA IgG, Viral Capsid VCA IgG & IgM	Reflex testing not applicable with this order.
Filaria, Blood	Filaria	In the event that microfilaria is discovered in the Knott Concentration; a Giemsa stain for identification will be performed at an additional charge.
Gamma-Hydroxybutyric Acid (GHB), Urine	Gamma HydroxyButyrate (GHB)	If the GHB Screen is non-negative, then the Gamma-Hydroxybutyric Acid, CF, UR (FGHAC) will be performed at an additional charge. GC/MS Confirmation (Mayo)
Gastrointestinal PCR Panel	Campylobacter (C.jejuni/C.coli/C.upsaliensis), Clostridium difficile (C. difficile) toxin A/B, Plesiomonas shigelloides, Salmonella, Vibrio (V. parahaemolyticus/V. vulnificus/V. cholera), including specific identification of Vibrio cholera, Yersinia enterocolitica, Enteropathogenic Escherichia coli (EPEC), Enteropathogenic Escherichia coli (EAEC), Enterotoxigenic Escherichia coli (ETEC) It/st, Shiga-like toxin-producing Escherichia coli (STEC) stx1/stx2 (including specific identification of the E.coli O157 serogroup within STEC), Cryptosporidium, Cyclospora cayetensis, Entamoeba histolytica, Giardia lamblia, Adenovirus F 40/41, Astrovirus, Norovirus GI/GII, Rotavirus A, Sapovirus (Genogroups I,II,IV, and V)	Positive C. difficile results will automatically reflex to C. difficile A/B toxin assay testing.
Group B Streptococcus PCR	Molecular test from enrichment broth for group B streptococcus only	Susceptibility will be automatically performed on positive specimens from patients who have a documented Penicillin allergy.



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Hematopathology Consultation, Peripheral Smear	Pathologist Review	If review of peripheral blood smear is ordered without required accompanying CBC with differential, and if the specimen is within 10 hours of collection, a Complete Blood Count (CBC) with Differential will be reflex ordered
Hemoglobin Electrophoresis Screen, blood	Capillary Electrophoresis identification and distribution of hemoglobin fractions	If Hgb S is the non-dominant hemoglobin (patient is heterozygous) then a Sickle Cell Preparation test will be reflexed and resulted If Hgb S, is the predominate hemoglobin or Hgb C or E are present then a gel is done and charges for the gel are reflexed.
Heparin PF4 Platelet Antibody – Unfractionated Heparin	Heparin PF4 Platelet Antibody	When positive results are obtained, a reflex order will be placed to send a sample to reference laboratory for the serotonin release assay.
Hepatitis B Surface Antigen (HBsAg), Serum	Hepatitis B surface antigen	If Hep B surface Ag is positive, reflex then HbsAg Confirmation test, performed at Mayo Medical Laboratories for confirmation at an additional charge
Hepatitis C Antibody, Serum or Plasma	Hepatitis C antibody	Equivocal or Positive samples should be confirmed by Hepatitis C Virus RNA Quantitation by PCR. A reflex order for Hep C RNA Quantitative is reflex ordered.
Herpes Simplex & Varicella zoster PCR	Herpes Simplex Type 1, Type 2 & Varicella zoster PCR	Reflex testing not applicable with this order
Herpes Simplex IgG Antibodies	Herpes Simplex Type 1 and Type 2 IgG Antibodies	Reflex testing not applicable with this order



