HealthPartners/GHI

Urinalysis – Clinitek Advantus Procedure	**Attachments** ☐ Yes ☒ No
Key words	**Number** GHI-PC-CLINIC LAB-Procedures-Urinalysis Advantus v. 7-2013
Category Provision of Care	**Effective Date** July 2013
Manual Clinic Laboratory Procedure Manual	**Last Review Date** July 2013
Issued By Clinic Laboratory – Laboratory Technical Consultants	**Next Review Date** July 2014
Applicable Clinic Laboratory Staff	**Origination Date** July 2013
	Retired Date
Level of Complexity Non Waived	**Contact** Laboratory Technical Consultants
Review Responsibility Laboratory Technical Consultants	**Approved Date**
APPROVAL(S) Laboratory Medical Director	

Urinalysis

I. PURPOSE/PRINCIPLE

To provider direction for performing a urinalysis using the Clinitek Advantus.

A routine urinalysis consists of testing for pH, specific gravity, color, clarity, leukocytes, nitrite, glucose, protein, ketones, bilirubin, urobilinogen, and blood. A microscopic examination of the urinary sediment can also be performed to detect the presence of RBCs, WBCs, casts and other formed elements. Multistix 10-SG is an inert plastic strip to which is attached 10 different reagent test pads. A brief discussion of each follows:

Glucose:
This test is based on a double sequential enzyme reaction. One enzyme, glucose oxidase, catalyzes the formation of gluconic acid and hydrogen peroxide from the oxidation of glucose. A second enzyme, peroxidase, catalyzes the reaction of hydrogen peroxide with a potassium iodide chromogen to oxidize the chromogen to colors ranging from green to brown.

Bilirubin:
This test is based on the coupling of bilirubin with diazotized dichloroaniline in a strongly acid medium. The color ranges through various shades of tan. Substances that can interfere with the

test and produce a false positive include, but are not limited to urobilinogen, Indican (Indoxyl Sulfate) and metabolities of Lodine (Etodolac).

Ketone:

This test is based on the development of colors ranging from buff-pink, for a negative reading, to purple when acetoacetic acid reacts with nitroprusside.

Specific Gravity:

This test is based on the apparent pKa change of certain pretreated polyelectrolytes in relation to ionic concentration. In the presence of an indicator, colors range from deep blue-green in urine of low ionic concentration through green and yellow-green in urine of increasing ionic concentration.

Blood:

This test is based on the peroxidase-like activity of hemoglobin, which catalyzes the reaction of diisopropylbenzene dihydroperoxide and 3,3',5 ,5'-tetramethylbenzidine. The resulting color ranges from orange through green; very high levels of blood may cause the color development to continue to blue.

pH:

This test is based on the double indicator principle that gives a broad range of colors covering the entire urinary pH range. Colors range from orange through yellow and green to blue.

Protein:

This test is based on the protein-error-of-indicators principle. At a constant pH, the development of any green color is due to the presence of protein. Colors range from yellow for "Negative" through yellow-green and green to green-blue for "Positive" reactions.

Urobilinogen:

This test is based on a modified Ehrlich reaction, in which *p*-diethlaminobenzaldehyde in conjunction with a color enhancer reacts with urobilinogen in a strongly acid medium to produce a pink-red color.

Nitrite:

This test depends upon the conversion of nitrate (derived from the diet) to nitrite by the action of Gram negative bacteria in the urine. At the acid pH of the reagent area, nitrite in the urine reacts with *p*-arsanilic acid to form a diazonium compound. This diazonium compound in turns couples with 1, 2, 3, 4,-tetrahydrobenzo(h)quinolin-3-ol to produce a pink color.

Leukocytes:

Granulocytic leukocytes contain esterases that catalyze the hydrolysis of the derivatized pyrrole amino acid ester to liberate 3-hydroxy-5-phenyl pyrrole. This pyrrole then reacts with diazonium salt to produce a purple color.

II. POLICY

Laboratory Staff will follow the approved techniques outlined in this procedure.

Specimen: Midstream Urine Specimen

1. A fresh specimen is preferred, but urine held in the refrigerator for up to 24 hours can be used. Urine must be allowed to come to room temperature before testing.
2. No preservatives should be used.
3. Specimens should be run within one hour, or be refrigerated at 2-8˚ C.
3. A specimen collected at home in a clean container is acceptable if brought to the lab within one hour, or refrigerated until delivered to the lab within 24 hours.
4. Collect a sufficient volume for analysis (approximately 50 ml preferred).

Reagents/Materials:

Kova-Tubes

Kova-Petters

Glass Slides and Coverslips

Multistix 10-SG

Clinitek Advantus Urine Chemistry Analyzer and handheld bar code reader

BioRad Urine Controls Level 1 and Level 2:

Store in refrigerator at 2-8º C until expiration date on the bottles. Once opened, the product is stable for 31 days when tightly capped at (2ºC to -25ºC). Refrigerator storage is preferable. If it is at the end of the vial or close to the expiration date and there are problems with one or more parameters, try opening a new control vial.

Calibration:

Calibration is automatically performed at each read-head immediately before each reagent strip is read. The fixed platform contains 2 white calibration bars, positioned directly under each read-head. As a strip comes into position under a read-head, the analyzer reads the calibration bar and calibrates for that scanning cycle. A calibration confirmation can be printed by selecting "Calibration Confirmation" under the menu and selecting print.

