



**ARMY MEDICINE**  
Serving To Heal...Honored To Serve

# I-STAT ANALYZER TRAINING





# OBJECTIVES



- Understand the components of the i-STAT analyzer
- Correctly handle a specimen for blood gas analysis (ABG) and PT/INR
- Perform both ABG and PT/INR testing on the i-STAT
- Perform daily maintenance on the i-STAT



# PURPOSE



- The use of the i-STAT allows quantitative blood gas analysis and PT/INR test results at the patient's bedside.
- In order to ensure accurate, reliable patient results, all personnel utilizing an i-STAT must be properly trained and that training must be documented.



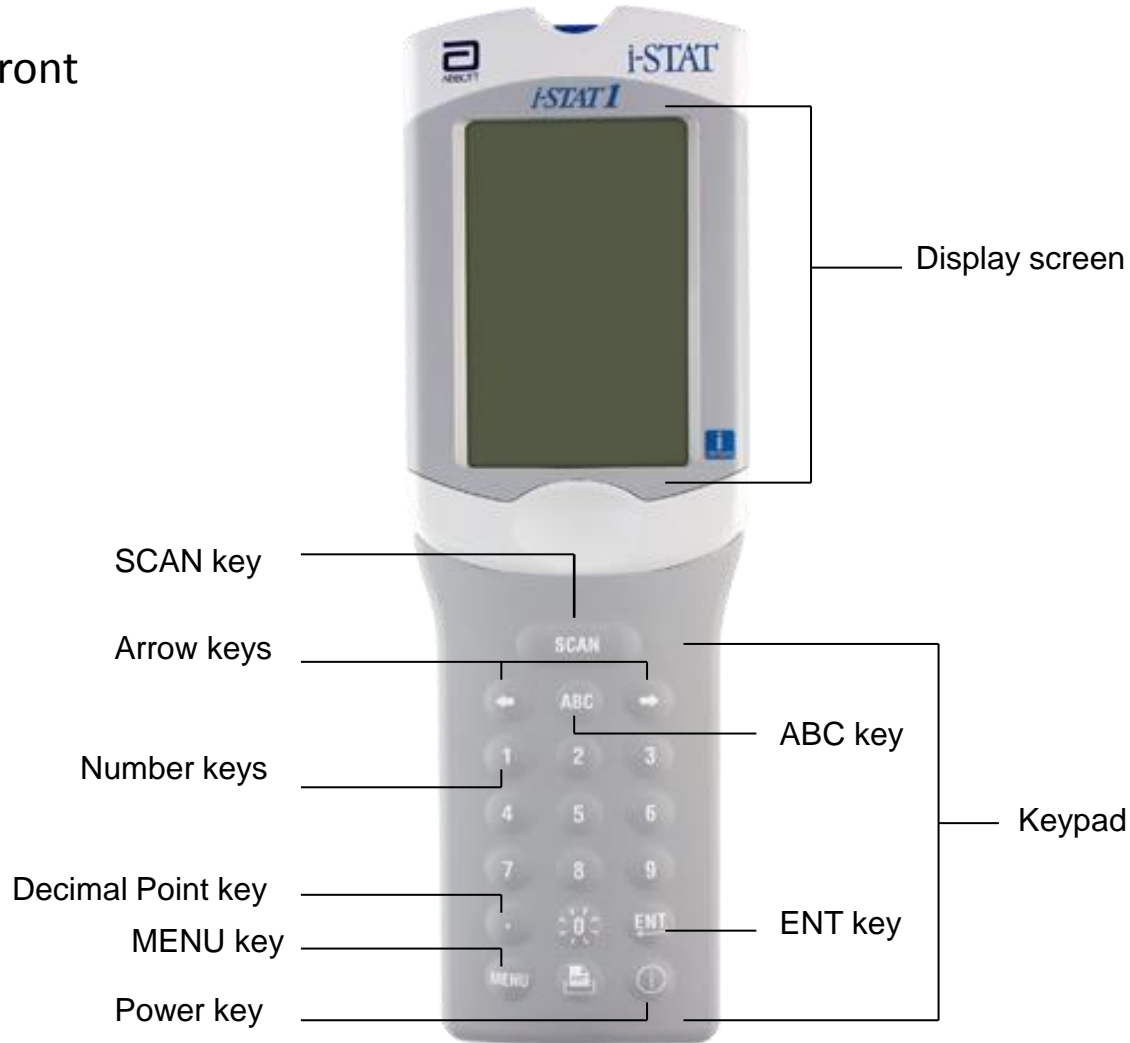
# PURPOSE



- Training frequency is initial, at six months, at one year and annually there after.
