Introducing 'Job Aids': A Simple, Effective Way to Capture, Maintain, and Communicate Procedures, Protocols, Work Practices, and More

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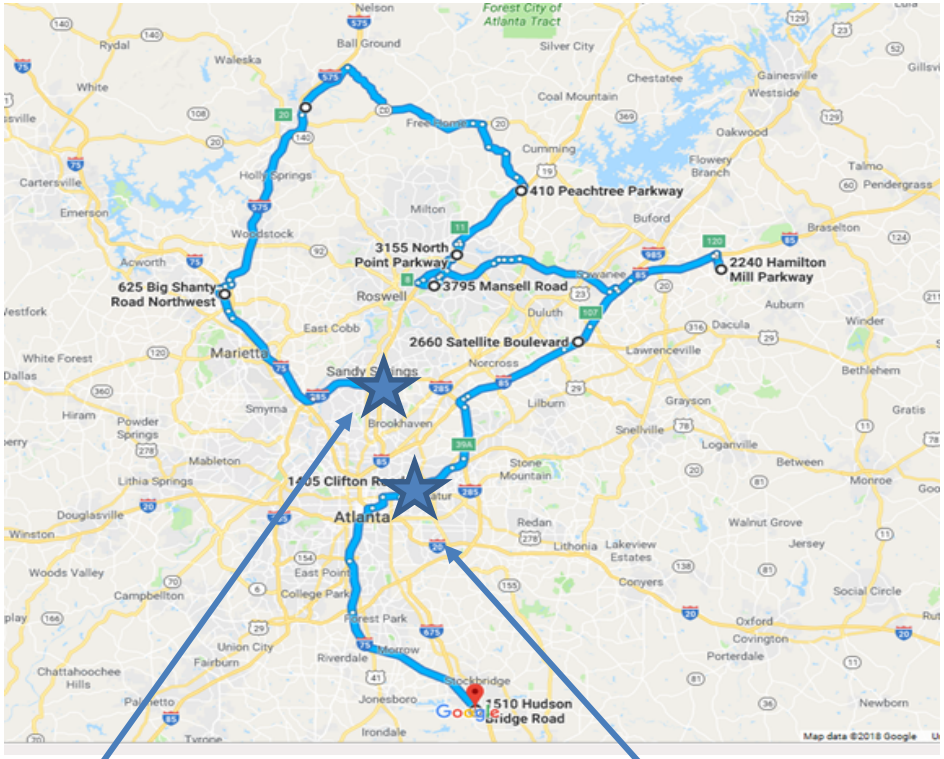
Children's℠
Healthcare of Atlanta

EMORY
UNIVERSITY

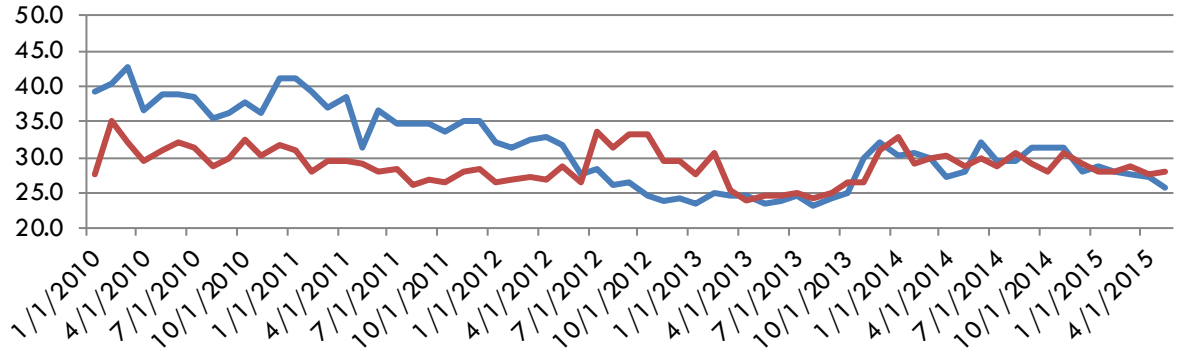
Children's Healthcare of Atlanta

- 638 licensed beds; 3 hospitals (2 with labs)
- 8 Urgent Care Centers
- >11,300 employees
- 1,028,551 patient visits
- 233,184 ED visits
- 341 lab employees
- Standard instrumentation and procedures



Inception of Job Aid at Children's

- Lean implementation in 2011

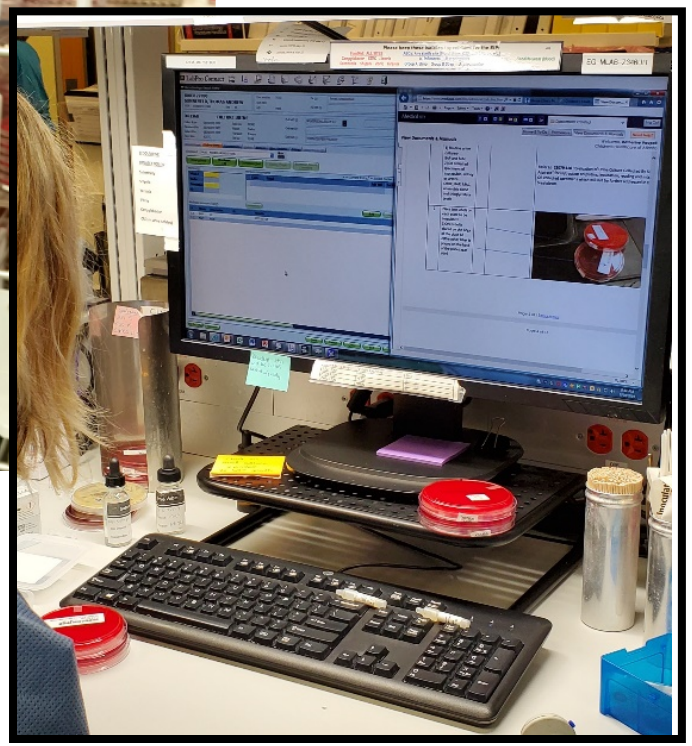


Inception of Job Aid at Children's

- Jim Adams, administrative director, 2012
  - Introduced Toyota Way and JBS
  - Maria Atuan – Core Lab Manager
    - Very helpful in the very beginning for weekly maintenance
    - Expanded from a few techs to multiple techs
    - Allowed flexibility with scheduling
  - Jonelle McKey – Microbiology manager
    - Techs wondered why there was a procedure and a JBS
    - Visuals were key