Quality Control:

Multistix 10-SG strips should be checked with BioRad Urine Controls Level 1 and Level 2 of the urinalysis control each day, and with each change to lot# of test strips. Positive and negative controls should be performed and recorded. The lot number of the controls should be entered as the patient ID.

III. PROCEDURES

1. Preparing for a run

- **NOTE: Leave the Clinitek Advantus analyzer on at all times, except during maintenance and cleaning procedures.**

a. When the analyzer is not in use, the screen saver or **Ready/Run** screen displays.

b. Touch the screen to activate. Do not use anything hard or pointed as this will damage the screen.

c. The analyzer automatically enters the Run mode when a strip is placed on the platform. If the push bar is positioned at the left side of the loading station, the analyzer is ready to accept placement of a strip. If the bar is positioned to the right, the analyzer is not ready and ignores any strip placed on the platform.

d. Ensure that the strip loading station and push bar are clean and in the correct position. If contaminants are present, remove and clean the push arm, the platform and the moving table.

e. Change the Technician Identification

1. Select **Menu**.
2. Select **Tech ID**.
   A numeric keypad displays.
3. Enter your Tech ID number
   Select **Enter** to return to the numeric keypad.
4. Select  to save the Tech ID.

2. Testing QC Samples

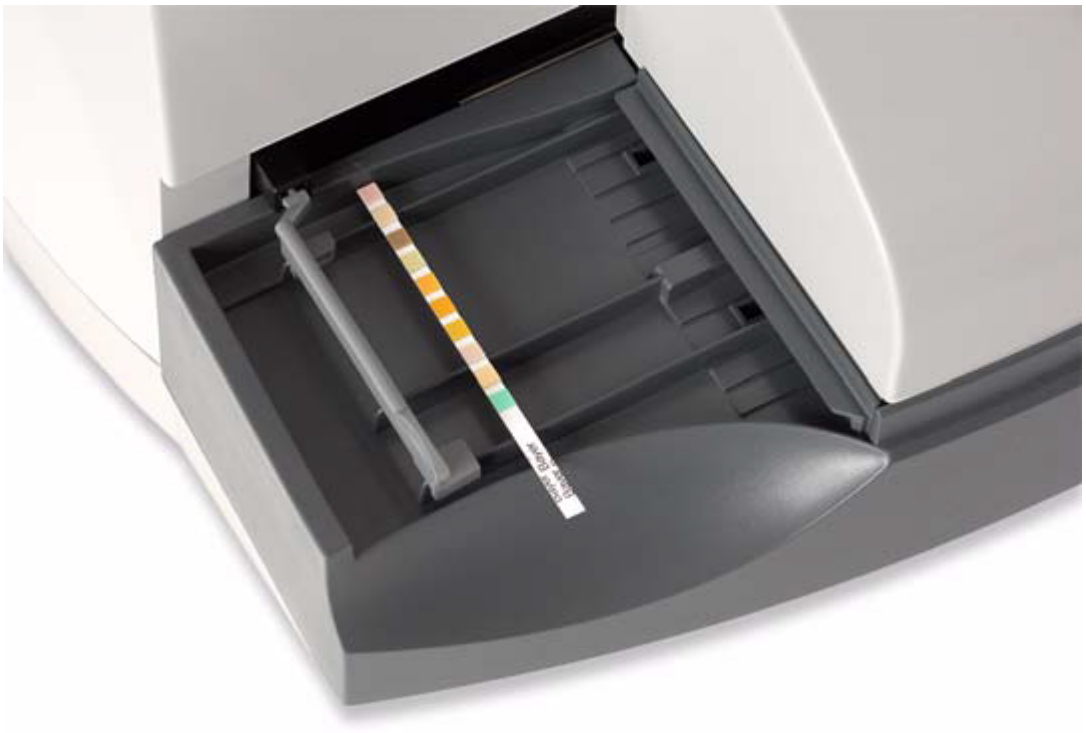
a. At the **Ready/Run** screen, select **ID**.

- The QC function will not be used. Run QC as a patient. Tape the QC printout onto the logsheets and record the QC values on the QC log, verifying that parameters are in range.

b. Enter the Lot# identification of the controls.

c. Gently swirl controls to assure good mixing. Apply control to reagent strip. Hold strip horizontally to assure saturation; remove excess control by tilting strip on it's edge on a paper towel. Do not blot as this will affect results.

d. Place strip onto the analyzer platform with reagent pads facing up. The Clinitek Advantus automatically detects its presence. The push bar will move the strip over the platform to the right and into the reading area.



e. Results will print once the analysis of the reagent pads is complete.

f. The strip is automatically advanced to the waste bin.

g. Repeat for additional controls.

h. Record QC results on the UA QC logsheet and compare to the values given on the appropriate lot# product insert. If any results are not within the expected range, troubleshoot and repeat the controls before patient testing.

3. <u>Patient testing</u>

a. At the **Ready/Run** screen, **select ID**

b. **Before immersing the Multistix 10 dipstik**, use the cycle key to move through the options for color and clarity for the specimen.

COLOR
Pale Yellow
Yellow
Dark Yellow
Orange
Bloody
Colorless
Red
Blue: can be entered on Sunquest keyboard
Green: can be entered on Sunquest keyboard

CLARITY
Clear
Hazy
Cloudy

c. Enter the CID number for the specimen. This can also be scanned from a barcoded label using a handheld scanner.

d. When this information is correctly entered, select ENTER.