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HIV 1 RNA Quant PCR reflex to Genotypic Drug Resistance if Indicated	HIV Type-1 RNA Standard Quantification (HIVQ)	HIVQ is performed first and will reflex to HIVPR Genotypic Drug Resistance if >1000.
HIV Screen, Serum	4th generation HIV 1/2 antibody and p24 antigen by Enzyme Immunoassay (EIA)	<p>Preliminary positive specimens will be tested by the BioRad antibody differentiation HIV 1/2 Differentiation test and reported as follows:</p> <p>PRELIMINARY POSITIVE</p> <p>Screening test for HIV is positive. Screening test performed by a 4th generation immunoassay for the qualitative determination of p24 antigen and antibodies to human immunodeficiency virus types 1,2 and group O. This test does not differentiate between p24 antigen and HIV antibody.</p> <p>This specimen will be tested for HIV 1/2 antibody differentiation by immunoassay, per CDC recommendations. Should further antigen specific testing be indicated, a new order and specimen will be required.</p> <p>Medical evaluation and counseling are important parts of HIV testing, and should include test result confirmation for any patient with initially positive results.</p>
Leukemia/Lymphoma Markers, blood, body fluids or fresh tissue	Leukemia/Lymphoma/Myeloma and/or Non-Hodgkin lymphoma panels by flow cytometry: if indicated, reflex testing may be added to further characterize possible abnormal cell populations identified by the screening panel.	<p>The following add on panels may be employed after initial testing, as needed and appropriate, to further evaluate any possible abnormal population of cells.</p> <p>B lymphoblastic leukemia (B-ALL) panel T lymphoblastic leukemia (T-ALL) panel Chronic lymphocytic leukemia (CLL) panel Hairy cell leukemia (HCL) panel Extended B-cell tube panel Extended T-cell tube panel NK cell or LGL panel CD10 positive B-cell panel CD5 positive B-cell panel Acute myeloid leukemia (AML) panel Extended myeloid or monocytic panel Plasma cell panel Mast cell panel</p>
Lipid Panel (Cholesterol, HDL, triglyceride and calculated LDL with reflex to measured LDL), Serum or Plasma	Cholesterol, triglycerides HDL and LDL	Reflex to measured LDL when triglyceride is >800 mg/dl. . This is due to the inability to calculate an LDL if triglyceride is >800.
Lyme Disease Antibody Screen, Serum	Lyme Disease Screen	If screen is positive or equivocal, then Lyme antibody modified 2-tier with reflex, serum testing will be performed at Mayo for an additional charge.



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Lymphoma workup, Tissue for permanent	Pathologist tissue review, flow cytometric analysis.	<p>If All Diffuse Large B-cell Lymphoma/other B-cell Lymphoma with aggressive or high grade features: Immunohistochemical/In situ hybridization staining which may include: CD3, CD20, Pax5, CD5, CD10, Cyclin D-1, Ki-67, EBER in situ hybridization, BCL-2, BCL-6, MUM1, MYC, CD30, and CD45. Cytogenetic FISH testing for double hit Mayo algorithm.</p> <p>If Low grade lymphoma or reactive appearing tissue: CD3, CD20, Pax5, Bcl-2, Bcl-6, CD5, CD10, CD23, CD43 and cyclin D1</p>
Meconium Toxicology; Screen and Auto Confirmation	Panel includes: Amphetamines, Methamphetamines, THC, Cocaine, Opiates, Benzodiazepines, Methadone, Oxycodone, Buprenorphine, Tramadol	All positives are automatically reflexed to a confirmation by LC/MS/MS.
Meningitis/Encephalitis Panel	Screens for Escherichia coli K1, Haemophilus influenza, Listeria monocytogenes, Neisseria meningitides, Streptococcus agalactiae, Streptococcus pneumonia, Cytomegalovirus (CMV), Enterovirus, Herpes simplex 1 & 2 (HSV-1 & 2), Human herpesvirus 6 (HHV-6), Human parechovirus, Varicella zoster virus (VZV), and Cryptococcus neoformans/gattii.	Negative Cryptococcus neoformans/gattii results will automatically reflex to Cryptococcus Ag assay testing. Culture will be performed with all Meningoencephalitis panels.
Microbiology Cultures	The following culture orders will always include Gram Stain/Smear: Acid Fast Bacilli (AFB), Respiratory, Quantitative, & Bacterial (abscess fluid, sterile body fluid and all surgical specimens).	Reflex Identification testing and Susceptibilities as appropriate.
Monoclonal Protein Evaluation, Monoclonal Gammopathy Screen, serum	Includes serum free light chains (kappa, lambda, ratio, and serum free light chain difference) and serum protein electrophoresis (albumin, alpha-1, alpha-2, beta- and gamma-globulins, total protein, and clinical interpretation by a pathologist).	If kappa/lambda ratio is abnormal or result is inconclusive for a monoclonal gammopathy, the clinical pathologist will order an immunofixation electrophoresis
Mononucleosis Screen	Presence of infectious mononucleosis heterophile antibodies	Reflex to Epstein Barr (EBV) Panel if screen is Negative.
NICU Prepare Aliquot	Packed red blood cell and Non-Psoralen Platelet aliquots prepared, Blood Bank	IF age less than 4 months or any NICU patient, regardless of age, will have unit irradiated
Ova and Parasite Complete Screen	Ova and parasites (direct and concentrated exam), Ova & Parasite Screen Giardia, Ova Parasite Cryptosporidium, Trichrome Stain	Reflex testing not applicable with this order