- Initial training consist of lecture, hands-on and written exam. A competency checklist is also a part of the training; initial, 6 months, 1 year and annually.

# ISTAT COMPONENTS

Handheld: Front

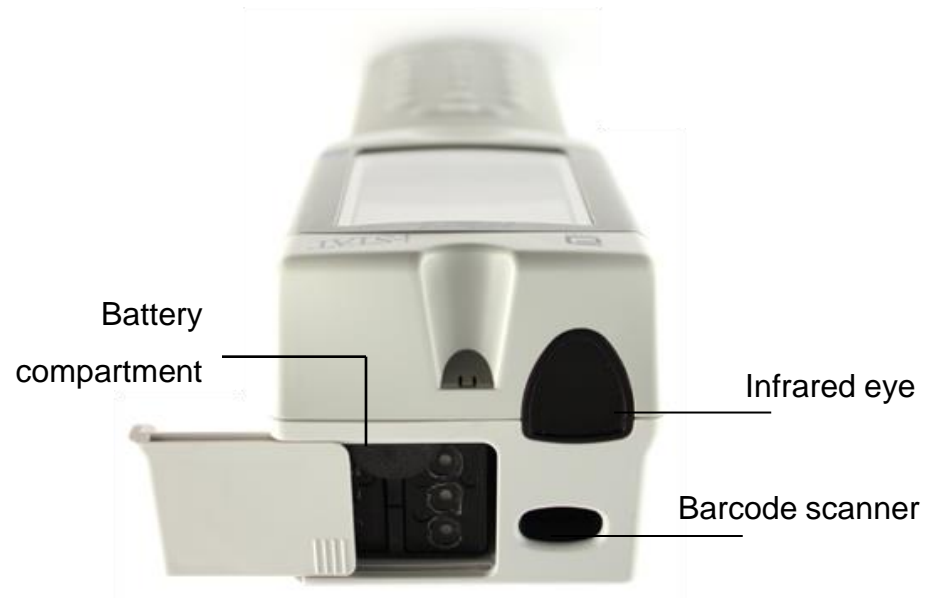


# ISTAT COMPONENTS

Handheld: Bottom



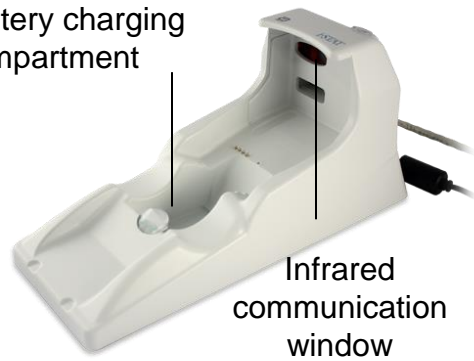
Handheld: Top



# ISTAT COMPONENTS

## Downloader/Recharger

Battery charging compartment



- Used to charge Handheld and spare batteries
- The Handheld must be properly placed in Downloader/Recharger
- Spare battery must be properly placed in the battery charging compartment
- Red or green status light illuminates when charging
- The handheld must be properly aligned with the infrared communication window to transmit results to the Data Manager.