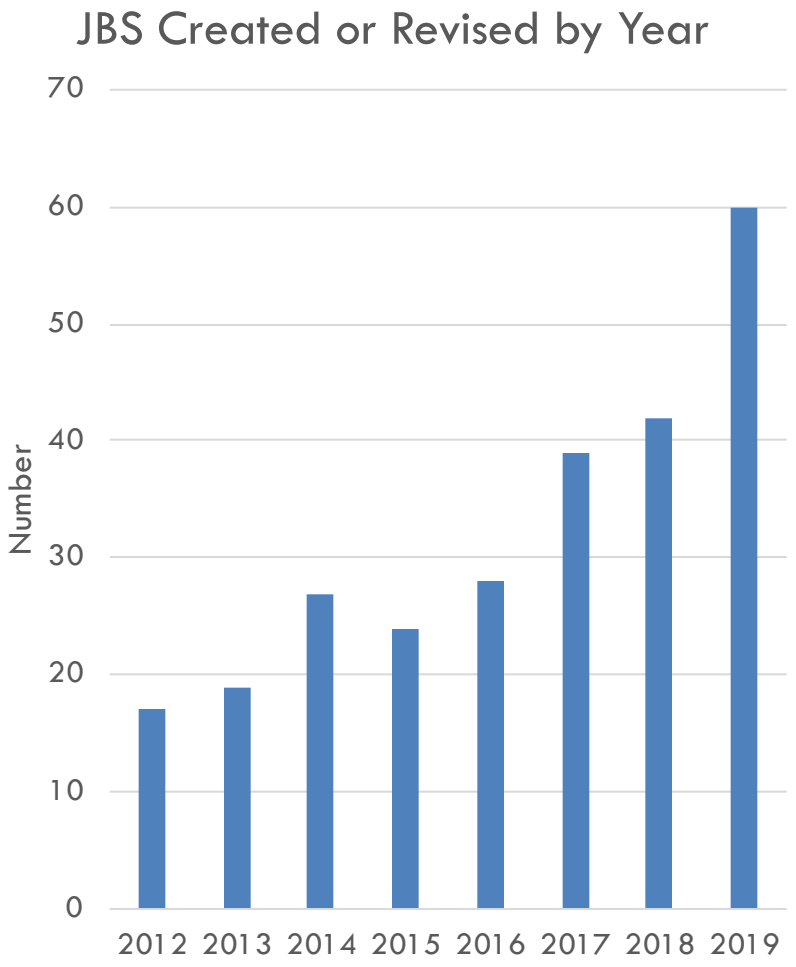
Implementation – Organic Based on Need to Change

1	Following incubation, the appropriate rack, 1st, 2nd or 3rd shift, is removed from the non-CO_2incubator for plate reading. Plate reading will occur on all three shifts 7 days per week. On weekends when working 12-hour shifts, day shift will provide the readings at 0900 and again at 1700. Evening/night shift will provide the 0100 reading.		Culture read times are as follows: 1st shift: ~0900 2nd shift: ~1700 3rd shift: ~0100



Sustainability

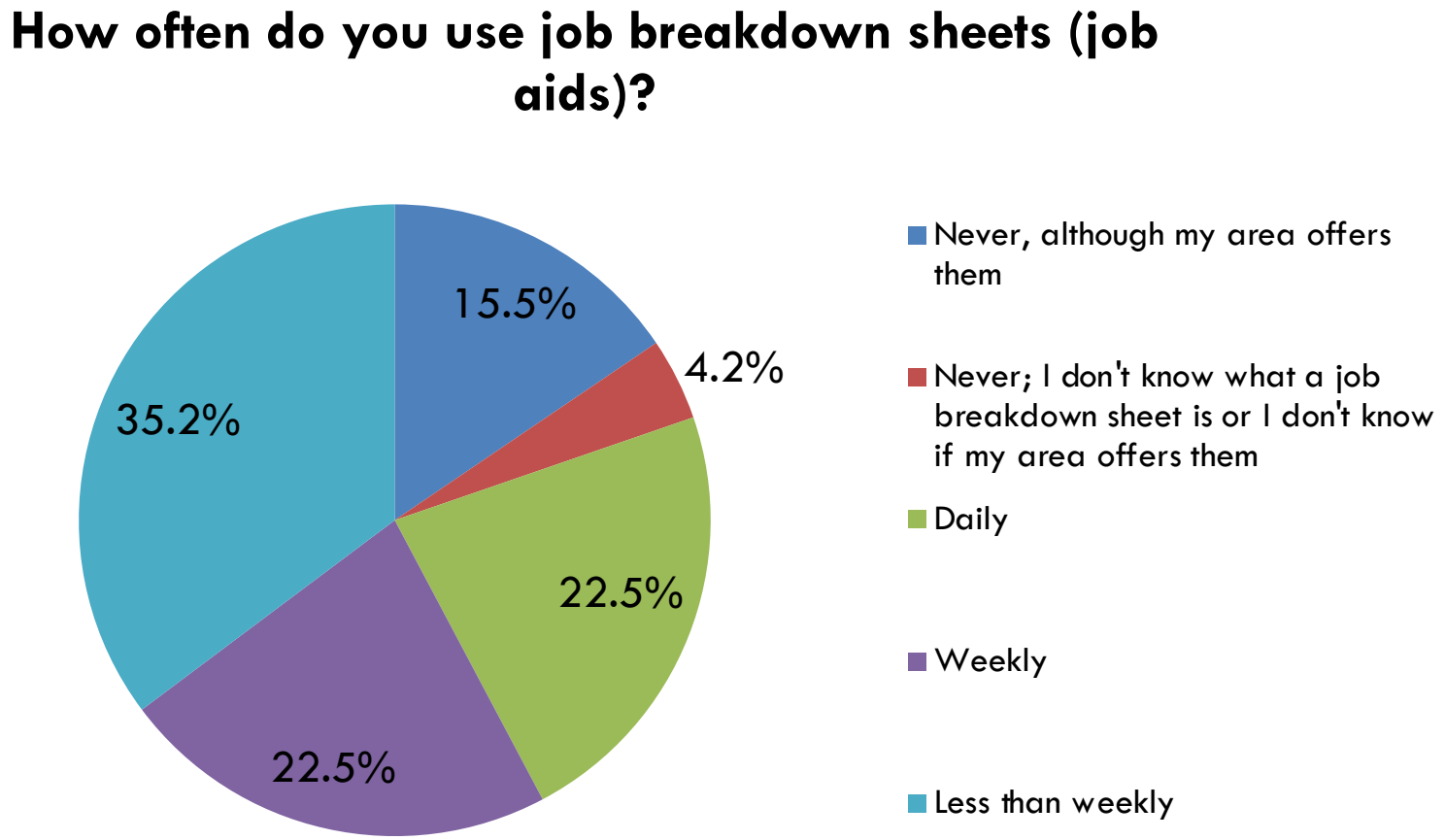
- Began 10/1/2012
- 180 total JBS currently
- Maintenance often used
- “There are several job breakdown sheets that I regularly use in the chemistry department.”
- “The JBS's for maintenance on the instruments are particularly useful.”
- “Film Arrays, Quest Urgent Care Blood culture reporting and Blood culture workup are a few of the JB sheets that I find helpful.”



