

# Beaumont

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Last Approved 2/15/2024  
Effective 2/15/2024  
Last Revised 2/15/2024  
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Supv, Laboratory  
Area Laboratory-  
Chemistry  
Applicability Royal Oak

## Outreach Problem Serum Separator Tubes - Royal Oak

Document Type: Policy

### I. PURPOSE AND OBJECTIVE:

- A. The purpose of this procedure is to provide guidance to Automated Chemistry technical staff in determining action for inappropriately processed serum separator tubes (SST) that may be received from Outreach. A Technical Bulletin, flowcharts and stability tables are also included.

### II. POLICY STATEMENT:

- A. It is essential that gold-top/SST tubes are centrifuged as soon as the blood has clotted (clotting takes 30-60 mins). Centrifugation allows the gel to separate red cells, white cells, and platelets from the serum. If cells remain in contact with serum, cell contents (e.g. potassium, LD, AST) leak into the serum, or because the cells are metabolically active they utilize glucose. Consequently, the following changes start to occur within 2-4 hours from blood collection:
1. Potassium increases
  2. Glucose decreases
  3. Other tests are affected after longer periods (e.g. LD, CO2, Phosphate, TSH)

### III. LABORATORY BULLETIN:

*Updated Policy - Un-Centrifuged Serum Separator Tubes Received by Lab. August 3, 2009*

# Beaumont Laboratory

Royal Oak • Troy • Grosse Pointe

## Technical Bulletin

### ATTENTION PHYSICIANS AND OFFICE MANAGERS

#### – UPDATED POLICY –

#### UN-CENTRIFUGED SERUM SEPARATOR TUBES RECEIVED BY LAB –

##### Why have a policy?

It is essential that gold-top/SST tubes are centrifuged as soon as the blood has clotted (clotting takes 30 – 60 mins). Centrifugation allows the gel to separate red cells, white cells and platelets from the serum. If cells remain in contact with serum, cell contents (e.g. potassium, LD, AST) leak into the serum, or because the cells are metabolically active they utilize glucose. Consequently the following changes start to occur within 2-4 hours from blood collection:

- Potassium increases
- Glucose decreases
- Other tests are affected after longer periods (e.g. LD, CO<sub>2</sub>, phosphate, TSH)

##### What is the updated policy?

Un-centrifuged tube collected less than 24 hours prior to receipt:

Routine Chemistry tests performed. The following cautionary note will be reported with results: "Tube received unspun – may elevate K and LD and lower gluc."

If results include a critical glucose or potassium value, these will be called to the physician after 6 am the next day.

Un-centrifuged tube collected 25-48 hours prior to receipt:

Only selected chemistry tests (e.g. BUN, creatinine) can be performed; others will be canceled (e.g. electrolytes).

Un-centrifuged tube that has been frozen, exposed to excessive heat or collected more than 48 hours prior to receipt:

**All tests will be canceled.**

In summary, in order to cause as little inconvenience to you and your patients, it is essential that your staff:

- Centrifuges the gold-top/SST tube as soon as the blood has clotted (clotting takes approximately 30-60 mins).
- Does NOT centrifuge before clotting has occurred.
- Documents the time of blood collection on the requisition form.

Effective Date  
Submitted by

August 3, 2009  
Elizabeth Sykes, MD, Medical Director, Automated Chemistry and  
Special Testing, Royal Oak

