

OUTREACH UN-CENTRIFUGED SERUM SST TUBES

RC.CH.LOP.SH.PR.009.r01

Introduction

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, CO2, Phosphate, TSH)
-

Purpose

Technical Bulletin, flowcharts and stability tables are provided to guide our AutoChem technical staff in determining action for inappropriately processed serum separator tubes that may be received from Outreach.

Authorized Reviewers

Section Medical or Technical Director

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, CO2, 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
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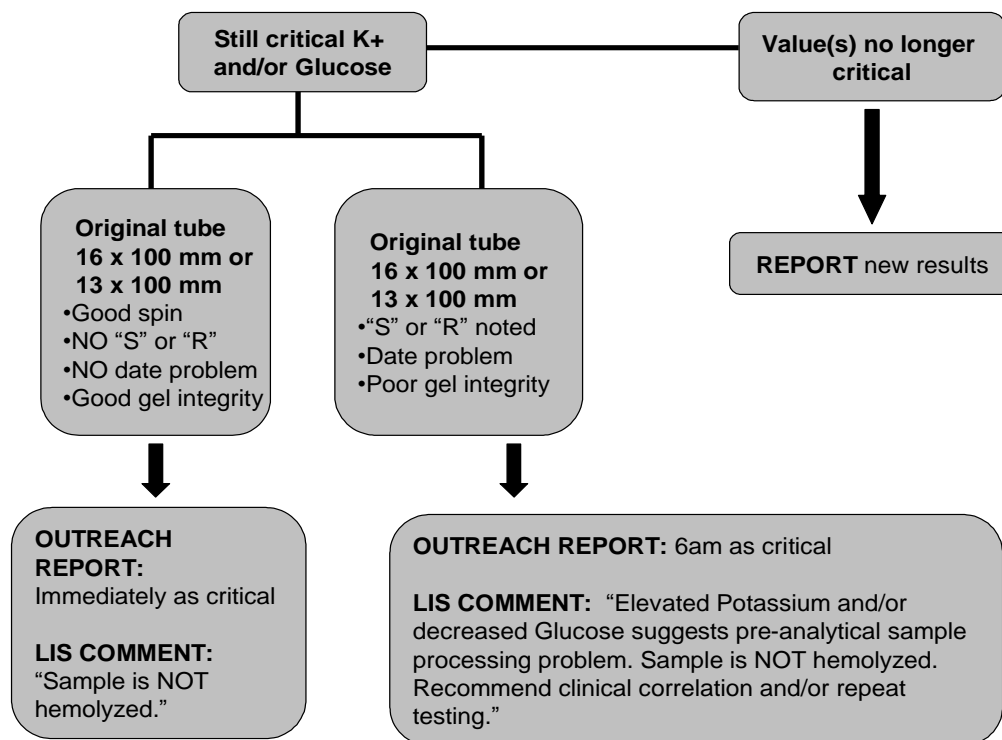
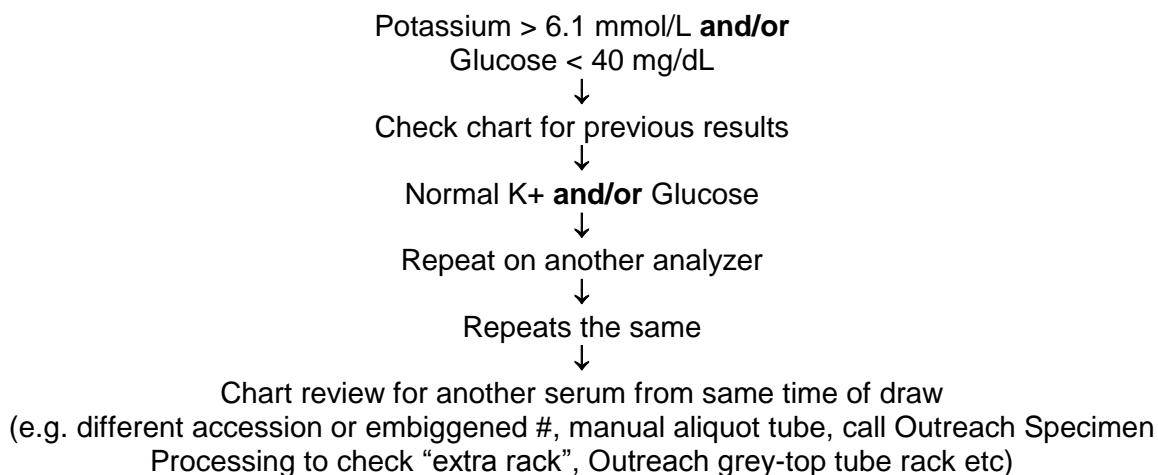
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OUTREACH UN-CENTRIFUGED SERUM SST TUBES