Staff Acceptance

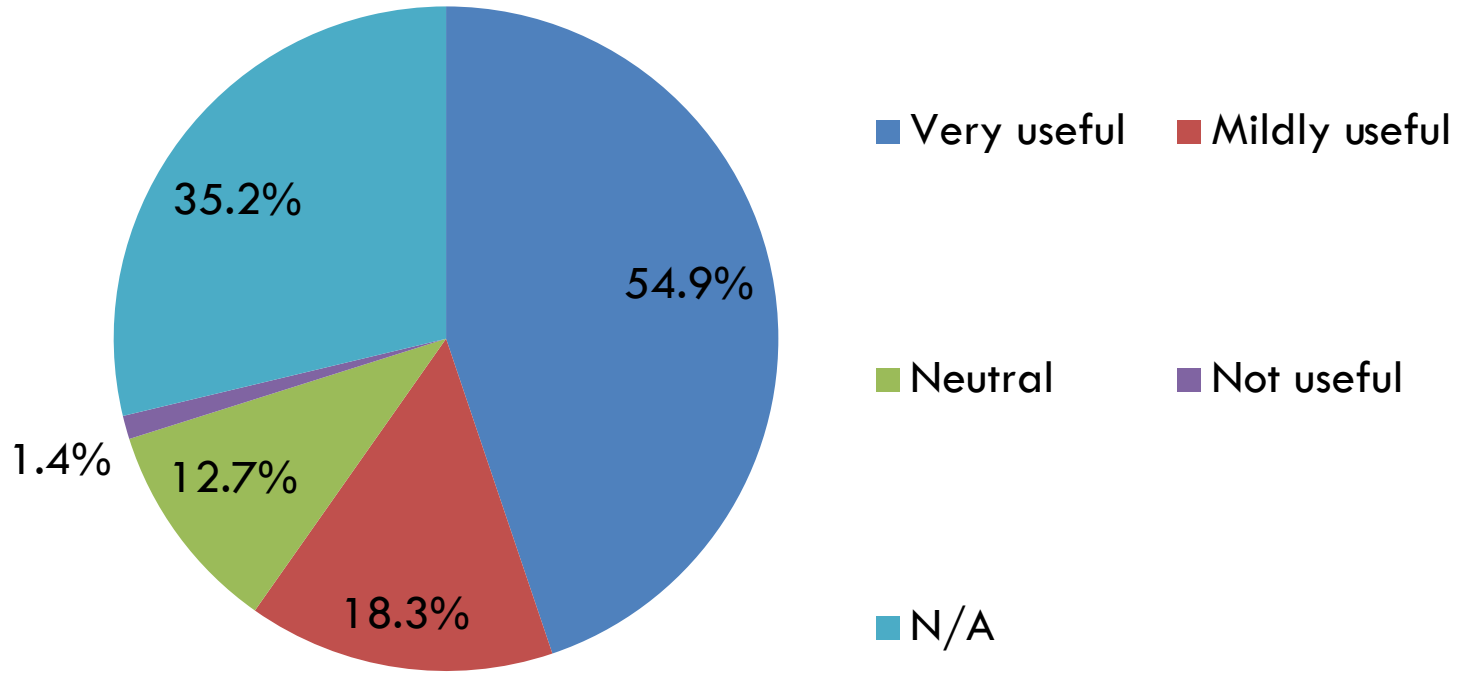
- Survey to entire lab, basic questions about use of job breakdown sheets
- 71 respondents from all areas of lab
- Predominance of MTs (45.1%), Supervisors (14.1%), Phlebotomists (9.9%)
- 84.5% stated they worked in an area that offered job breakdown sheets

Staff Acceptance



Staff Acceptance

When/if you do use job breakdwon sheets (job aids), how useful do you find them?



Practical Applications of Job Breakdown Sheets

- Most used JBS's
  - Some related in context; some unique
  - Some better than others, but most useful
- Collated responses from personal interviews into four categories of processes
  - Infrequent
  - New manual or technically complex manual
  - Complex and need standardization
  - Complex and unable to standardize

Practical Applications of a JBS

- Processes that are infrequent
- Processes that are manual and new and or manual technically difficult
- Processes that are complex and need standardization
- Processes that cannot be standardized and are therefore complex

Hematology Instrument Calibration

JOB BREAKDOWN SHEET			
AREA: Hematology			Team Leader: Melissa Johnston
	MAJOR STEPS (what to do)	**KEY POINTS (how to do it)** **SAFETY:** Injury avoidance, ergonomics, danger points **QUALITY:** Defect avoidance, checkpoints, standards **TECHNIQUE:** Efficient movement, special methods **COST:** Proper use of materials	**REASON FOR KEY POINTS (why you do it)**
1	Run five or more patient samples before starting the calibration	Save the samples and the print-outs.	The pre- and post calibration results will be compared.
2	Remove OPTIpoint and SETpoint calibrator from Hematology refrigerator		Allow OptiPoint and Setpoint calibrator to come to room temperature, approximately 20 minutes
3	Check that maintenance is up to date	Make sure daily and weekly maintenance were completed	Done to ensure instrument is thoroughly cleaned prior to calibration
4	Check reagents/waste	Make sure all reagents are full and waste container is completely empty	Done so that there are enough reagents for entire calibration; adequate room in the waste container
5	Turn printer off	Choose 1) customize, 2) system setup, 3) system options, 4) tab on left: run screen options, 5) print none, 6) save	We do not need to print out every page during calibration
6	Obtain normal blood	Obtain 2 7cc Lavender top tubes from a normal donor	Needed for calibration of Retics
7	OPTIpoint	OPTIpoint tube has a red-cap.	Run to make sure Red Blood cells are being mapped properly
8	Mix OptiPoint	Vortex vigorously for 1 minute	Vortex to mix well and break up any clumps, visually inspect for clumps Record open date ,10 day expiration date and initials
9	Run OPTIpoint	Go to 1) special procedures, 2) Direct Optics, 3) RBC-direct RBC mode, 4) press the open mode plate, **let green light blink 20 times** before introducing OptiPoint to the straw	Waiting to aspirate the OPTIpoint until after 20 blinks of green light saves reagent.
10	Look at OptiPoint results	Compare Advia RBCx, RBCy and ReticZ to the OPTIpoint barcode sheet	Results for RBCx and RBCy should be +/- 0.2 ReticZ results should be approximately 11.3 +/- 0.2

Hematology Analyzer Weekly Maintenance

JOB BREAKDOWN SHEET AREA: ADVIA - Weekly Maintenance (out-of-cycle)			Team Leader: LuAnn Jinks/Roxy Russell AS: Anyela Cardenas
MAJOR STEPS (what to do)		**KEY POINTS (how to do it)** **SAFETY:** Injury avoidance, ergonomics, danger points **QUALITY:** Defect avoidance, checkpoints, standards **TECHNIQUE:** Efficient movement, special methods **COST:** Proper use of materials	**REASON FOR KEY POINTS (why you do it)**
1	Prepare/gather supplies needed for weekly maintenance	1. 25% bleach solution 2. EZ Kleen 3. CLRW 4. Tubing 5. Pointed tip syringe 6. Kimwipes 7. Cotton-tip applicator sticks 8. 3 conical tubes/urine cups (optional) 9. Orange biohazard wipes or other absorbent material 10. PPE, including eye/face protection	*containers can be attached to Advia's using rubber band on the OTS to provide hands-free aspiration if desired.
2	Perform full system shutdown	1. Click *Routine Operations* on the main menu bar 2. Click *Log On/Off* 3. Click *Shutdown NT* Press *OFF* button on analyzer 4. Release pressure on waste jug.	1. Analyzer should be powered off before cleaning sample shear valve and other parts that might engage if system begins to cycle 2. Siemens recommends a complete system shutdown weekly to reset/refresh software.
3	Clean sample shear valve (SSV)	1. Remove knurled nut, compression spring and rotor from sample shear valve. 2. Remove outside rotating ceramic shear face from shear valve and place in 25% bleach soln. to soak. 3. Place absorbent material underneath stationary ceramic plate of shear valve to prevent cleaning solutions from	Care should be taken to not scratch the inner surfaces of the ceramic plates. Always use non-abrasive materials.