468 Cadieux  
Grosse Pointe, MI 48230  
313-343-1637

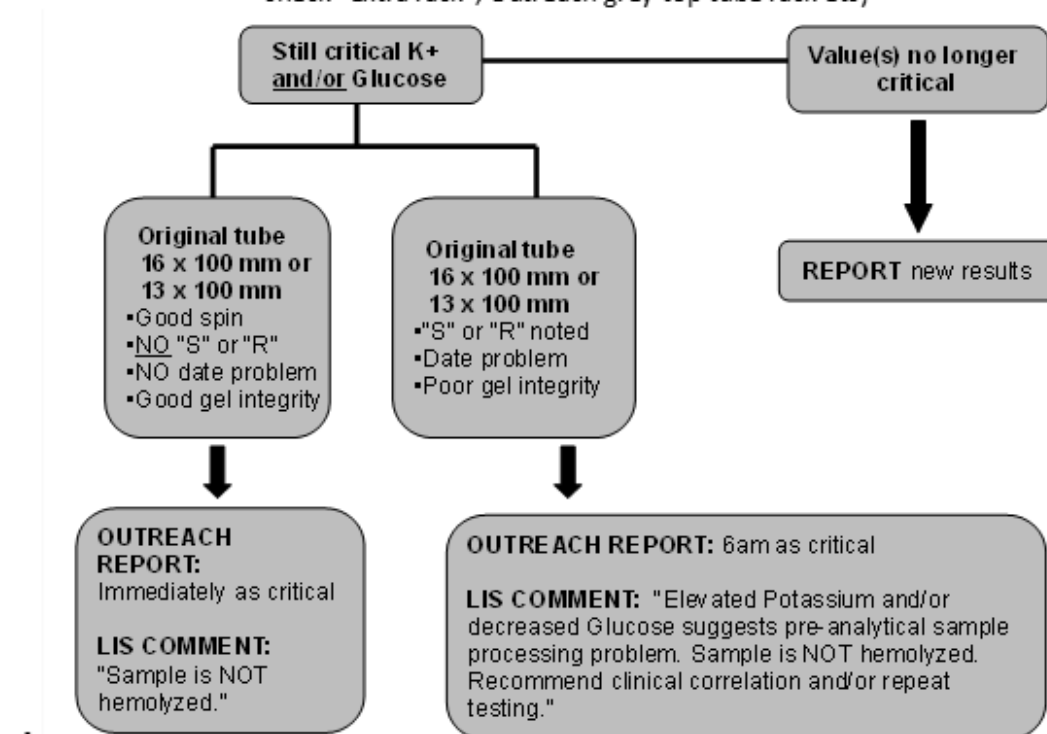
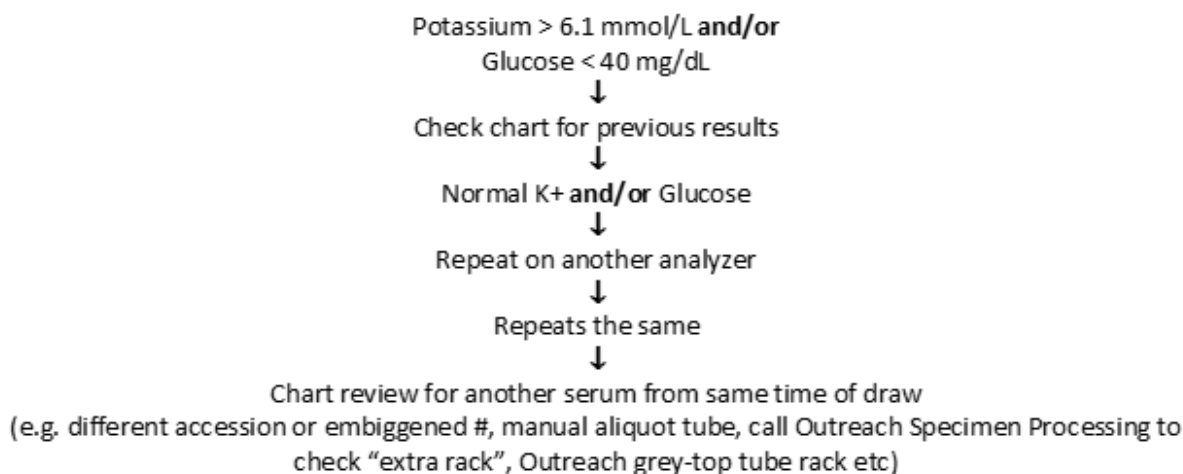
Beaumont Laboratory  
Outreach Customer Service  
1-800-551-0488

3601 West 13 Mile Road  
Royal Oak, MI 48073-6769  
1-800-551-0488

44201 Dequindre Road  
Troy, MI 48065-1198  
248-964-8030

[www.beaumont-hospitals.com/labs](http://www.beaumont-hospitals.com/labs)