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Platelet Function Analysis, Blood	Platelet Function Assay (PFA 100)	If result greater than 170 seconds, collagen/ADP test will be reflex ordered.
Post Delivery Rhogam Evaluation (Fetal Screen)	Post Delivery Rhogam Evaluation (Fetal Screen)	A Fetaldex (Kleihauer Betke) test will be reflexed if Rhogam Evaluation is positive.
Prostatic Specific Antigen, Free, Serum or Plasma	Prostate Specific Antigen (PSA) Free Level	PSA total on all orders that do not already have a PSA ordered on the same specimen. If total PSA is between 4 and 10 ng/mL, then free PSA is reflexed.
Protein Electrophoresis and Immunofixation, Serum or Urine	Protein electrophoresis, Immunofixation and total protein are performed. A professional fee for pathologist's interpretation may be applied.	No reflex testing associated
Protein Electrophoresis, Serum or Urine	Total Protein, Albumin, Alpha 1, Alpha 2, Beta, Gamma and clinical review by pathologist. A professional fee for pathologist's interpretation may be applied.	If result is inconclusive for a monoclonal gammopathy, the clinical pathologist will order an immunofixation electrophoresis.
Rapid Malaria Assay, Blood	Malaria Rapid Screen 1) If presumptive positive for malaria antigens 2) If presumptive negative for malaria antigens	1) Parasitemia Level; Malaria speciation confirmation by thin/thick smear microscopy evaluation and blood review by pathologist 2) Negative result confirmed by thin/thick smear microscopy evaluation.
Rapid Plasma Reagin (RPR)	Rapid Plasma Reagin (RPR) test for syphilis	Patients over 6 months of age will be converted to Syphilis Antibody. If RPR is reactive, reflex RPR titer, performed in-house.
Respiratory Infectious Agent Panel	Adenovirus, Coronavirus 229E, Coronavirus HKU1, Coronavirus NL63, Coronavirus OC43, Human Metapneumovirus, Human Rhinovirus (1, 2, 3 and 4), Enterovirus, Influenza A (H1-2009, H1, H3), Influenza B, Parainfluenza (1, 2, 3, and 4), Respiratory Syncytial Virus, Bordetella pertussis, Bordetella parapertussis, Chlamydia pneumoniae, Mycoplasma pneumoniae and SARS-CoV-2 virus.	Reflex testing not applicable with this order.
Smooth Muscle Antibody Screen, Serum	Smooth Muscle Antibody Screen	If smooth muscle antibody (SMA) screen is positive then the SMA titer will be performed at an additional charge.
STD Panels	Chlamydia trachomatis amplified and Neisseria gonorrhoea amplified. Chlamydia trachomatis amplified, Neisseria gonorrhoea amplified, Trichomonas vaginalis amplified and Mycoplasma genitalium amplified. Chlamydia trachomatis by PCR and Neisseria gonorrhoea by PCR. Chlamydia trachomatis by PCR, Neisseria gonorrhoea by PCR and Trichomonas vaginalis by PCR.	Reflex testing not applicable with this order.