Practical Applications of a JBS

- Processes that are infrequent
- Processes that are manual and new or manual and technically difficult
- Processes that are complex and need standardization
- Processes that cannot be standardized and are therefore complex

Processes That Are Manual and New

- Immunosuppressant testing
  - Performed at Eg only on one instrument
  - Need for in-house backup
  - Only 1 instrument at Eg but SR has same instrument
  - Decided to bring up immunosuppressant testing at SR
  - No precedent there for required extraction step

Immunosuppressants

JOB BREAKDOWN SHEET

Area: Chemistry
Process: Cyclosporine Specimen Pretreatment
Team Leader: Kevin Wickware
MediaLab Procedure: 23079.1816

Cyclosporine Pre-Treatment Quick Reference Guide			
	MAJOR STEPS	**KEY POINTS**	**REASON FOR KEY POINTS**
1	Mix each calibrator, control and specimen.	Prepare no more than five specimens at a time.	Ensures samples are well-mixed and homogeneous
2	Pipette 200 uL into labeled 1.5 mL centrifuge tubes.	Use a fixed-volume non-repeater pipette.	
3	Pipette 100 uL Cyclosporine solubilization reagent into the first tube.	Use a fixed-volume non-repeater pipette. Do not batch. **Immediately move to step 4.**	Reagent evaporates quickly. Delays may lead to imprecision.
4	Pipette 400 uL Cyclosporine precipitation reagent into the same tube.	Use a fixed-volume non-repeater pipette. Do not batch. **Immediately move to step 5.**	Reagent evaporates quickly. Delays may lead to imprecision.
5	Cap tube and vortex at high speed for 10 s.	Inspect after vortexing to ensure mixture is uniform in appearance without clumps.	Proper vortexing and inspection reduces imprecision.
6	Repeat steps 3 through 5 above for each sample.		
7	Centrifuge all samples for 4 minutes at 14,000 RPM.	After centrifugation, inspect all samples for a well-formed pellet.	Well-formed pellet indicates that centrifugation was done correctly.
8	Decant supernatant into a transplant pretreatment tube labeled with the patient's Sunquest label.		
9	Vortex tube for 10 s.	Replacing the cap is not necessary, but may be done if desired.	
10	Repeat steps 7 and 8 above for each sample.		
11	Place tubes into Architect instrument carrier(s) and immediately load into a **STAT** bay.	Specimens must be aspirated by the instrument **within two hours** of decanting into the pretreatment tube.	

Processes That Are Manual and Technically Difficult

- Mass spectrometry performed previously at CHOA on a LC/MS/MS
  - Immunosuppressant testing
  - Instrument often down; no back-up
  - Eventually ceased testing
- 4 years later, introduced GC/MS (for HVA/VMA and subsequently pentobarbital)
- General core lab techs to be trained
- Anxiety regarding change/learning new technique

HVA/VMA Specimen Preparation

JOB BREAKDOWN SHEET

Area: Chemistry/Mass Spectrometry
Process: HVA/VMA Specimen Preparation
Team Leader: Kevin Wickware
MediaLab Procedure: 23079.4016

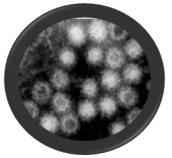
HVA-VMA Specimen Preparation Quick Reference Guide

	MAJOR STEPS	KEY POINTS	REASON FOR KEY POINTS
1	Remove calibrator, controls, and specimens from refrigerator/freezer	Calibrator and controls should sit at room temp for 15 minutes	Ensures most consistent results
2	Centrifuge patient specimens to remove gross particulate matter		
3	Obtain a urine creatinine result on the Vista for each specimen	Refer to procedure **23079.3198** (CRE2)	Creatinine is used to calculate the HVA or VMA to creatinine ratio
4	Vortex HVA-VMA Reaction Solvent located in the hood vigorously for 10 seconds	Ensure that the solvent mixture is homogeneous	Homogeneous solvent mixture contributes to consistent results
5	Pipette 75 µL Reaction Solvent into each 10 mL glass vial	Use a 20-200 µL, non-repeater Eppendorf pipette	
6	Pipette 50 µL of calibrator, control, or specimen into its respective vial	Use a 20-200 µL, non-repeater Eppendorf pipette	
7	Vortex Internal Standard (**IS**) vigorously for 10 seconds	Internal Standard = 1.0 mg/dL HVA-D5 and VMA-D3 in methanol	Vortexing contributes to consistent results
8	Pipette 50 µL of IS into each vial, using a new pipette tip each time	Using a new tip each time prevents contamination of the IS	Contamination of IS would require preparing new IS

Practical Applications of a JBS

- Processes that are infrequent
- Processes that are manual and new or manual and technically difficult
- Processes that are complex and must be standardized across the system
- Processes that cannot be standardized and are therefore complex

GI Rapid PCR Assay

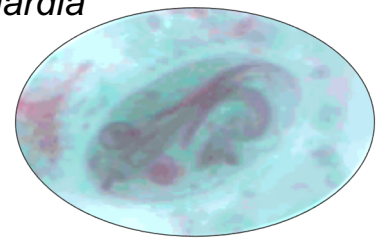


Virus

Multiplexed nucleic acid test

- Multiple viruses, bacteria, parasites detected from stool
- Can get Passed/Failed/Invalid runs
- Positive results
  - Impact on patient: some "significant", others "critical"
  - Many require supplemental testing
    - » Varies by organism

Giardia



Chapter 93, Manual of Clinical Microbiology, 11th Edition
https://www.cdc.gov/dpdx/

GI PCR

Job Breakdown Sheet

Institution Name: Children's Healthcare of Atlanta
Process Location: Laboratory
Work Process: **FilmArray GI Panel by PCR**

Refer also to technical procedure 23079.2479.

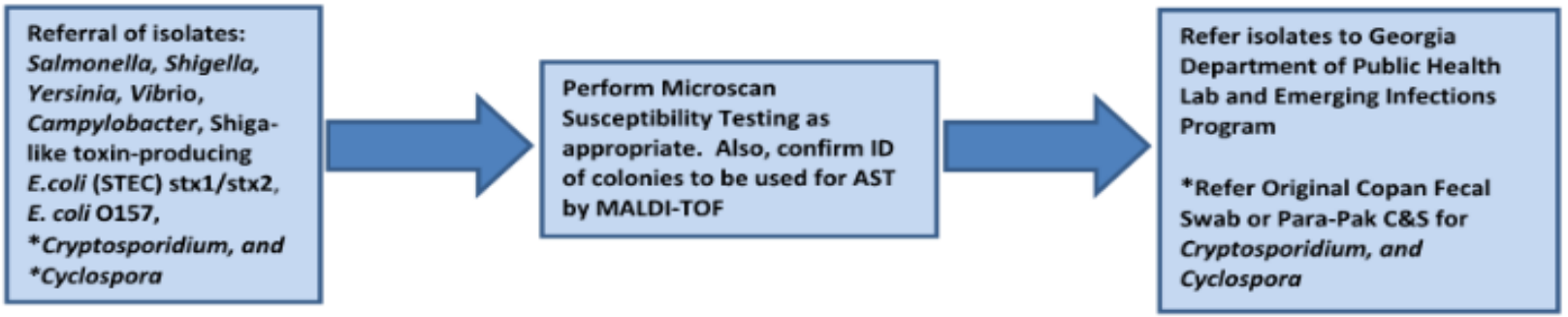
Operator: Microbiology Staff

Job Step	Description of Job Content	Time (min)	Key Quality Safety Points	Resources: FilmArray GI Panel Procedure
			Sample Preparation	
1	Apply gloves and PPE when working with specimens		Apply gloves and lab coat. Perform work inside the PCR safety cabinet.	
2	Label a Copan Fecal Swab or Para-Pak C&S container with the patient's Sunquest label.		Para-Pak C&S consists of Cary Blair transport.	
3	Add stool specimen as indicated per collection device method.		For Para – Pak C&S Method: 1. Use a transfer pipette or wooden stick to add stool specimen to the red line.	For Copan Fecal Swab Method: 1. Collect a small amount of stool by inserting all the tip of the flocked swab into stool sample and rotate it. Bloody, slimy or watery area of stools should be selected and sampled. 2. After collection examine the swab to make sure there is fecal material visible on the tip. In case it is not, insert again the flocked swab into stool. 3. Transfer the swab into the tube with the preservation medium and visually check that the maximum filling line ("MAX. FILL") indicated on the label is not exceeded.