## IV. WORK FLOW: Elevated Potassium and/or Decreased Glucose - Outreach Sample:

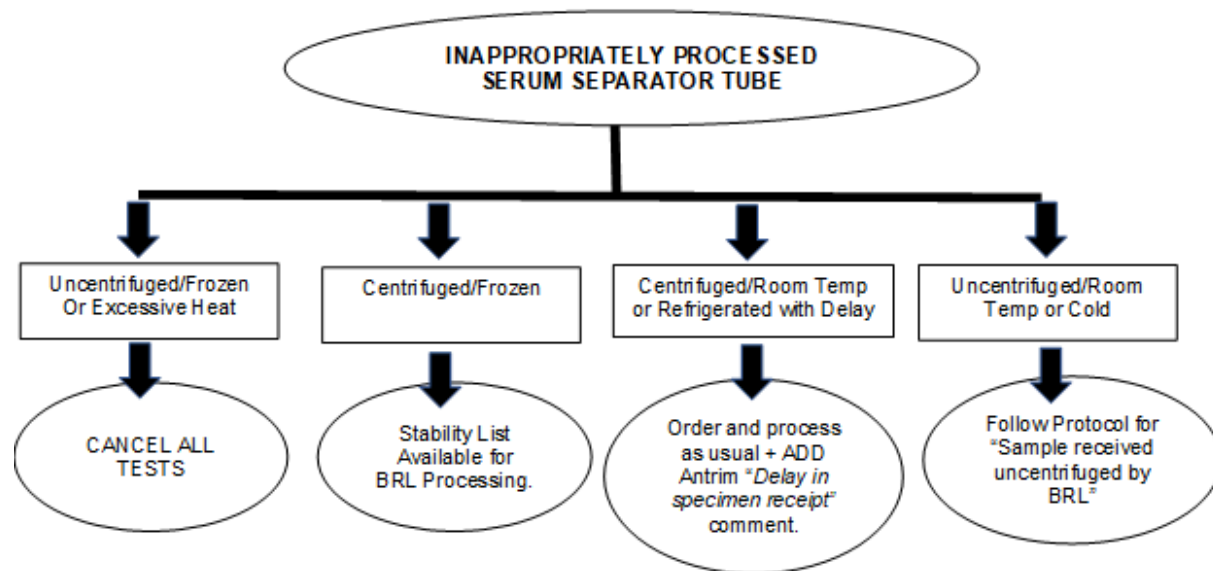


- "S" = spun by Outreach (noted on specimen tube by Outreach Processing)
- "R" = respun (noted on specimen tube)
- Integrity poor – angled gel, cells in serum, or incomplete separation of cells/serum
- Date problem/Processing delay – date of collection differs from processing date.

Poor gel integrity - If sample is "old" (has sat for several hours, already centrifuged in client's office, in Outreach refrigerated problem rack, or in archive) **do NOT re-centrifuge primary specimen**. If you must re-spin, pour off the serum into another tube and re-centrifuge the serum only.

If you receive a critical Outreach K+ that is >10.0 mmol/L, report as ">10.0 mmol/L" instead of the actual value from the analyzer.