Elevated Potassium and/or Decreased Glucose – Outreach Samples



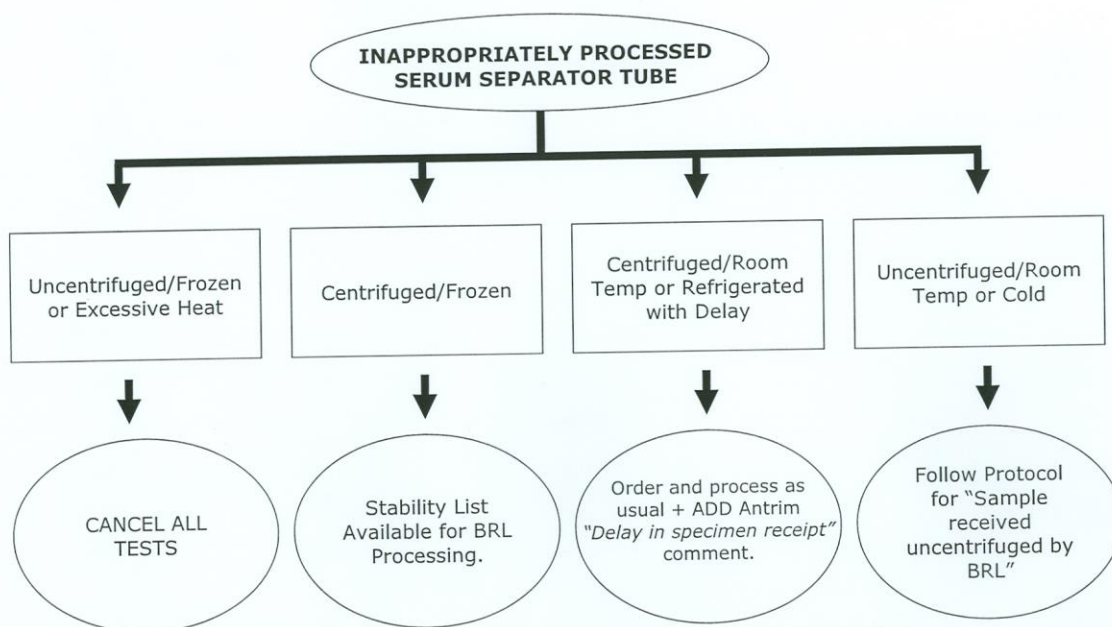
- "S" = spun by Outreach (noted on specimen tube by Outreach Processing)
- "R" = respun (noted on specimen tube)
- "US" = noted in Antrim Patient Inquiry for unspun specimen received by Outreach
- Integrity poor – angled gel, cells in serum, or incomplete separation of cells/serum
- Date problem/**Processing 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.