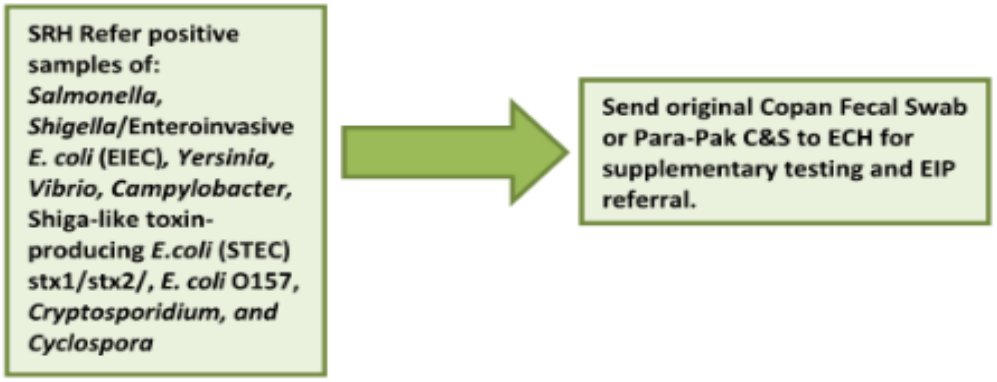
GI PCR

Appendix A: GIPCR Workflow for Positive Targets Referral

ECH

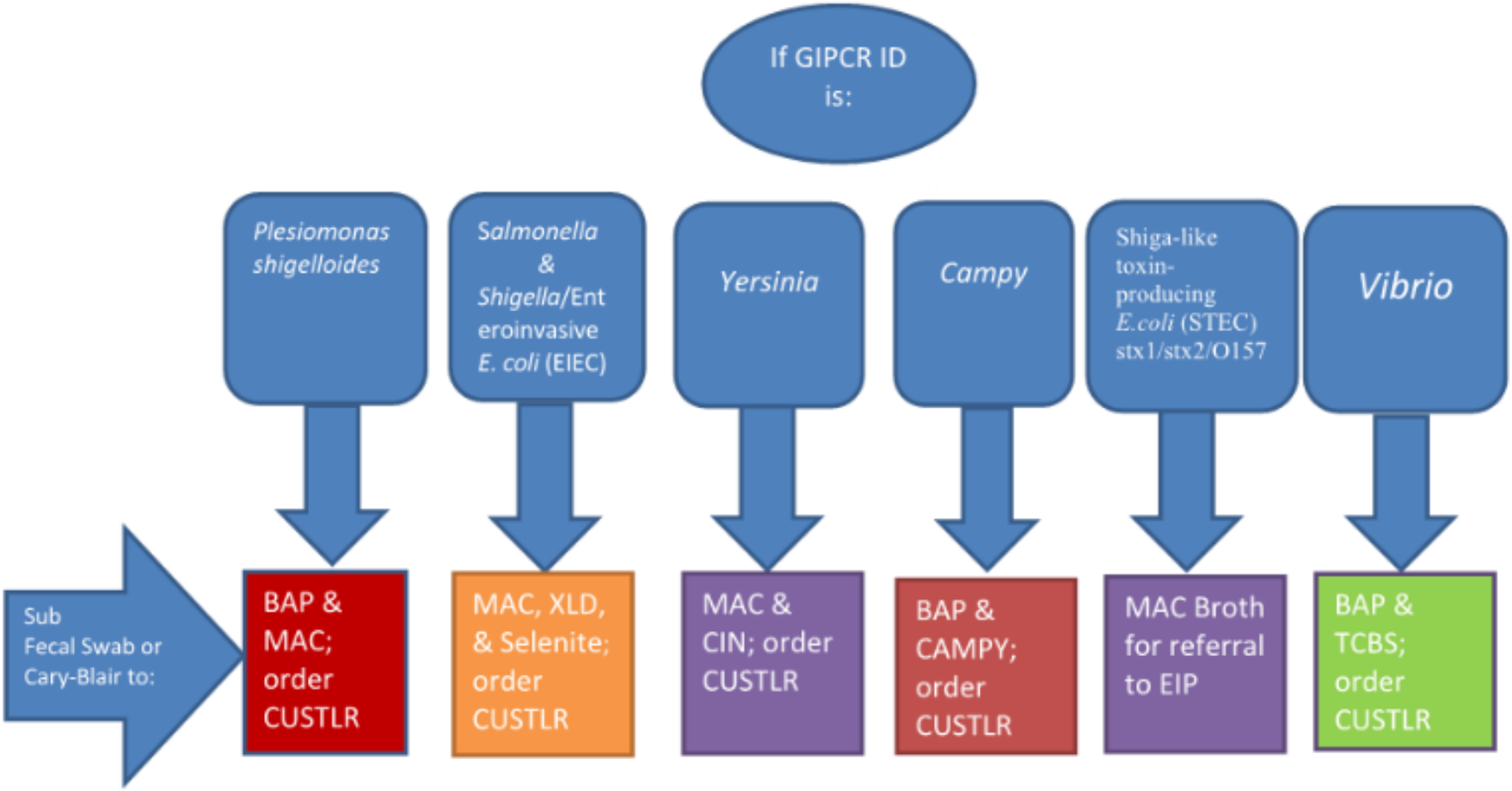


SRH



GI PCR

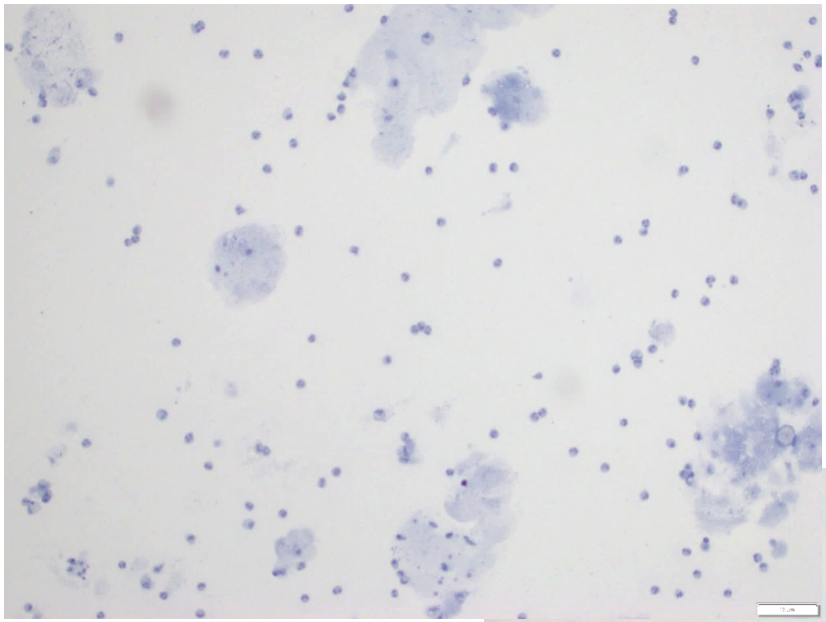
Appendix B: ECH - GIPCR Workflow for Positive Bacterial Targets