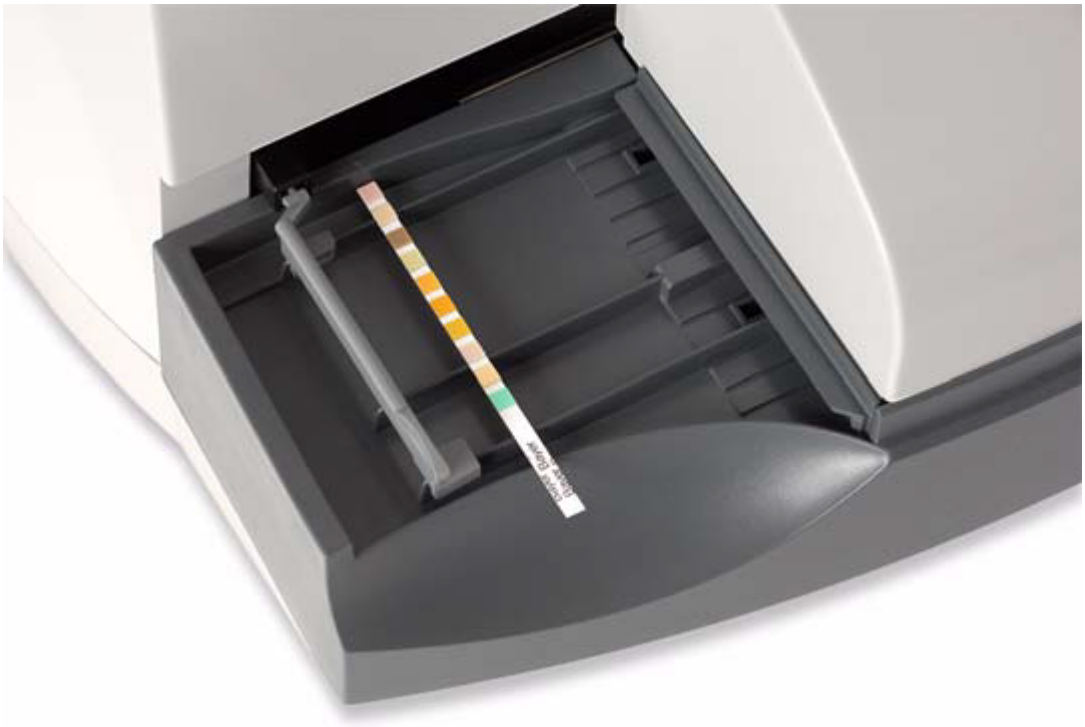
e. Completely immerse all of the reagent pads into a fresh, well-mixed, uncentrifuged urine. Be sure all test pads are wet.

f. Immediately remove the test strip from the urine, dragging the edge of strip against the side of the container as you remove the strip. You now have 8 seconds to complete steps g, h and i.

g. Blot the reagent strip to remove excess urine by touching the edge to a paper towel or gauze. Do not drag the strip across the towel or gauze; touch the edge only.

h. Place the strip on the analyzer platform with the reagent pads facing up.

i. Place the strip to the right and parallel to the push bar. Ensure that the end of the strip is against the back wall of the platform and that it is not touching the bottom of the strip loading station.



CAUTION: Improper placement may cause the analyzer to jam or the strip to incorrectly align under the readheads.

j. Repeat steps b. through i. for each additional specimen.

k. Testing does not need to be completed before running the next patient.

4. Managing results

a. Results are transmitted to the printer and computer as soon as all reagent areas on the strip are read.

b. A microscopic exam will be performed on all UAM orders and when UAif results show the following: trace or more leukocyte, trace or more blood, positive nitrite, or trace or more protein. A microscopic analysis will also be performed when ordered by the physician.

5. Microscopic exams

When a UA "if" is ordered a microscopic analysis will automatically be ordered if the test strip shows: trace or more leukocyte, trace or more blood, positive nitrite, or trace or more protein. A microscopic

analysis will also be performed when ordered by the physician.

a. Using a modified Kova system, centrifuge 12 ml of urine for 3 minutes at 2500 rpm.

b. Pour off 11 ml of supernate using the Kova-Petter, and resuspend the sediment in the remaining1 ml.

c. Place one drop of the sample on a slide and coverslip.

d. Scanning a minimum of 20 fields, report as follows:

1) **RBCs:** # per hpf using a range (such as 0-3 or 10-20).

2) **WBCs:** # per hpf using a range (such as 3-5 or 10-20).

3) **Epithelial Cells:** 0, occasional (0-1/hpf) few (1-2/hpf), moderate (4-7/hpf), or many (≥8/hpf).

4) **Bacteria:** 0, occasional, few, moderate, or many.

5) **Casts:** # per lpf using a range (such as 1-2). List type of casts seen (hyaline, finely or coarsely granular, RBC, WBC, waxy, broad or fatty).

6) **Crystals:** Few (1-3/hpf), moderate (4-7/hpf), or many (≥8/hpf). List type of crystal seen. Refer to section on page 6 for further information.

7) **Others:** List if present:

Amorphous material (urates pH ≤6.5, phosphates pH≥7): Occasional, few, moderate, or many.

