From the Director’s Chair

Spring is certainly here and I am enjoying the beautiful blooms on trees and flowers in the Raleigh area. Is there anything better than the smell of freshly cut grass?

With the arrival of spring, our laboratory has a number of exciting plans moving forward that I would like to share with you.

We had a great time celebrating National Medical Laboratory week in April, which we expand to Laboratory Celebration Week at SLPH to include environmental testing as well. Some of the fun activities planned by our committee led by Janice West for that week include the following:

- Lab Management Team Hosted Breakfast
- Games such as crossword puzzles and a scavenger hunt
- Dress up like a Famous Duo or Twins Day
- 1980’s Theme Day
- Sports Day
- Picnic in the Park or Boxed Lunch Day

Leslie A. Wolf, PhD, HCLD (ABB)
Laboratory Director

Cont. on page 2
We also have a Wellness Coordinator, Laura Fierke, who has been creating many opportunities for our staff to improve their health in new and creative ways. For example, any interested staff members are meeting in the classroom after working hours on Wednesdays to do a group workout that is low impact and moderate intensity. There is also a Friday Morning Dance Break from 10-10:30 in the classroom where staff can line dance to The Cupid Shuffle, The Electric Slide, The Cha Cha Slide, Cotton-Eyed Joe, and more! There are no spectators allowed, so staff must come ready to dance. Finally, SLPH has 57 people signed up to participate in the statewide walking challenge. In order to participate, challengers have to wear a pedometer and track their steps for 60 days. The participants are grouped into teams of ten members each. The winning team will earn a nice lunch at a local restaurant serving healthy, tasty food.

On a final note, the construction of the new facility for the SLPH and Office of Chief Medical Examiner is right on schedule. We are heavily into making plans for the move set to occur in February 2012. I have included a couple of photos taken March 23, 2011 so that you can see the progress that has been made.

Submitted by:
Leslie A. Wolf, PhD, Laboratory Director,
NCSLPH
N.C. Public Health, 100 years ago...

Interesting Cases of Hookworm Disease Treated by North Carolina Physicians

Treatment Brings Health, Happiness and Usefulness

Last fall a boy of fourteen years old was brought to me from Moore County for examination. The boy showed a marked want of development (his apparent age being about nine or ten years), the face had a vacant look, pupils dilated, hair dry and bushy, skin waxy white with darker areas and mucous membranes of mouth bloodless. The boy complaining of being incapable of any exertion, want of energy and getting out of breath on the slightest exertion; has indigestion, bowels alternating between costiveness and diarrhea, irregular heart action, wandering pains in the limbs.

Seeing in my mind the ravages of the hookworm disease, I collected a sample of feces, and forwarded it to the State Laboratory of Hygiene. The report was; “Eggs very numerous.” On the next morning I administered the thymol treatment, with results of a discharge of three teaspoonfuls of hookworms in the twenty-four hours. I sent the boy home, giving him two more treatments to be taken a week apart. The boy came to see me last Christmas, being the very picture of health, able to walk two miles to school, and enjoying life as he hadn't for years.

To be sure that I was not in error I sent some worms to the State Laboratory of Hygiene, and the report was that they were genuine hookworms.

(Signed) C. Daligny, M.D.;
County Supt. Of Health
of Montgomery County
Bulletin of the North Carolina
Board of Health
Vol. XXVI. August, 1911. No. 5

“It is gratifying to know that the two special divisions of work under the NC State Board of Health in all probability have no equals in the South. The State Laboratory of Hygiene has done more analyses in the last two years than any other similar laboratory in the South, and in the hookworm campaign the man directing it, Dr. Ferrell, and the amount of money invested by the State in it, puts us well in the front of this work in other States.”