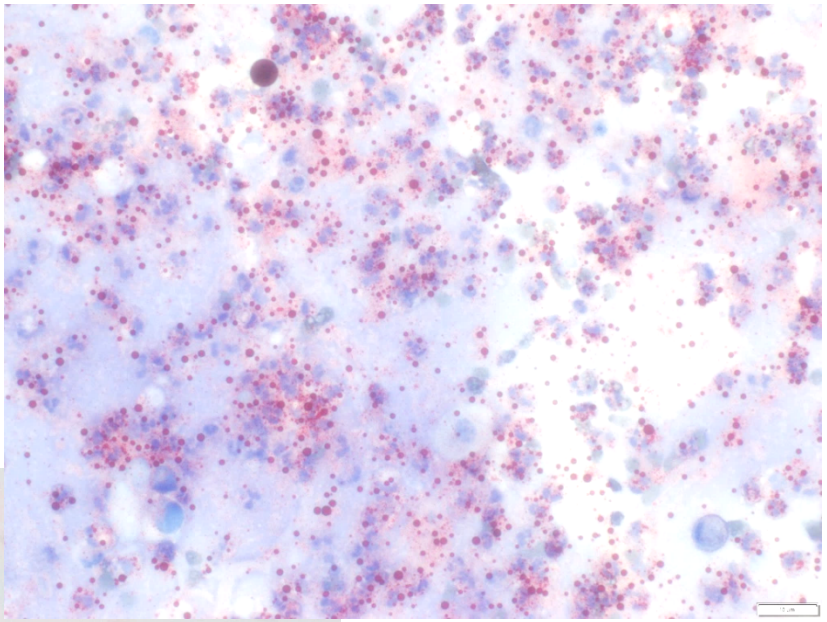


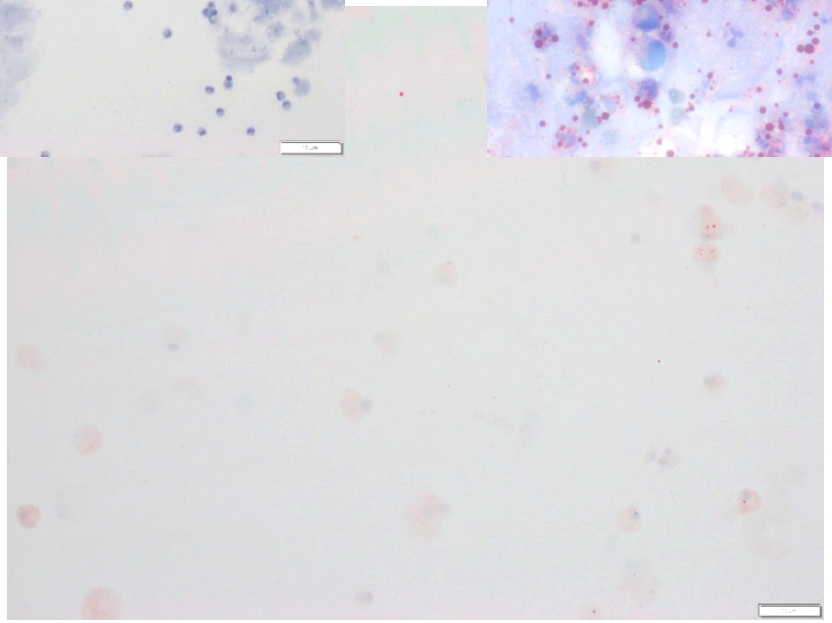
Oil Red O Stains

- Performed at both campuses
- Prior to JBS:
  - 0 repeats requested at SR hospital
  - 12/100 repeats requested at Eg hospital
- Why the difference?
  - Months of attempts to improve unsuccessful
  - Direct observation by outside observer identified difference
    - Thorough washing of slides in running water
    - Allow solution to settle before using
  - Procedure didn't include above steps