Mucus: Occasional, few, moderate or many.

Sperm

Yeast

Trichomonas

Renal or Transitional Epithelial

Clue Cells

8) **Fat Bodies or Unknown Cells**

- Fat bodies or unknown cells are confirmed by further testing. If you think you are seeing these, enter the ETC code **UA2RH** under the "Other" test on the keyboard:

"UA specimen sent to Regions for Identification of unknown cells".

- Print out a copy of the results and highlight the comment. Please note what you are looking for on the printout.
- Send the original urine specimen (unspun) and the result printout to Regions via the Regions ReRoute tote. Call Regions UA department (651-254-9612) and let them know a urine for unknown cell identification has been sent.

NOTE: Regions and HPMG do not report histiocytes in urine specimens.

Crystals:

1) Normal Crystals in Acid Urine (pH≤ 6.5)

Amorphous Urates, Uric Acid and Calcium Oxalate

2) Normal Crystals in Alkaline Urine (pH> 7)

Amorphous Phosphates, Triple Phosphate, Calcium Carbonate, Calcium Oxalate, Ammonium Biurate and Calcium Phosphate

3) Abnormal Crystals

Cystine: Cystine crystals can be easily confused with uric acid crystals. The differentiation between them is critical, as cystine crystals are indicative of a rare inherited metabolic disease. Uric acid crystals have little, if any , clinical significance. Cystine crystals normally appear as hexagonal plates. Uric acid are pleomorphic in shape and color. Among other shapes, they can appear as rhombic plates, which can be a source of confusion with cystine. For further explanation, pictures, and chemical differentiation, refer to laboratory reference books. A polarizing microscope can be used in differentiating cystine from uric acid crystals: cystine will polarize blue/white while uric acid will polarize multicolored.

Tyrosine: Tyrosine crystals are very fine, highly refractile needles occuring in sheaves or clusters.

Leucine: Leucine crystals are oily, highly refractile, yellow or brown spheroids with radial and concentric striations.

Cholesterol: Cholesterol crystals are colorless, large, flat, rectangular plates with one or more corners notched out. They are usually seen in acidic or neutral pH urine.

Bilirubin: Bilirubin crystals are seen as reddish-brown needles that cluster in clumps, or as spheres.

Hemosiderin: Hemosiderin granules are coarse, yellow-brown granules that occur as free granules in the urine, in renal epithelial cells or macrophages, or in casts.

Reference Ranges:

Color:	Pale yellow, yellow
Clarity:	Varies with diet and age of specimen
S.G.:	1.005-1.030
Leukocytes:	0
Nitrite:	0
pH:	4.5-8.0 (varies with diet)
Protein:	0
Glucose:	0
Ketones:	0
Urobilinogen:	0.2-1
Bilirubin:	0
Blood:	0
RBCs:	0-3/hpf
WBCs:	0-5/hpf
Epithelials:	0-few
Casts:	0-1 hyaline/lpf:

REPORTING RESULTS

Clinic Labs: see the Computer Entry section of this procedure

PROCEDURE NOTES

1. If the Clinitek Advantus fails to perform, for any reason, the Multistix 10-SG strip may be read visually. Compare the color changes with those on the vial. Glucose and bilirubin are read at 30 seconds. Ketones are read at 40 seconds. Use a refractometer for specific gravity. Blood, pH, protein, urobilinogen, nitrite are read at 60 seconds. Leukocytes are read at 2 minutes.

2. A positive nitrite is a strong indicator of the presence of bacteria. When the leukocyte or nitrite is positive on a UC "if", a culture should be set-up.
3. Urines with strong color due to medication (pyridium) or elevated bilirubin should not be read on the Clinitek Advantus, due to the abnormal color changes on the reaction pads of the Multistix. If, when the Multistix is dipped in the urine, the reaction pads immediately change color, and the colors are not representative of a positive reaction, refer to the Computer Test Manual for entry. Record appearance and specific gravity.
4. All cellular elements (RBCs, WBCs, and casts) are extremely labile in hypotonic solutions. Low specific gravities will cause them to lyse. Centrifugation and resuspension also places stress on cellular elements. The test strip is capable of measuring the esterases from lysed granulocytes and hemoglobin from lysed RBCs. Therefore, the microscopic analysis may not correlate with the dipstick results; the dipstick is a better indication of WBCs and RBCs.
5. If 12 ml of urine is not available to centrifuge for microscopic exam, use 3, 6, or 9 ml and multiply the microscopic findings by 12/3, 12/6 or 12/9 respectively. This gives consistency to the microscopic exam by making all results relative to a 12:1 concentration.
6. When a urine sample is grossly bloody and some of the parameters are unable to be read, it can be centrifuged for three minutes at 2500 RPM. Dip the Multistix 10-SG into the supernatant and read and report all parameters except leukocytes and blood.