Status Light



# ISTAT COMPONENTS

Abbott rechargeable battery pack



Battery compartment

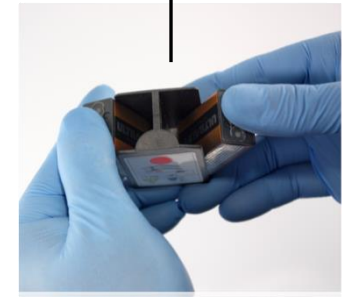


## Recharging in the Downloader/Recharger

- Use the spare battery compartment
- Red dot facing up; gold contact pads facing the foot
- Green light near the battery compartment illuminates when charging



9-volt lithium disposable batteries with battery carrier



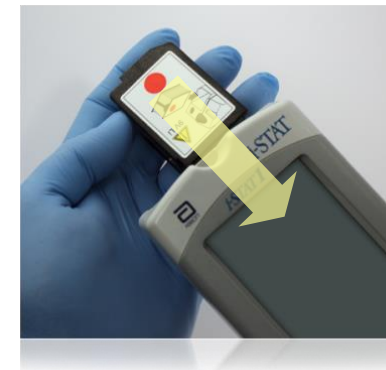
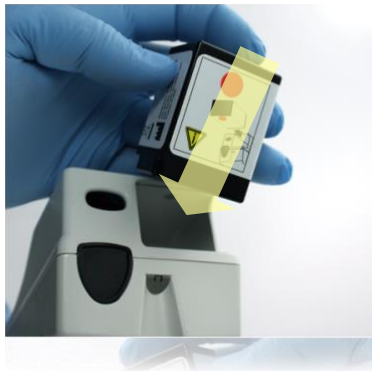
**Important Note:**  
Batteries can be left in recharger- they will not overcharge!



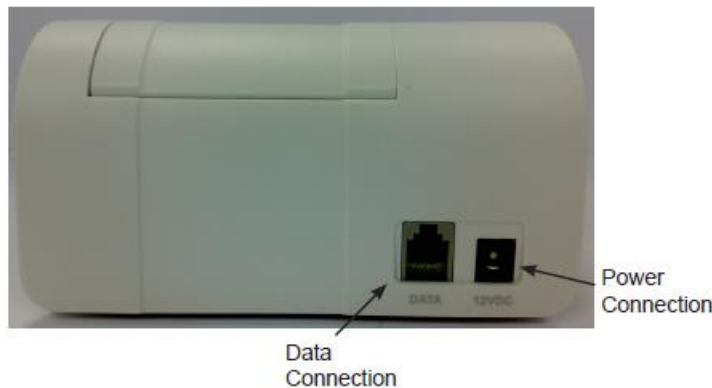


## Replacing Battery

- Slide open the battery compartment
- Tilt the Handheld to slide out the battery
- For **9-volt batteries**: remove batteries from battery carrier and replace with NEW 9-volt batteries
- Insert new battery pack/battery carrier with gold dots facing down and red dot facing the screen
- Slide the battery compartment cover back into place



# ISTAT COMPONENTS



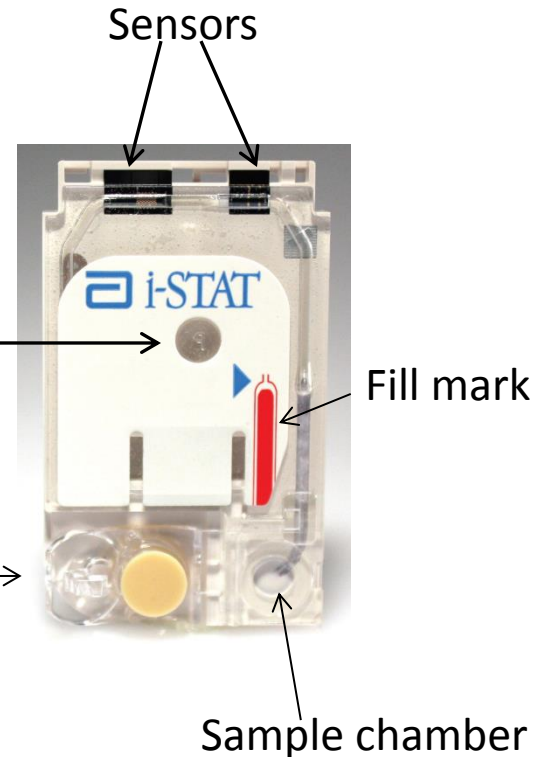
## Portable Printer

- The printer can receive data directly from the analyzer via Infra-red (IR) transmission.