Oil Red O Staining pre-JBS





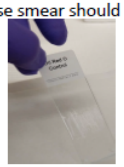


Oil Red O Staining

JOB BREAKDOWN SHEET

nd current. Effective starting 8/6/2019. 23079.5219 (version 1.0) Oil Red O JBS

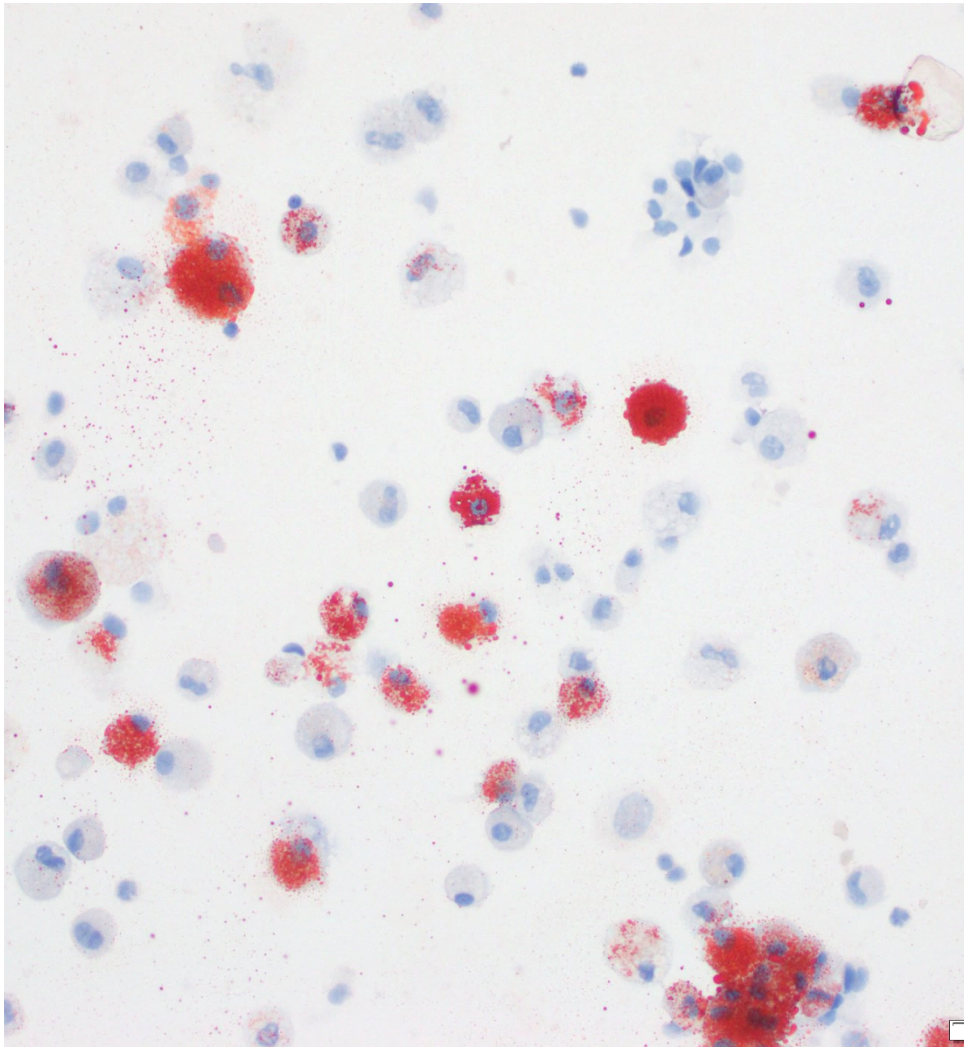
AREA: HISTOLOGY | PROCESS: OIL RED O STAIN FOR CYTOLOGY | MEDIA LAB: 23079.230

Major Steps (what to do)	KEY POINTS (how to do it)		REASON FOR KEY POINTS (why you do it)
1	**Side Preparation**		
	IF	THEN	
	1. Frozen Tissue Section	1. Cut at 8µ and mount tissue to a charged slide.	
	2. Cytology Specimen	2. Use cystospin to adhere tissue to charged slide.	
2	**Fixation**		
	IF	THEN	
	1. Frozen Tissue Section	1. Fix in 10% NBF for 10 minutes	
	2. Cytology Specimen	2. Air Dry	
3	**Prepare Control Slide**		
	Thinly smear mayonnaise onto a positively charged slide. The mayonnaise smear should be so thin that it is colorless. 		Mayonnaise is made up of fat making it an excellent control material. If mayonaise is too thick it can wash off slide and contaminate solution, potentially causing false positve on test slide.
4	**Prepare Solutions**		
	IF	THEN	
	1. New working solution needs to be made	1. Age stock Oil Red O Solution by pouring solution to staining jar and allowed to sit for at least one week prior to use to create working solution.	Solution that is too new tends to produce inconsistent results. Older solution that has been allowed to sit has been noted to produce desired staining.
	2. There are visible solid precipitates in working soltuion.	2. Filter Oil Red O Working Soltuion. After filtering, allowing working solution to sit for one hour before use.	Filtering is sometimes necessary to removed precipitates and produce a cleanly stained slide. However, solution that has been too recently filtered tends to produce inconsistent results. Allowing solution to rest after filtering has been noted to consistenly produce desired staining.
	3. Volume of working solution is low due to use and evaporation	3. Add just enough stock solution to the working solution to fill to the top of the label. Allow new working mixture to sit for at least one hour before use. 	The best and most consisent results have been achieved by adding small amounts of new stock solution to working solution that is already in use.

Oil Red O Staining Post-JBS

Number of Repeats Requested

- Prior to JBS
  - 12/100
- Following JBS and training (one month data)
  - 0/40
- “The JBS for manual special staining has been very helpful in the training of new staff. It has also reduced the number of repeats requested due to stains that were not adequate.”



Downtimes

- Downtimes
  - February 2019: Scheduled downtime
    - Multiple complaints from SR ED
    - Some TATs reported as 4+ hours
  - Scrubbed current issues
    - Outside department:
      - No location listed on downtime forms
      - STAT stickers not in use
      - Faxes not distributed to appropriate clinical staff
    - Multiple issues within department:
      - Staff education and training
      - Organization during downtime
      - Lack of drills

Downtimes

JOB BREAKDOWN SHEET

Area: Core Lab
Team Leader: Kevin Wickware
Process: General Management of Downtime - SRH
MediaLab Procedure: 23079.2736

During a downtime, the #1 most important thing is good communication. Do not break from your assigned role unless it is absolutely necessary, and if you do, communicate.

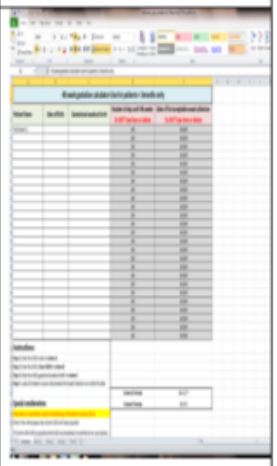
General Management of Downtime – SRH Core Lab			
	MAJOR STEPS	**KEY POINTS**	**REASON FOR KEY POINTS**
1	Resource Tech or Lead Tech contacts appropriate personnel to notify of downtime.	Personnel to contact: On-call LIS Analyst, Supervisors and/or Managers	Notify personnel that we are in an extended downtime situation.
2	Resource Tech or Lead Tech designates roles to all available techs and specimen processors in the lab.	Roles to Designate: • Specimen processor(s) • One faxer • A tech for each bench • Centralink programmer (if possible)	A **faxer** is important so results can be faxed to floors. A **Centralink programmer** is nice to have if staffing allows for it but it is not a required role. These roles can assist in other areas when not busy.
3	Enable automatic (downtime) printing in Centralink.	Refer to the instruction document for how to enable downtime printing in Centralink.	Any results that come through Centralink must be printed from Centralink so appropriate reference ranges are appended.
4	Set up two file accordions: One on the sed rate bench and one at the call center.	Sed rate accordion will be used for results requiring faxing. Call center accordion will be for completed AND faxed results.	**Only set up two accordions** – more can cause confusion. Faxer should manage accordions.
5	Specimen Processors receive specimens w/ requisitions. Verify information on requisition is correct and matches specimen(s). Write time of receipt on requisition.	Keep specimens together with their manual requisitions. Use two patient identifiers. **Verify patient location is written on requisition.**	Two patient identifiers to identify all specimens and requisitions is standard procedure. Patient location is required for faxing results later.
6	Fill out downtime labels with patient MRN, name, location, and tests. **If name is too long to fit, full last name + first initial is acceptable.**	Make sure labels are completely filled out. If there is no space allocated for writing tests, the top right corner is a convenient place to write in tests.	If labels are not filled out with all pertinent information, downstream confusion or issues can occur.

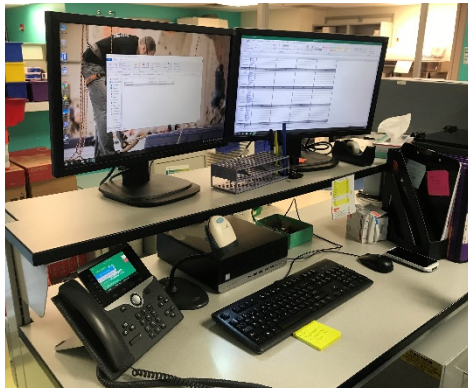
Downtimes

7	Affix footer labels to each copy of requisition matching department. Make sure test(s) are written on footers so techs know which CID goes with which test(s).	For instance, place chemistry footers on the white copy, hematology footers on the yellow copy and micro footers on the pink copy. **Use chart to determine how many tests can go on a single CID.**	Writing test(s) on CID footer labels will facilitate a smooth ordering and recovery process later, when CIDs have to be manually assigned to orders.
8	Process specimens and distribute to departments with appropriate copies of requisition.	Follow all relevant procedures for processing of specimens.	
9	Techs should organize requisitions, then program tests into Centralink or analyzer and run tests.	**Use two patient identifiers, minimum, when ordering tests.** Develop a simple way to organize requisitions on the bench.	Organizing requisitions will make it easier to match requisitions to results.
10	When results print, tech will paper clip the results to the requisition. Then, immediately place that requisition w/results into the accordion.	Always use a paper clip to keep results together. **DO NOT STAPLE**.	Stapling papers together will make it more difficult to fax results. Immediate transfer of results to the accordion will minimize confusion at the bench area as to which testing is complete and which is pending.
11	Faxer should monitor accordion regularly for results that are ready to be faxed. Ideally, only fax results when all testing is complete on a patient and all results have been received.	Verify all ordered testing is complete by matching results printouts to requisition orders. If some testing will be delayed, the completed testing may be faxed, but should be returned to the same accordion afterward.	Faxing results when all are complete will facilitate the best organization, but we also do not want to delay results unnecessarily. Utilize good judgment for this step.
12	Once results are faxed, paper clip the fax confirmation to the requisition and deliver to the call center accordion.	All requisitions placed in the call center accordion are considered COMPLETE and FAXED. Do not place anything in this accordion that has not been faxed.	When the recovery phase begins, this accordion will be used for ordering and resulting tests in Sunquest.
13	Once downtime is complete, initiate recovery phase. Designate techs to participate in recovery. Specimen processors may assist with ordering tests.	Refer to MediaLab procedure 23079.519 for downtime ordering procedure. Each tech should take an entire patient's paperwork and result all tests on that patient. Results may be uploaded from instruments, Centralink or resulted in MEM.	It is acceptable for techs to enter results for test systems they do not maintain competency for, provided that they also enter the performing tech's tech code when resulting.