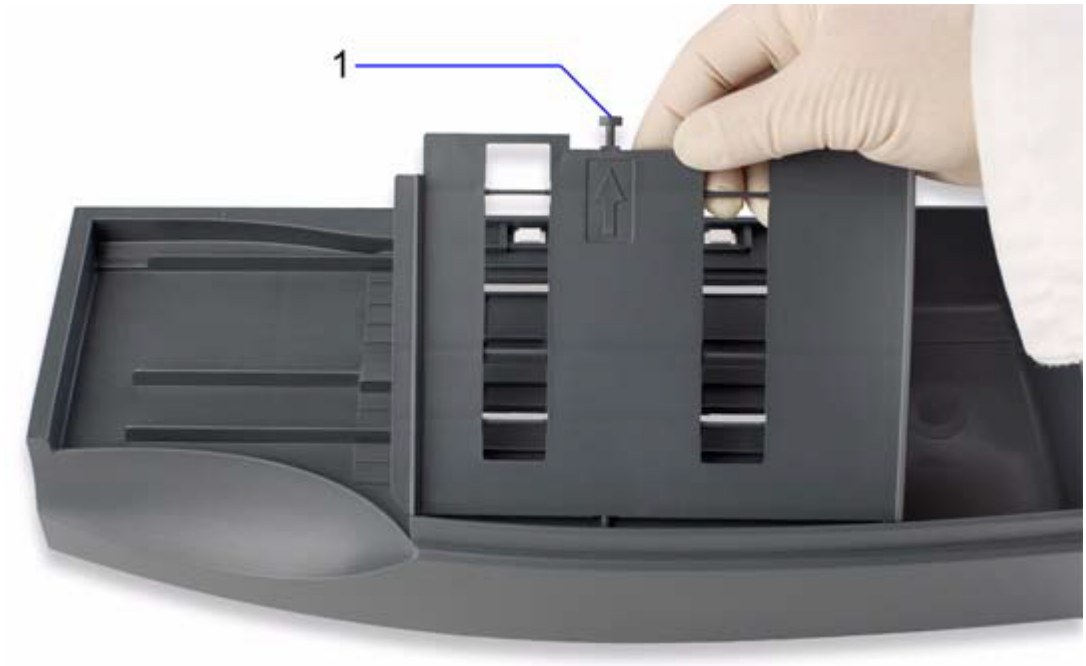
Cleaning Procedure for the Clinitek Advantus:

1. General cleaning
    a. Keep the exterior of the analyzer free of dust at all times
    b. Clean the exterior using a damp cloth and a mild detergent as needed
        - Caution! Do not use any type of solvent, oil, grease or silicone spray on any part of the analyzer. Harsh chemicals can damage the platform components.
2. Daily Cleaning (end of day):
    a. Ensure that the run is complete and the analyzer is at the Ready/Run screen, before removing components. In this state, the moving table is in its lowest position and the fixed platform can be reinstalled when cleaning is completed.
    b. Turn the analyzer off
    c. Remove the push bar by tilting the bar slightly upwards and pulling it straight out.

d. Remove the waste bin liner
e. Discard the used reagent strips into an appropriate container.
f. Remove the fixed platform by pulling the entire assembly towards you.

g. Remove the moving table by pulling the entire assembly towards you.

h. Remove the holddown plate from the fixed platform by pressing upwards on the tab at the back of the plate. Pull the other end from its retaining hole.



i. Clean the push bar, platform, holddown plate and the table with warm water and a mild detergent. When cleaning the platform, avoid wiping across the 2 white calibration bars. Use a cotton-tipped swab, wetted with plain water, to clean the bars. Cleaning solution can damage the calibration bars.

- If the holddown plate of push bar is extremely dirty, soak it in warm water and a mild detergent to loosen the dried material.

l. Rinse each piece thoroughly and dry with a paper towel or soft cloth. Use care when drying around the pins on the moving table.

m. Allow the calibration bars on the platform to air dry.

n. After cleaning, inspect the calibration bars for scratches, marks or discoloration. If the bars are damaged or cannot be cleaned, discard the platform and replace with a new platform.

o. Reinstall the moving table:
   1) Hold the table with the small rectangular tab facing to the back.
   2) Align the two grooves on the bottom of the table with the edges of the platform on which the table rests.
   3) Gently push the table in until you hear the tab latch into the hold position.
   4) Make sure the table is secure.

p. Reinstall the holddown plate:
   1) Position the holddown plate with the arrow side facing up and the arrow pointing to the back.
   2) Place the pin on the front of the holddown plate into the hole at the front of the fixed platform.
   3) Align the tab at the back of the holddown plate with the slot at the back of the platform.
   4) Snap the holddown plate into place
   5) Ensure that the white calibration strips are visible.

q. Reinstall the fixed platform:
   1) Align the 2 grooves on the bottom of the fixed platform with the arms extending forward from the analyzer. The flanges on the sides of the holddown plate align just outside the read area cover. The top edge of the platform aligns just under the cover.
   2) Genlty push the platform in as far as possible. Push past the ridge to correctly position the platform. Do not force the platform. Ensure that the moving table is correctly positioned before attempting to reinstall the fixed platform.

r. Reinstall the push bar:
   1) Hold the push bar at the indented end.
   2) With this end slightly upward, insert the peg on the other end of the bar into the hole in the pusher mechanism.
   3) Lower the push bar into place.

s. Place a new liner into the trash bin.

t. Clean the display screen with a soft, nonabrasive cloth dampened with a mild glass cleaner.

u. Turn the analyzer power on.

TROUBLESHOOTING

A. Urinalysis Control Troubleshooting:

BioRad Urine Controls Level 1 (negative) and Level 2 (positive) are used to test the Mulitstix each day of use and when a new lot# of Multistix is opened. Document results on the Urinalysis Quality Control sheet.