## To print results

- While viewing the results hold down the print button on the handheld while pointing at the IR window on the printer.
- The results will begin to print.
- The printer is recharged using a power adapter connect to an outlet

# CARTRIDGES



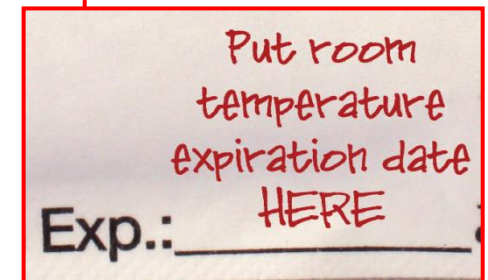
- Room Temperature Store indicated on the box:
  - Number 14 and a “d”= 14 days room temperature storage
  - Number 2 and a “m”= 2 months room temperature storage



# CARTRIDGES



\*\*\*DO NOT RETURN CARTRIDGES TO THE REFRIDGERATOR ONCE AT ROOM TEMPERATURE\*\*



Put room temperature  
Exp.: expiration date HERE

# Sample Collection and Handling: Syringe

- When collecting a syringe sample from an arterial stick, venipuncture, etc., care should be taken to prevent the introduction of ambient air into the sample when it is collected.
- If using a syringe, expel all air bubbles. Cap or seal the end of the collection device.

NOTE: If air bubbles are present in the sample, results may be invalid for O<sub>2</sub>. If small air bubbles are present, please annotate it on the final report in the patient's chart.



Ensure air bubbles are not trapped in the syringe

# Sample Collection and Handling: Syringe



Always mix properly!



Mix sample by vigorously rolling the syringe between palms for 5 seconds; invert and repeat.



# Sample Collection and Handling: Syringe

## Avoid Quality Check Codes!

- Mix the sample thoroughly and gently
- Discard first few drops
- Fill to the fill mark
- Close the closure to seal



If the cartridge is not sealed, the handheld will return an *Unable to Position Sample* Quality Check Code.



closure is closed



# Sample Collection and Handling: Fingerstick

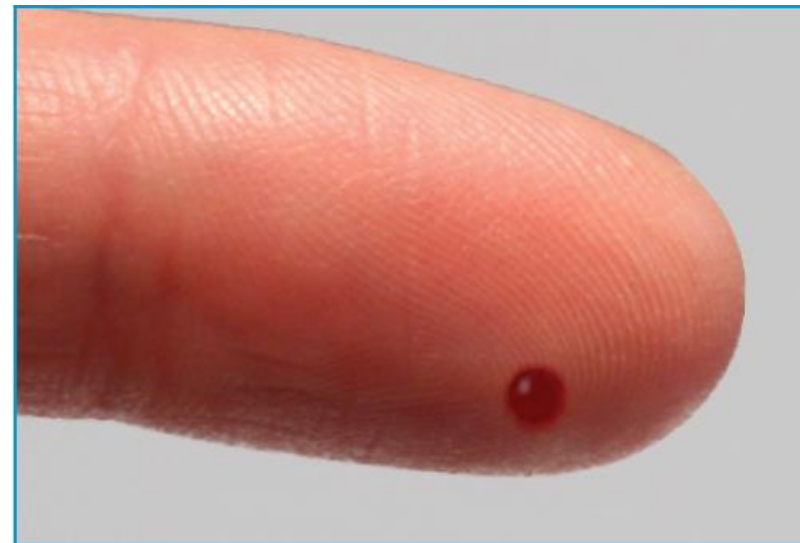
- Use a skin puncture device that provides free-flowing blood.