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Bronson Custom Panels and Orders with Reflex Testing	Tests Included in Panels or Orders	Reflex Testing
Sweat Chloride	Chloride	Two arm reporting: Testing will be done on each arm and each order will consist of 2 times the analysis and 2 times the collection.
Syphilis (Treponemal) Antibody, Total	Treponemal antibody (Syphilis, Total Antibody).	If Syphilis positive, reflex RPR. If RPR reactive or non-reactive, reflex Treponemal pallidum particle agglutination.
Thrombophilia Cascade without Genotype	Inhibitor Screen, Anti-Thrombin III activity, Protein C activity, Protein S antigen, Factor 8 activity and Activated Protein C Resistance	Additional testing, any reflex testing associated with the Inhibitor Screen plus: Protein C Antigen, Protein S Activity and Antithrombin Antigen.
Thyroid Function Screening Cascade	TSH	<p>If an order for the Thyroid Function Cascade is received on patients less than 6 years old, TSH and Free T4 will be performed. If indicated, additional tests would need to be requested by the ordering physician.</p> <p>If TSH is <0.27 mIU/mL, then free T4 is performed. If free T4 is <2.0 ng/mL and TSH is <0.1 mIU/mL, then total T3 is performed.</p> <p>If TSH is >4.2 mIU/mL, then free T4 and anti-thyroid peroxidase are performed.</p>
Type and Screen	ABO/RH (D) and antibody screen	<p>If antibody screen is positive, reflex antibody identification.</p> <p>If products are needed, orders for specific components must be placed.</p> <p>When blood component needs have not yet been determined (i.e., trauma, high risk OB, etc.), a TSC can be ordered to decrease turnaround time if blood components become necessary.</p> <p>All patients that are identified as a sickle cell patient reflex serological testing for full phenotype if under the age of 21. Reflex for serological C, E and K antigen typing for anyone over 21 years of age.</p> <p>RBC component requests for all patients identified as a sickle cell patient reflex HGB S testing on each RBC unit.</p>



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Urinalysis with Reflex Microscopy	Urine: glucose, bilirubin, protein, pH, hemoglobin, ketones, urobilinogen, nitrite, leukocyte esterase, specific gravity, color, appearance	Urine Chemistry testing will always be performed, however microscopy will be reflexed only when any of the following occurs: Positive Leukocyte Esterase Positive Hemoglobin Positive Nitrite Positive Glucose Positive Protein Non-clear Appearance
Urinalysis with Reflex Microscopy and Urinalysis with Reflex Microscopy and Culture if Indicated	UA or UA culture if (where volume is inadequate for microscopic exam) Urine: glucose, bilirubin, protein, pH, hemoglobin, ketones, urobilinogen, nitrite, leukocyte esterase, specific gravity, color, appearance	Urine Chemistry testing will always be performed, however microscopy will be reflexed only when any of the following occurs: Positive Leukocyte Esterase Positive Hemoglobin Positive Nitrite Positive Glucose Positive Protein Non-clear Appearance Urine culture will be reflexed when any of the following occur: positive nitrite Moderate or large leukocyte esterase 2+ or greater bacteria Greater than 9 WBC
Urine Cytology	Review for absence or presence of malignant cells; abnormal cells related to certain non-neoplastic conditions	When specifically requested for abnormal cells present reflex to: UroVysion for Detection of Bladder Cancer, Urine.
Urine Drug Screen 6	Amphetamine/methamphetamines, barbiturate, benzodiazepine, cocaine, opiates, THC	Reflex testing not applicable with this order.
Urine Drug Screen 8	Amphetamine/methamphetamines, barbiturate, benzodiazepine, cocaine, opiates, THC , oxycodone & fentanyl	Reflex testing not applicable with this order.
Urine hCG Test, Qualitative	Urine hCG Test Note: Urine hCG reflex to Urine Specific Gravity prior to Radiologic Procedures if patient qualifies to child bearing potential: A female of childbearing potential is defined as a non menopausal female who has not had a hysterectomy, bilateral oophorectomy, or medically documented ovarian failure. This definition includes a young woman who has not yet started menstruating.	Reflex Urine Specific Gravity. If the urine hCG test is negative and there is no urine specific gravity test within the last hour, specific gravity test will be reflex ordered. The Urine Specific Gravity is done to evaluate the sample for potential false negative results which could occur in a highly dilute urine sample.
Urine Opioid Drug Screen	Opiate, buprenorphine, methadone, oxycodone, fentanyl	Reflex testing not applicable with this order.