1. If the Level 1 values are unacceptable, rerun using a fresh sample of distilled water. Check and make sure the strips have not become discolored by exposure to air. The strips should be negative before use.
2. If Level 2 values are unacceptable, verify expected values for the current lot number of BioRad Urine Dipstick Control with its package insert values. Make sure the Multistix control ranges have been correctly recorded. Check expiration date of strips and control, rerun strips with a fresh aliquot of control.
3. For testing of Multistix, make sure the pads have been saturated with control. Let it sit 2-3 seconds then dab the edge of the strip on a paper towel to prevent run-off/bleeding reagents from pad to pad.
4. For testing of Multistix, some possible explanations for controls that are out of range are:

- The controls must be at room temperature. pH and Specific gravity are particularly affected if the controls are *not* at room temperature.
- Make sure the test strip placement is correct. Place the test strip onto the supports of the strip loading station, with the reagent pads facing up. Place the strip to the right of, and parallel to, the push bar. Ensure that the end of the strip is against the back wall of the platform and that it is not touching the bottom of the strip loading station.
- The control bottle is almost empty or close to the expiration date. Controls expire 31 days after opening when controls are refrigerated, unless the expiration date on the bottle comes first. Open a new bottle.

5. If positive control values are still unacceptable, open a new vial of strips and run the current bottle of BioRad Level 2 Urine Control.
6. If positive control values are still not in range, use a different lot number of strips.
7. For backup, cross-reference with another lot number of strips, if applicable.
8. If available, run a new lot number of controls with first vial of strips.
9. Notify a TC. The manufacturer may be called for possible causes and recommendations.

Reminder: According to the Internal Quality Control Policy, if expected QC Values are not attained, patient results will not be reported until troubleshooting is complete.

B. <u>Clinitek Advantus Troubleshooting:</u>

If an operational of analyzer problem occurs, an error number may display on the analyze screen with an explanation of the problem. Refer to the analyzer manual for explanations and troubleshooting of the various errors and messages, along with probably causes and corrective actions. If the problem persists, record the error number being displayed and contact technical service.

1. Removing a jammed test strip:
    a. Select **Stop Run** to stop the run and return to the Ready/Run screen.
    b. To determine the specimen(s) to retest, record the information provided on the Results Error Report.
    c. Turn the analyzer power off.
    d. Remove the push bar, fixed platform and holddown plate. Refer to daily cleaning section for instructions.
    e. Remove the jammed strip.
    f. Replace the push bar, fixed platform and holddown plate. Refer to daily cleaning section for instructons.
    g. Turn the analyzer power on and rerun specimens that were not tested.
2. Reinstalling the fixed platform:
    If the analyzer is turned off during a run, or at any screen other than the Ready/Run screen, the moving table may not be in its lowest position. If the fixed platform is removed, the moving table will be pulled out at the same time. The platform cannot be reinstalled at this position because the pins of the moving table are in the way. To resolve this problem:
    a. Turn the analyzer power on.
    b. Let the analyzer initialize.
    c. An error displays because the fixed platform is not in place, but the moving table is rotated into the correct position.
    d. Turn the analyzer power off.
    e. Install the fixed platform. Refer to daily cleaning section for instructions.
    f. Turn the analyzer power on.

<u>REFERENCES</u>

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Davidsohn and Henry: Clinical Diagnosis by Laboratory Methods
Haber, MH: Urinary Sediment: A Textbook Atlas

Graff, L.: A Handbook of Routine Urinalysis
Ringsrud and Linne: Urinalysis and Body Fluids: A Color Text and Atlas
Brunzel, N: Fundamentals of Urine and Body fluid Analysis
Clinitek Advantus operating manual

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IV. DEFINITIONS

V. COMPLIANCE
Failure to comply with this policy or the procedures may result in disciplinary action, up to and including termination.

VI. ATTACHMENTS

VII. OTHER RESOURCES

VIII. ENDORSEMENT
Laboratory Administration

Computer Order and Result Entry

URINALYSIS
FUNCTION: UR

Order Codes: UA, UAIF, UAM, UCIF, PHUR
Order Code: SPGU (Riverside only)

QUICK REFERENCE:

ORDERING

UA: Test strip only.
UAIF: Test strip. Microscopic is automatically ordered by computer if test strip is trace or positive for blood, leukocytes, nitrite, or protein.
UAM: Dipstick and Microscopic.
UAML: (Lab ordered) Microscopic: added to UA order if provider adds micro.
UCIF: Culture to be ordered if test strip is positive for either nitrite and/or leukocytes.
PHUR: Urine pH only
SPGU: Urine specific gravity only (Riverside specific)

RESULTING

1. Mysis Gateway (GUI) – Keyboard **For order codes: UA, UAIF, UAM, and UAML.**

Select **URHP** from the drop box as the keyboard for entering all HP urine results, see below:

NAME	CODE NAME
On UA_ _ Worksheet	
UAPPR	Appearance
USG	Specific Gravity
UPH	pH
ULEUK	Leukocytes
UNITR	Nitrites
UPRO	Protein
UGLUC	Glucose
UKET	Ketones
UURO	Urobilinogen
UBIL	Bilirubin
UBLD	Blood

On UM_ _ Worksheet	
URBC	RBCs
UWBC	WBCs
UEPI	Epithelials
UBACT	Bacteria
UCAST	Casts
OTHER	Other

2. FUNCTION: MEM ONLY for order codes: UCIF, PHUR, SPGU

UCIF: Worksheet UA_ _. Accept computer calculated result:

a. If leuk and/or nitrite is pos→ Display: "Order Urine Culture"
Resulted with "Urine Cultured".
Accept.