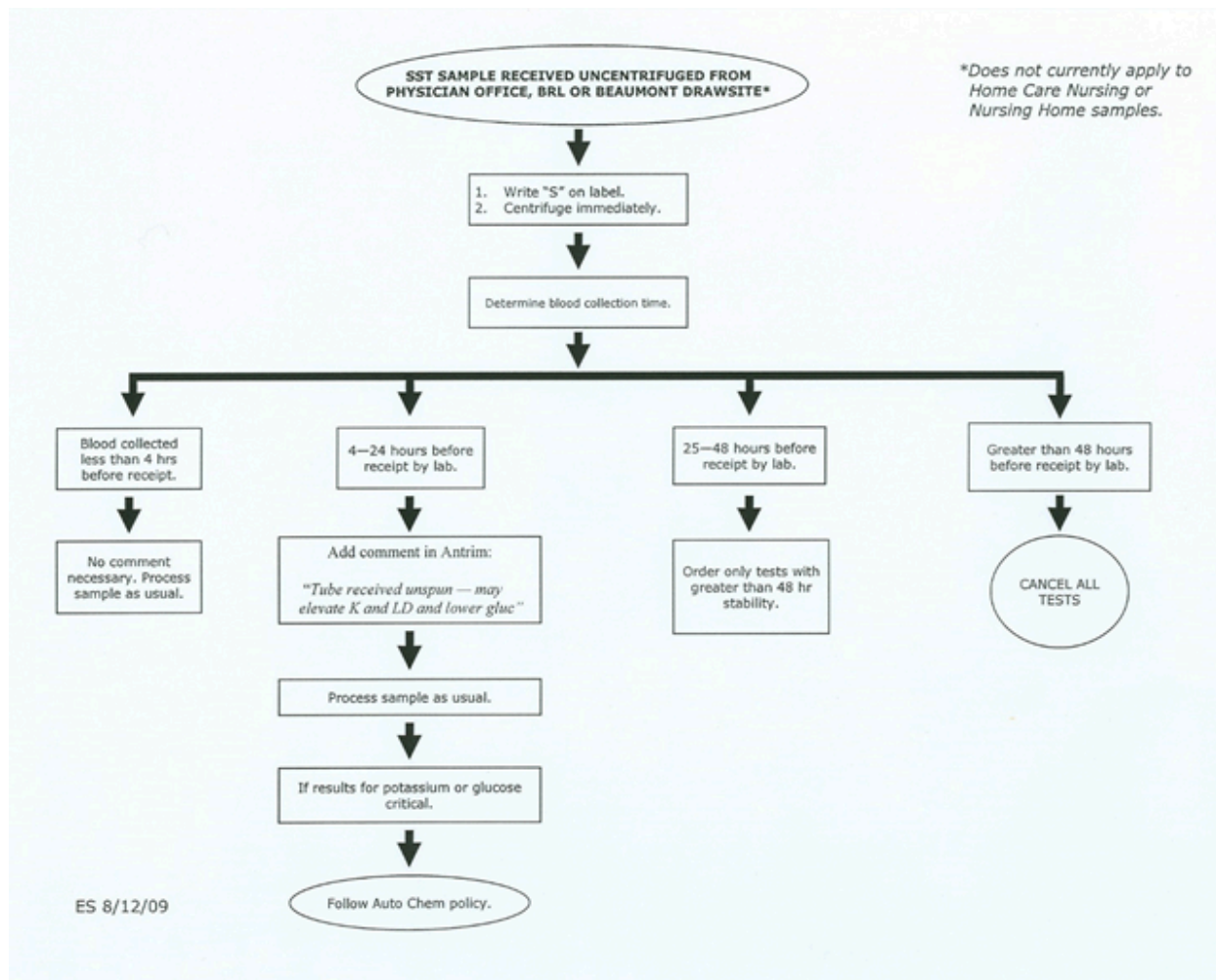
## V. WORK FLOW: Inappropriately Processed Serum Separator Tube:



ES 08/12/2009

COPY

## VI. WORK FLOW: SST Sample Received Un-Centrifuged from Physician Office, Beaumont Reference Lab or Hospital Draw Site:



## **VII. STABILITY DATA FROM ES 01MAY09 UN-CENTRIFUGED SPECIMENS:**

COPY



Stability Data from ES 01May09  
Uncentrifuged Specimen

Alphabetical Sort			By Time (hrs) Sort	
Test	Time (hrs)		Test	Time (hrs)
Albumin	48		Glucose	4
Alk Phos	48		LD	8
ALT	24		Potassium	8
Amylase	24		ALT	24
AST	24		Amylase	24
Bicarbonate	24		AST	24
Bilirubin, total	24		Bicarbonate	24
Bilirubin, direct	24		Bilirubin, direct	24
BUN	48		Bilirubin, total	24
Calcium	48		CO2	24
Chloride	48		Cortisol	24
Cholesterol, total	48		Estradiol	24
Cholinesterase	48		Ferritin	24
CO2	24		Folate, serum	24
Cortisol	24		Fructosamine	24
CK	48		FSH	24
Creatinine	48		hCG	24
Estradiol	24		HDL cholesterol	24
Ferritin	24		Iron	24
Folate, serum	24		LDL cholesterol	24
Fructosamine	24		LH	24
FSH	24		Lipase	24
GGT	48		Magnesium	24
Glucose	4		Phosphorus	24
hCG	24		Prealbumin	24
HDL cholesterol	24		Prolactin	24
Iron	24		Sodium	24
LD	8		T3	24
LDL cholesterol	24		T4	24
LH	24		Testosterone	24
Lipase	24		TSH	24
Magnesium	24		Vitamin B12	24
Potassium	8		Albumin	48
Phosphorus	24		Alk Phos	48
Prealbumin	24		BUN	48
Prolactin	24		Calcium	48
Protein, total	48		Chloride	48
Protein electrophoresis	48		Cholesterol, total	48
Sodium	24		Cholinesterase	48
Testosterone	24		CK	48
T3	24		Creatinine	48
T4	24		GGT	48
Triglycerides	48		Protein electrophoresis	48
TSH	24		Protein, total	48
Uric Acid	48		Triglycerides	48
Vitamin B12	24		Uric Acid	48

S:/Autochem/Spec Processing/Stability Chart\_Uncentrifuged\_01May09.xls / Uncentrifuged Comb

## VIII. SST SPECIMEN RECEIVED CENTRIFUGED

# AND FROZEN ON GEL: Acceptability for Testing:

## SST Specimen Received Centrifuged and Frozen on Gel Acceptability for Testing Based on RO Studies 2/25/09

Alphabetical Sort			By Approval Sort		
	Approved	Not Approved		Approved	Not Approved
A/G Ratio	X		Na	X	
Alb	X		K	X	
Alk Phos	X		Cl	X	
Alt	X		CO <sup>2</sup>	X	
Amy	X		Glucose	X	
Calcium	X		UN	X	
CK	X		Creat	X	
CKMB	X		UN/Creat	X	
Cl	X		Calcium	X	
CO <sup>2</sup>	X		Phos	X	
Creat	X		Mag	X	
Dbili	X		Tprot	X	
Dig	X		Alb	X	
Digoxin		X	Glob	X	
Estradiol		X	A/G Ratio	X	
FrT <sub>3</sub>	X		Uric	X	
FrT <sub>4</sub>	X		Alk Phos	X	
Glob	X		Alt	X	
Glucose	X		CK	X	
HDL	X		Tbili	X	
Iron, TIBC, %Sat	X		Dbili	X	
K	X		PreAlb	X	
LDL	X		HDL	X	
LH	X		LDL	X	
Lipase	X		Amy	X	
Mag	X		Lipase	X	
Myo	X		Iron, TIBC, %Sat	X	
Na	X		CKMB	X	
Phos	X		Trop	X	
PreAlb	X		Myo	X	
Prge	X		Prge	X	
Prl	X		Prl	X	
PSA	X		THCG	X	
Tbili	X		PSA	X	
Testosterone		X	Dig	X	
THCG	X		FrT <sub>4</sub>	X	
Tprot	X		FrT <sub>3</sub>	X	
Trop	X		LH	X	
TSH	X		TSH	X	
UN	X		VB12		X
UN/Creat	X		Estradiol		X
Uric	X		Testosterone		X
VB12		X	Digoxin		X
see Val's file for raw data			see Val's file for raw data		

S:/Autochem/Spec Processing/Stability Chart\_Uncentrifuged\_01May09.xls / SST-Centrifuged-frozen-combo



## Approval Signatures

Step Description	Approver	Date
CLIA Directors	Ann Marie Blenc: System Med Dir, Hematopath	2/15/2024
System Medical Director	Caitlin Schein: Staff Physician	1/26/2024
Medical Director	Subhashree Mallika Krishnan: Staff Physician	1/24/2024
Technical Director	Qian Sun: Tech Dir, Clin Chemistry, Path	1/24/2024
Policy and Forms Steering Committee Approval (if needed)	Kelly Walewski: Supv, Laboratory	1/24/2024
Lab Manager	Leah Korodan: Mgr, Division Laboratory	1/24/2024
	Kelly Walewski: Supv, Laboratory	1/24/2024

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## Applicability

Royal Oak