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<p>Urine Protein Electrophoresis with Monoclonal Quantitation</p>	<p>Urine protein electrophoresis with monoclonal quantitation. Urine protein electrophoresis includes quantitation of Bence Jones Protein if present.</p> <p>Professional fee for pathologist's interpretation may be applied.</p>	<p>If results suggest a presence of Bence Jones protein or monoclonal gammopathy, the clinical pathologist will order an immunofixation electrophoresis.</p>
<p>von Willebrand Disease Profile, Plasma</p>	<p>Coagulation factor VIII activity assay, von Willebrand factor (VWF) antigen, VWF activity and interpretation</p>	<p>If the factor VIII, VWF antigen, VWF activity, and VWF activity: VWF antigen ratio are normal, then a computer-generated interpretive comment indicating no evidence of von Willebrand disease will be provided.</p> <p>If VWF activity assay is less than 55% or VWF activity: VWF antigen ratio is abnormally increased, then VWF ristocetin cofactor activity assay will be performed at an additional charge.</p> <p>If VWF antigen is less than 55%, the VWF activity is less than 55%, or the VWF activity: VWF antigen ratio is abnormally low, then VWF multimer analysis will be performed at an additional charge.</p> <p>If any test results are abnormal, all results will be reviewed by a coagulation consultant and a von Willebrand Disease Interpretation will be provided at an additional charge.</p>



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Surgical Pathology, Routine	Pathology review of surgical sample	<p>Samples that have specific finding will result additional testing:</p> <ul style="list-style-type: none"> •Non-small cell carcinoma, stage IV will reflex: next generation sequencing, PD-L1 and MMRd IHC. *† •Non-small cell carcinoma clinical stage 1b or greater will reflex: next generation sequencing and PD-L1 •Non-small cell carcinoma, tumor 3-4 cm in size without evidence of lymph node involvement will reflex: Next generation sequencing •Colorectal adenocarcinomas will reflex MMR by IHC. *† •Colorectal adenocarcinoma, stage IV will reflex next generation sequencing and MMR by IHC. *† •Metastatic melanoma will reflex: next generation sequencing •Gastroesophageal adenocarcinomas will reflex: MMR by IHC and sent for Her2/neu FISH or IHC testing*† •Small intestine adenocarcinoma including ampullary will reflex: MMR by IHC *† •GIST with high risk features will reflex: next generation sequencing •Head and Neck squamous cell carcinomas: oropharyngeal squamous cell carcinomas and/or regional lymph node metastasis will reflex p16 IHC or HPV molecular testing. •Metastatic prostatic adenocarcinoma will reflex: MMR by IHC. *† •Urothelial carcinoma, upper tract only will reflex: MMR by IHC on resections. *† •Uterine endometrioid adenocarcinomas will reflex:MMR by IHC and p53 by IHC if grade 2 or higher. *† •Uterine serous carcinoma or carcinosarcoma with serous epithelial component will reflex: HER2 by IHC * z • Ovarian clear cell, endometrioid and mucinous carcinoma will reflex: MMR by IHC *† and if low grade ER and PR testing by IHC • Ovarian high-grade serous carcinomas will reflex paired germline and somatic HRD testing. *This will be requested by WMCC. • Breast carcinomas will reflex ER, PR, HER2, and Ki-67 IHC. *z • Metastatic or relapsed breast carcinoma will reflex: ER, PR and HER2. *z • Pediatric tumors as indicated may reflex IHC, flow cytometric analysis, chromosome analysis, fluorescent in situ hybridization and/or molecular testing.



Bronson Laboratory Custom Panels and Reflex Testing

		<ul style="list-style-type: none">• Central nervous system tumors may reflex flow cytometric analysis, FISH, IHC and molecular testing.
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¹ Reflex molecular testing guidelines are regularly reviewed and updated. Current guidelines may be altered subsequent to dissemination of this letter. Additional molecular tests, including NGS testing, may be performed at the discretion of pathologists or treating physicians on a case by case basis.

F Cases demonstrating loss of nuclear MMR protein expression may be sent for additional testing including, but not limited to, MSI PCR (Mayo code: TMSI), MLH1 promoter methylation analysis (Mayo code:MLH1M) and combined MLH1 promoter methylation and BRAF mutation analysis (Mayo code:BRMLH). Patients with certain patterns of loss in tumor may be referred for genetic counseling and additional molecular testing may be performed as requested by genetic counselors or as dictated by germline genetic studies.

Z Cases demonstrating equivocal (score 2+) HER2 IHC studies will be sent for HER2 FISH testing (Mayo code:H2BR).