Go into RE and order a UC on a separate access number.
Remember to enter DX code for UC.
Order using the same collect and receive times as UCIF.

b. If leuk and nitrite are both neg→ "Urine Culture not Indicated.
Accept.

PHUR: Worksheet UA_ _ .

SPGU: Worksheet UARI (RI Only).

3. ADDITIONAL INFORMATION:

To Modify Results: Function MEM See pages 13-14, Modifying results

GUI FUNCTION UR - Urinalysis Result Entry.
Log into Misys Gateway GUI

Click on Urinalysis Result Entry keyboard folder.

Your tech number and name will display. Select URHP from the keyboard lists. Current shift will display. Click OK.

Acc. No.: Enter the Access Number and <Enter> OR Scan in CID from barcode label and <enter>.

Results will automatically download. Results can also be entered manually if the interface is down.

Urine keyboard and specific patient demographics data will display.

Note: Mandatory keys display in Yellow.
Color, Clarity, Specific Gravity & pH are mandatory for UA, UAM, UAIF.
RBC, WBC, Epithelial, Bacteria and Cast Keys are mandatory for UAM and qualifying (positive) UAIF.

A: Color key. Possible response keys will display.
Enter code for color. <Enter>.
(Example: Color (A) is 1=Yellow, 3=DYel, or 9=Red, & etc.)

W: Clarity key. Possible response keys will display.
Enter code for clarity <Enter>
(Example: Clarity (W) is 1=Clear, 2=Hazy, or 3=CLDY & etc)

G: Specific Gravity key, enter the whole number.
(Example: 25 or 5) and <Enter>.
Once you <Enter>, the result will default to 1.025 or 1.005.
The computer will automatically precede the number entered with 1.0 and will automatically enter any leading zeroes.

J: pH key, enter numerical result without decimal place (Example: 7 or 55) and <Enter>.
Once you <Enter> the computer will automatically enter the decimal place (Example: 7.0 or 5.5)
Note: If pH is unreadable, please see modifying results, page 3.

Test Strip Abnormal/Positive Results:
If any of the remaining parameters on the dipstick are positive, enter the test key and the corresponding result key and <Enter>.

(Example: S = Glucose. Result: 3 = 500).

Test Strip Normal/Negative Results:
Result all positives.

Click on <QA Review> Tab to result the remaining tests on the test strip that are negative or normal.
This will default all the remaining macro parameters to NEG (Negative) or their normal value.

Resulting Microscopic Tests:
There are no defaults built into the system for the microscopic.

Enter the appropriate test key (Example: Z=RBCs) and then the appropriate result key (Example: 3=5-10) and <Return>.

You may also result the N (Other) key for crystals, various unusual cells, yeast, mucous, etc. Precede/quantify each "Other " observation using Occ, Few, Mod or Many.

Enter the ETC code **UA2RH** (UA Specimen Sent to Regions for Identification of Unknown Cells) under the "Other" test on the keyboard when a urine specimen is sent to Regions for identification of unknown cells.

Note: If a UAIF is ordered 'waiting" and a UAML is reflexed due to dipstick results, the UAML will automatically also be ordered as "waiting".

Test Keys with Multiple Answers: CAST, Q OR "OTHER" TESTS,
More than 1 result may be entered for these tests. To modify or remove extra or incorrect results, see next page.

Modifying/Editing Results before Saving (before Filing/Accepting):
Edit results in the "Resulting" Tab, not the QA Review Tab.

1. If only one result is allowed for that parameter, reselect the key and reenter new results. <Enter>.

2. Click on / Highlight the test + results in the macro or micro results list and then click on the Remove key. All results will be removed. <Enter>. Then reselect that key and enter the correct results.

3. If multiple results have been entered for a test and you want to remove only some of the results, Highlight the test and then click on the Edit/Comments key.
   In the Edit Results box, click on the results you want to remove and then click/highlight the Remove key.

   Keep other results, or remove all results for that parameter and start over.

   Example: N (other), You may remove one, or remove all and start over.

4. If any of the keys are unreadable (except UCOL and UWRAP), you would select that key and enter the (U) key-UNIN = Unable to Interpret, then select the Q (comment) key and result with (S) key - SODIP =Unable to read other UA parameters due to color of urine, and the (P) key - UCULT = Urine Cultured. In Order Entry order a urine culture with same collect date and time on any SODIP urine results. QA Review results and Save.

Finishing Resulting

Once all the positive and mandatory parameters have been correctly resulted, Press <QA Review> Tab.

REVIEW all results. Return to "Resulting" Tab to edit any results. See below for Modifying before Saving.

Note: Special logic rules may display and direct you to review, record, order UC, notify provider, etc. Review pop up boxes and click OK.

Saving/Accepting Results:
To save/accept/file results, you must have entered all mandatory results and completed QA review. Once results are saved, you cannot reject results or place them in Hold. To later modify/correct results, see page 4.

Click on SAVE: Results will file and a blank keyboard screen will display for next accession number entry

Rejecting Results:
If results have not been saved and you want to start over, click on Reject. No results will be saved or held.