**Inadequate blood flow may affect results**

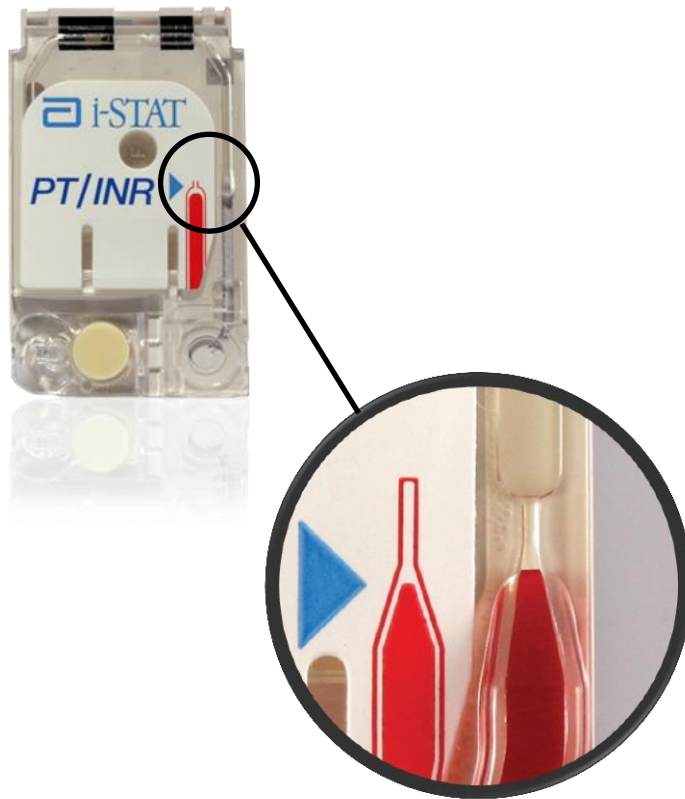


- Gently squeeze the finger to develop a hanging drop of blood.
- Use the first sample of blood to perform the test.





# Sample Collection and Handling: Fingerstick



- Bring PT/INR cartridge up to the finger
- Immediately close the cartridge

Fill cartridge to the fill mark

# HOW DO I COMPLETE TESTING

STEP 1:  
Turn i-STAT analyzer on



STEP 2:  
Press "2" for i-STAT Cartridge



- STEP 3: Scan your operator ID using your barcoded badge.
- STEP 4: Scan the patient's ID number using the patient's armband. If this is not feasible, manually enter.



*Per Hospital policy all patients must be identified with two identifiers*  
**Full Name and Date of Birth**