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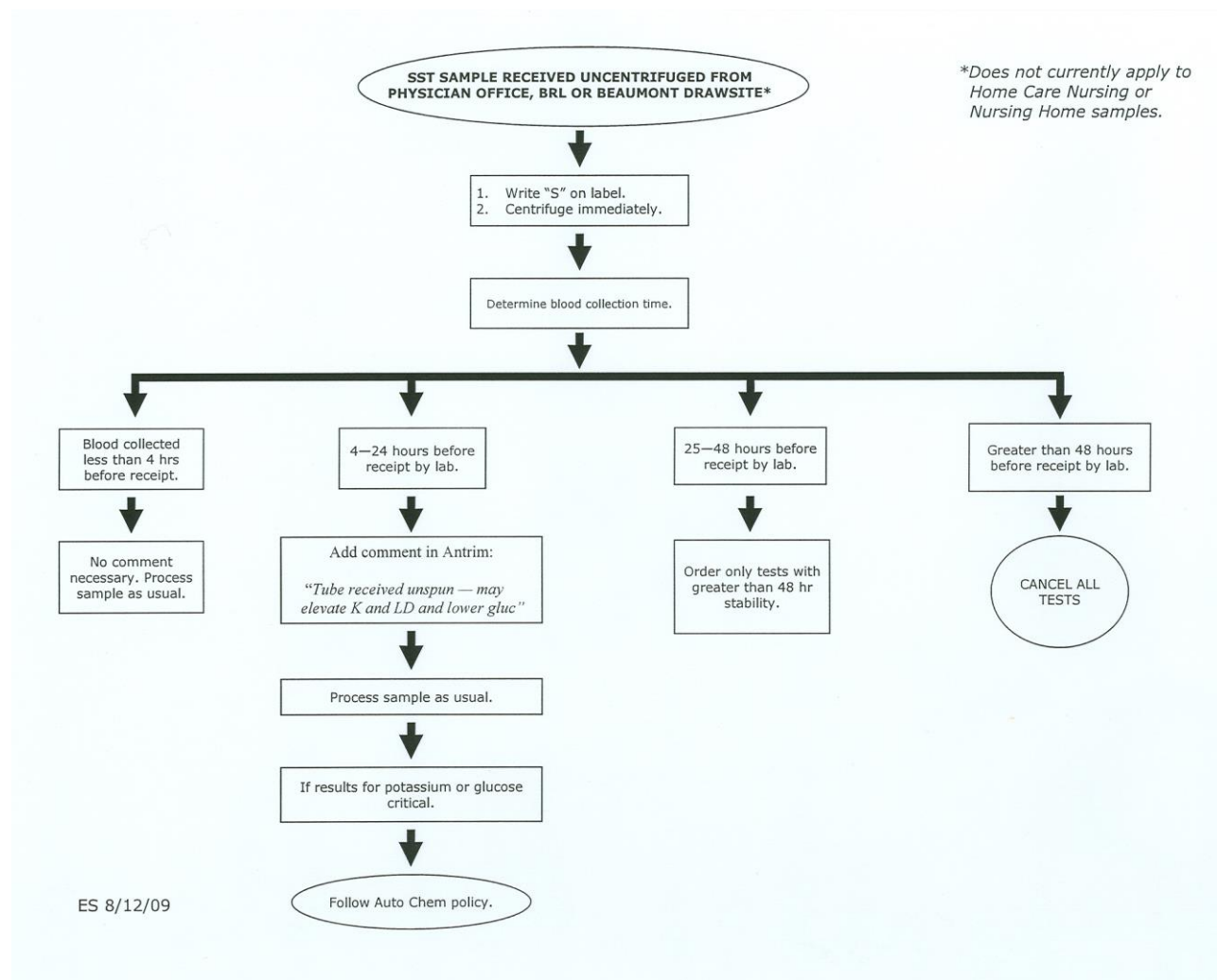
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ES 8/12/09

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OUTREACH UN-CENTRIFUGED SERUM SST TUBES

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

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OUTREACH UN-CENTRIFUGED SERUM SST TUBES

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 ² | X | |
| Amy | X | | Glucose | X | |
| Calcium | X | | UN | X | |
| CK | X | | Creat | X | |
| CKMB | X | | UN/Creat | X | |
| Cl | X | | Calcium | X | |
| CO ² | 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 ₃ | X | | Uric | X | |
| FrT ₄ | 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 ₄ | X | |
| Tprot | X | | FrT ₃ | 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

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