Placing Results into Hold:
If, at any point prior to saving, you wish to place the results in a hold file, click on the HOLD key.
<<Filing to the hold file>> will display.
When you reenter the Acc#, the HOLD results will display. Edit / continue, then save/ accept.

Calculations and Display Messages:

Q – Comments Key Entries:
See further information below – due to special logic rules display messages.

Key	Code	Text
[	LVM	Microscopic Corrected for Low Volume
Z	UMNI	Urine Micro Not Indicated.
S	SODIP	Unable to Read Other UA Parameters Due to Color of Urine

Please note: Other keys also display, but should not be used to result Q/Comments test.

Do not result Q with 1,2,3,4,5,6,0 (quantity keys), / (HIDE) key. If Q/Comment key is selected in error you highlight and remove.

Entering Multiple Results onto the Q (Comment) key:
Enter Q. Result with "P,S,[(string 3 codes). You can string them together by just selecting the key one after another and the computer will separate them with a | (broken vertical bar) after you hit <Enter>

This will translate to: Comment: Urine Cultured
Unable to Read Other UA Parameters Due to Color of Urine
Microscopic corrected for low volume

If you type in any U's (UNIN), the system will automatically order a microscopic and ask you to order a Urine Culture.
Remember to enter the DX code for the UAML if it is not added on and performed on the same day.

If you type in U's (HIDE) for Leukocytes and/or Nitrite, the system will automatically order a microscopic and ask you to order a Urine Culture. To do this, go into GUI Order Entry and order the UC on a different access number with the same date and time as urine AND Inoculate and label the UC plate.
NOTE: A urine culture is to be set up even if a UCIF has not been ordered in these circumstances.

Resulting UAIF with Negative Results:
If test code UAIF has been ordered, once the test strip parameters have been resulted, if they are all negative or normal,

The computer will prompt with "Due to negative macro, result key Q (comment) with Key Z (UMNI)".
Enter Q, then Z and <Enter>.
Return to QA review.

Low Volume Microscopic:
If the microscopic was corrected for low volume.
Enter Q, Then Enter **[** The **[** key translates to "Microscopic corrected for low volume".

Resulting if Medication or Color Interference:
If a patient is on Pyridium or has an elevated bilirubin, you may only be able to result the Clarity and Color, these two must always be resulted.

Note: If you are unable to result the Specific Gravity and pH, you will need to enter "dummy" results originally and then Edit/Comment and enter ETC of UNIN (Unable to Interpret) and click Add or <Enter that will replace your number. For example, enter 1.010 for the Specific Gravity and press Enter. Then click on those results in the Macro window to highlight the result, click the Edit/Comment button, enter UNIN in the Text Code box, click Add, and then finally click OK. Notice that the Specific Gravity result now shows UNIN in the Macro window. Do the same steps for the pH, if necessary.

For all other parameters, enter the (U) key for UNIN for each parameter on the test strip. Once you have answered all parameters and you click on the QA Review tab, one or more popup boxes will display. **You must comply with each popup box instruction.** These popups are determined by the parameter that was resulted with UNIN.

Positive Bilirubin:
If the bilirubin is positive (Sm, Md, Lg), report the positive result, or if you are unable to read the bilirubin result it with UNIN**,** all positive results will have the ETC BILC automatically appended once you select OK on the keyboard prompt.

In manual entry will also add this code (BILC) to any positive result.

BILC means "False positive results may occur in the presence of Urobilinogen, Indican (Indoxyl Sulfate) and metabolites of Lodine (Etodolac). Interpret results in conjunction with clinical presentation."

Bilirubin tests WILL NOT be confirmed due to a nation-wide shortage of the Ictotest tablet.

1. **If you have resulted the bilirubin with SM, MD or LG from the dipstick**
   a. You do not need to change results. Sm, Md or Lg can be reported without confirmation. The BILC will automatically append once you enter the result and select Accept.
2. **If you have resulted the D (UBIL) with UNIN** (Unable to Interpret):
   a. Result Key Q with Key S (SODIP), Enter Q and result with S.

Unspun Micro:
If you want to comment that the microscopic was done on unspun urine::
Enter N (Other) key. Result with an **=**. The (**=**) key translates to Unspun Micro.

Correcting results AFTER Saving/Accepting:
Reenter the Acc#. "Loading Previously Filed Data" will display.

Choose parameter to be corrected and enter new results. Review in QA review. Save.
NOTE: correction comment is automatically generated. Error documentation report will need to be completed.

To Order a Sensitivity on a UC:

Once an accession number has been assigned in Order Entry, you will be prompted for the following:

SDES (Specimen Description): This prompt will autoanswer with URINE (Urine). You may also choose UW (Weebag), UCB (Cath/Bladder) or USUP (Urine Suprapubic) to describe the specimen.

SREQ (Special Requests): This prompt will autoanswer NONE. If a sensitivity has been requested, enter SEN (Sensitivity Ordered) at this prompt.

Click the Save button to accept the new results.

DO NOT ENTER "SEN" AS AN ORDER MODIFIER IN ORDER ENTRY. This should only be entered in the Result Entry window after the accession number has been assigned.

If a Sensitivity gets ordered after the culture is already at the Central Lab, call the Central Lab to order it. DO NOT ENTER ANY INFORMATION into SREQ; Central Lab will never see the added order.

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