Scheduling Sweat Collection

- Multiple people staffing "call center" for both hospitals

	Sweat Test. j. If the patient has had two previous QNS collections, do not schedule the patient, but instead relay the request to the core lab director and clinical chemist by email, making sure to convey the patient name and MRN.		Sweat scheduler shall use the scripted message below to explain to the caller why the sweat test cannot be scheduled: ***"Since the patient has had (at least) two previous unsuccessful sweat collections, CHOA requires that the Sweat Chloride Committee review the patient's chart before we can schedule the next collection. We will call you or your child's physician within a week to follow up."***	Core lab section director: elizabeth.weinzierl2@choa.org Clinical chemist: Van.pinedaWung@choa.org
4.	**37 week gestation calculator** **Use for patients ≤3 months only** P:\LAB\Sweat Chloride QA\Gestational_age_calculator.xlsx **a.** Enter the child's **Name** in **column A** **b.** Enter the child's **Date of Birth** in **column B** **c.** Enter the child's **Gestational weeks** at birth in **column C** d. Look at the **date** in **column E** & schedule the Sweat Collection on or after this date e. Complete & fax the "Delayed Sweat Collection Letter" f. Proceed to Step 5 P:\LAB\Sweat Schedule\Sweat Testing form (in Publisher).msg		• Due to the high rate of QNS collections in premature infants, the child is scheduled for the first sweat collection attempt after reaching the adjusted 37 weeks gestation age. • **37 Week Gestation Calculator Special Considerations:** 1. Only enter in column B & C, and do not delete any information in columns D & E 2. Enter in the white spaces only- columns D & E will auto populate 3. If Columns D & E fail to populate when B & C are completed, try another row or use a backup tab	



Scheduling Sweat Collection

5.	Scheduling the patient: a. **Schedule Child ≤3 months old at SRH only** b. Click on the ***ECH or SRH*** tab to see what appointment slots are available at each campus. c. Make sure the appointment time meets the criteria for a child with QNS repeat testing or <37 weeks adjusted gestational age. Refer to steps 3 & 4, respectively. d. Locate available appointment slots on the ECH or SRH schedule. e. Allow patient/parent/guardian to select an available appointment slot. f. Type the patient's information recorded from step 2 into the appointment slot. g. Confirm the scheduled appointment by reading the			P:\Lab\Sweat Schedule\2019 (or Current Year)
	information back to the person scheduling the appointment. h. Provide the Sweat Chloride instructions to the parent or guardian: **Sweat Chloride Test Instructions:** 1) Keep child well hydrated for 24-48 hours prior to testing (infants do not have to perform this step) 2) Allow the child to have breakfast before the appointment 3) No lotions or creams are to be applied to the child's arms or legs the evening before or the day of the appointment. However, if your child has dry skin or eczema on the arms or thighs, there is a very high risk of an unsuccessful collection and he or she may be turned away to be rescheduled at a later date. If your child has dry skin or eczema, please contact your physician immediately as to potential temporary treatment before and up to the day before the sweat test, such as with topical corticosteroids, to avoid risking the patient being turned away. However, please stop using those creams or lotions the evening before and the day of the sweat collection.			

Practical Applications of a JBS

- Processes that are infrequent
- Processes that are manual and new or manual and technically difficult
- Processes that are complex and need standardization
- Processes that cannot be standardized and are therefore complex

TB Quantiferon Testing Specimens

- Send TB Gold tests to 3 different labs based on insurance
- For all, incubate in house before sending out
- All 3 labs have different requirements
  - Centrifuge vs uncentrifuged
  - Room temp vs refrigerated
  - Some require special shipping bag

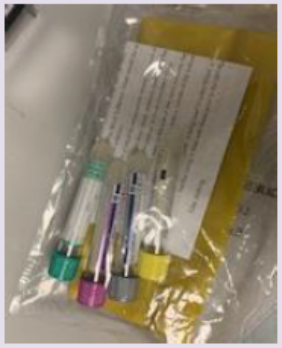
TB Quantiferon Specimens

Pre-JBS

1/19 - 6/19	ARUP	Labcorp	Quest
Volume	393	256	268
Errors	1		10

1.2% error rate

TB Quantiferon Specimens

4	Process specimen(s) for storage and shipment **Do NOT open original containers.** **Do NOT aliquot.**	**ARUP** 1. Remove all four tubes from the incubator. 2. Centrifuge all four tubes at 2000-3000 RFC for 15 minutes. 3. Place **centrifuged** tubes in the ARUP tube rack located in the Ref Lab refrigerator.	**LABCORP** 1. Remove all four tubes from the incubator. 2. Do **NOT** centrifuge. 3. Place **uncentrifuged** 4-tube kit in a regular LabCorp biohazard bag. 4. Print a LabCorp requisition from Epic, if one is not readily available. 5. Ensure the requisition has the following: a) "INCUBATED" stamp b) Collection time c) Collection date d) Pt Name e) Pt DOB f) Handwrite what is being shipped: *i.e. 4 TB Quant tubes, incubated, uncentrifuged, Room Temperature* g) Date & time of receipt stamp 6. Make a copy of the completed requisition and file in appropriate binder. 7. Place the LabCorp requisition in the biohazard bag side pocket. 8. Mark the biohazard bag "Room Temperature" 9. Place the bag in LabCorp **ROOM TEMPERATURE** bin.	**QUEST** 1. Remove all four tubes from the incubator. 2. Centrifuge all four tubes at 2000-3000 RFC for 15 minutes. 3. Place **uncentrifuged** 4-tube kit in a **gold** Quest biohazard bag marked "Refrigerated". a) **Gold** bag comes with the 4-tube kit, already marked "Refrigerated"   4. Print a Quest requisition from Epic, if one is not readily available. 5. Ensure the requisition has the following: a) "INCUBATED" stamp b) Collection time c) Collection date d) Pt Name e) Pt DOB f) Handwrite what is being shipped: *i.e. 4 TB Quant tubes, incubated, uncentrifuged, Refrigerated* g) Date & time of receipt stamp 6. Make a copy of the completed requisition and file in appropriate binder. 7. Place the Quest requisition in the biohazard bag side pocket. 8. Place the bag in Quest **REFRIGERATED** bin.

TB Quantiferon Specimens

Pre-JBS

1/19 - 6/19	ARUP	Labcorp	Quest
Volume	393	256	268
Errors	1		10

1.2% error rate

Post-JBS

6/19 – 9/19	ARUP	Labcorp	Quest
Volume	191	92	90
Errors	1		

0.27% error rate

Outpatient Specimen Collection

- 3 main labs based on insurance contracts (CHOA, Labcorp, Quest)
  - Some contracts allow exceptions (all tests can come to CHOA but higher out of pocket expense)
  - Some contracts allow no exceptions
  - Some contracts have strict exceptions (only some stat testing can come to CHOA but higher out of pocket expense)
- Physician-based practice vs hospital-based practice
- Ultimately confusing and complex

Lessons Learned

- What have we done well?
  - Instilled a culture in which a JBS is a useful and used (and expected) tool
  - Standardized the creation of JBS in new or complex processes
- What could we do better?
  - Be more consistent with JBS content (template)
  - Keep them updated
  - Keep them simple
  - Make them more accessible
  - Introduce them to areas that don't use them