# REMEMBER

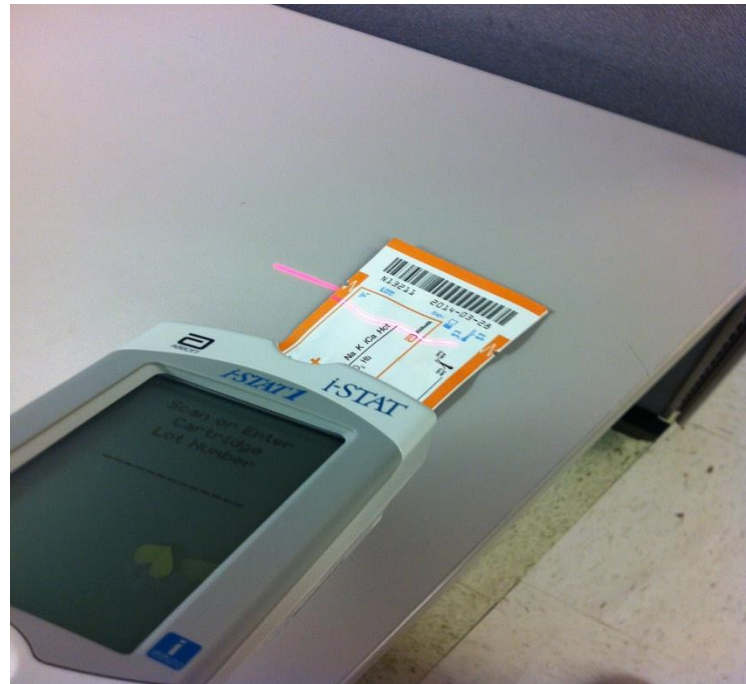


## Scanning is everything

- Scanning prevents manual entry errors and results going to the wrong patient chart.
- If you must manually enter a number, double check it before you press the enter button.

# SAMPLE TESTING

- Step 5: Scan Lot number on the cartridge pouch. The analyzer will prompt you to insert the cartridge.



# SAMPLE TESTING



**Insert cartridge into the handheld promptly.**

# SAMPLE TESTING

- At the end of the procedure, remove the i-STAT cartridge and insert the i-STAT analyzer into the docking station.





# HOW DO I RECORD RESULTS CONT'D



- If a result is flagged with “<” or “>”, the result may be outside the cartridge’s measuring range. If a result is flagged with “\*\*\*”, the cartridge sensor may have been compromised. In either case, repeat test with new cartridge.



# HANDHELD CLEANING



1. Clean the display screen with
  - PDI® Super Sani-Cloth®
2. Rinse using gauze pad moistened with water
2. Allow to dry



## Decontaminating the handheld

1. Use 1:10 bleach solution
2. Soak gauze pads, remove excess solution
3. Soften, then remove dried blood; do not scrape
4. Clean entire surface twice
5. Rinse with gauze pad moistened with tap water

**Important note:**  
**Do NOT let liquid enter the cartridge port or battery compartment.**





# QUALITY CONTROL TESTS



- The i-STAT analyzer will automatically perform electronic quality control & complete the testing.



# INTERFERENCES



ANALYTE	INTERFERENCE	INTERFERENCE CONCENTRATION	EFFECT ON ANALYTE RESULT
Sodium	Bromide	37.5 mmol/L	Increase (↑) Na
Ionized Calcium	Acetaminophen Magnesium  Acetylcysteine Bromide Lactate  Salicylate (Therapeutic)   Salicylate	1.32 mmol/L 1.0 mmol/L 10.2 mmol/L 37.5 mmol/L 6.6 mmol/L  0.5 mmol/L  4.34 mmol/L	Decrease (↓) iCa Increase (↑) iCa by 0.04 mmol/L Decrease (↓) iCa Increase (↑) iCa Decrease (↓) iCa by 0.07 mmol/L Decrease (↓) iCa by approx 0.03 mmol/L Decrease (↓) iCa



# INTERFERENCES



ANALYTE	INTERFERENCE	INTERFERENCE CONCENTRATION	EFFECT ON ANALYTE RESULT
Hematocrit	<p>White Blood Count (WBC)</p> <p>Total Protein</p>	<p>Greater than 50,000 WBC <math>\mu</math>L</p> <p><u>For measured Hct &lt; 40%</u> For each g/dL below 6.5 For each g/dL above 8.0</p> <p><u>For measured Hct &gt; 40%</u> For each g/dL below 6.5 For each g/dL above 8.0</p> <p>Abnormally high</p>	<p>May increase (<math>\uparrow</math>) hematocrit</p> <p>Decrease (<math>\downarrow</math>) Hct by 1% PCV</p> <p>Increase (<math>\uparrow</math>) Hct by 1% PCV</p> <p>Decrease (<math>\downarrow</math>) Hct by 0.75% PCV</p> <p>Increase (<math>\uparrow</math>) Hct by 0.75% PCV</p> <p>Increase (<math>\uparrow</math>) Hct</p>



# INTERFERENCES



ANALYTE	INTERFERENCE	INTERFERENCE CONCENTRATION	EFFECT ON ANALYTE RESULT
PCO <sub>2</sub>	Propofol (Diprován®) Thiopental Sodium		For patients administered propofol or thiopental sodium i-STAT recommends the use of G3+, CG4+, CG8+, EG6+, and EG7+ cartridges, which are free from clinically significant interference at all relevant therapeutic doses. I-STAT does not recommend the use of EC8+ cartridges for patients receiving propofol or thiopental sodium



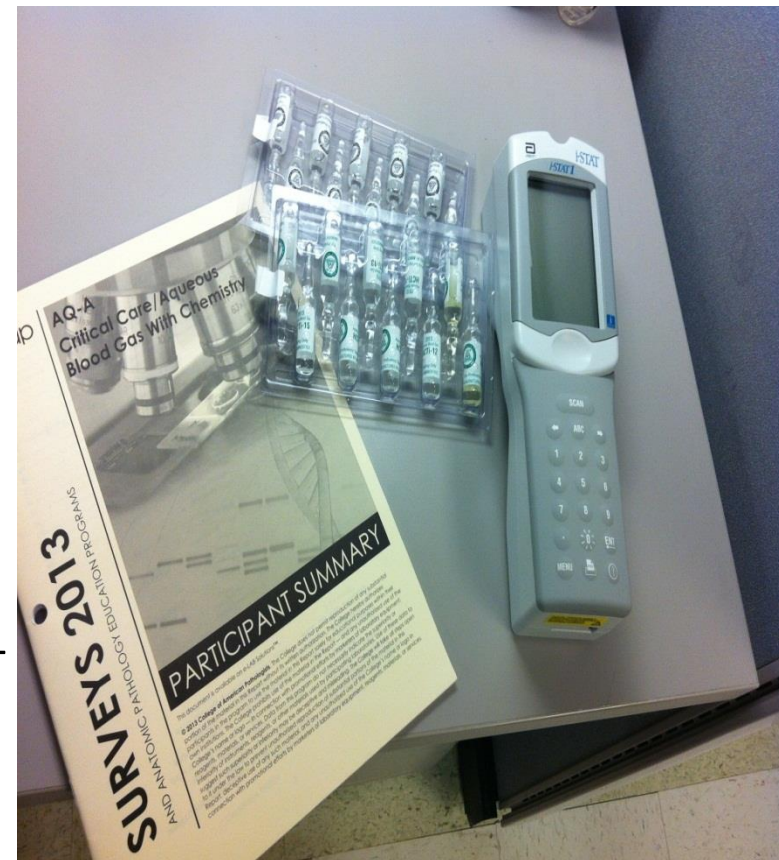
# TESTING YOURSELF OR CO-WORKERS



- It is a work rule violation to test yourself or co-workers.
- Exception to this is an emergency, the person will need to go to the Emergency Room for assistance.

# PROFICIENCY TESTING

- Proficiency Testing (PT) will be delivered 3 times per year.
- Each sample will need to be performed on all meters on your unit.
- Independently, run samples in **PROFICIENCY TESTING** mode, a POCT Staff member will be present to assist.
- Record the results on the form provided.
- Results will NEVER be compared amongst the departments.
- If an operator's performance results in an out-of-range PT, the POCT staff will observe, using the same specimen, to re-assess their competency.



# QUESTIONS



- ❑ For more information or if you have any questions, review the
- iSTAT Blood Gas procedure manual or contact
- the POCT Staff at
- 787-8359 or 706 830 1621





# TRAINING COMPETENCY



## Step One

- Print out the documentation showing you have passed the test.

## Step Two

- Let your Unit POCT Trainer know you have completed this portion of your training and present him/her with documentation.

## Step Three

- Demonstrate your performance of a i-STAT Arterial Blood Gas for your trainer. Have the training documented on your glucose competency sheet and have your Unit POCT Trainer submit a memorandum to the POCT Staff so your information can be updated in the system.

## Step Four

Place all certificates and training records in your CAF Folder.



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