Fourteenth Biennial Report
of the NC State Board of Health 1911-1912
Annual Notes from the Secretary
Watson S. Rankin, M.D.,
Raleigh. June 20, 1911

Public Health Laws of North Carolina As Amended
By the General Assembly of 1911-1912

Sec. 36 State Laboratory of Hygiene; analysis of water, sputum, blood, etc., appropriation for; tax against water companies,

“For the better protection of the public and to prevent the spread of communicable diseases, there shall be established a State Laboratory of Hygiene, the same to be under the control and management of the State Board of Health, and it shall be the duty of the State Board of Health to have made in such laboratory monthly examinations of samples from all public water supplies of the State…”

“The board shall likewise have made in this laboratory examinations of sputum in cases of suspected tuberculosis, or throat exudates in cases of suspected diphtheria, of blood in cases of suspected typhoid and malarial fever, of feces in cases of suspected hookworm disease, and such other examinations as the public health may require. For the support of the said laboratory the sum of four thousand dollars annually is hereby appropriated…”
Three Strains of Flu

Right on the heels of an influenza pandemic in 2009, and a very light flu season during the winter of 2009-2010, this year’s flu season brought yet another twist, with three strains of flu in circulation in North Carolina and the rest of the country: Influenza B; Influenza A, H3; and Influenza A, 2009 H1N1. The NCSLPH even reported two patients with dual flu infections.

In a typical flu season, one strain would end up dominating the season (simplifying laboratory testing) but that hasn’t been the case this year. As of March 9, 2011, the NCSLPH reported 498 positive influenza results since the beginning of October 2010:

<table>
<thead>
<tr>
<th>Influenza</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza B</td>
<td>217</td>
</tr>
<tr>
<td>Influenza A, H3</td>
<td>79</td>
</tr>
<tr>
<td>Influenza A, 2009 H1N1</td>
<td>199</td>
</tr>
<tr>
<td>Influenza A, unsubtypeable (low viral titer)</td>
<td>3</td>
</tr>
</tbody>
</table>

As of the beginning of March, flu surveillance data in North Carolina is indicating that influenza-like illness peaked in mid-February (with a 65% positivity rate in February), which is a little earlier than the peak in 2007-2008 or the peak prior to the pandemic in 2008-2009. However, it’s especially important for sentinel sites to continue to send specimens for flu testing even towards the end of the season. Make sure to complete the vaccination history on the submittal form. The NCSLPH will continue to send specimens to the CDC for further testing, and the CDC will make decisions about next season’s vaccine based on the strains circulating at the end of this season.

Nasal and nasopharyngeal swabs submitted for flu testing continue to be tested using RT-PCR, while samples from other sources are put directly into culture. A selection of samples tested with RT-PCR are later put into culture for surveillance purposes, but please note if you want a full viral culture panel performed if flu is undetected with RT-PCR.

As of February 26, 2011, there were 22 influenza-associated deaths in North Carolina, 8 pediatric, and 14 adult. For more flu surveillance information and guidance, see www.flu.nc.gov or www.cdc.gov/flu. As of April 9, 2011, there were 35 influenza-associated deaths in North Carolina, 9 pediatric and 26 adult.

HIV Lab Welcomes New Employee

The newest employee in the HIV lab may only have one arm, but is just as hard-working as any lab technologist.

Meet FANUC, the capping and uncapping robot. Developed by PaR Systems and FANUC Robotics, the robot is used to cap and uncap approximately 1,000 HIV samples per day. FANUC was custom built especially for the North Carolina State Lab of Public Health, so working with it has been a learning process for both the lab and PaR Systems. HIV lab technologists were trained to use the robot by a PaR systems engineer and have learned to perform maintenance and make some repairs themselves. The HIV lab hopes to continue improving the robot’s efficiency and performance by working with PaR systems and the local health departments.
In all fields, new technology comes with new challenges; this is especially true for laboratory work. Because FANUC lifts samples out of the testing racks in the lab, the patient label cannot extend past the end of the tube. Having the label snag on the testing rack can damage the rack, the specimen, or both. The robot is also not able to uncap samples that have a patient label on the threads of the tube because this makes the cap too tight. Only 3mL Sarstedt tubes can be capped and uncapped; Simport tubes, glass tubes, and clot tubes are not acceptable. The HIV lab also asks that health departments do not overfill tubes to minimize risk of spilling and splashing.

The HIV lab looks forward to many years of service from FANUC and appreciates the cooperation of the local health departments.

Submitted by: Amanda Smith

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Distance Learning Tool Available for Laboratory Continuing Education

Due to ongoing travel restrictions and diminishing budgets, staff from the North Carolina State Laboratory of Public Health (NCSLPH), local health departments, hospitals, preparedness centers and other healthcare facilities across the state are finding it challenging to obtain required continuing education (CE) credits. The Laboratory Improvement Unit of the NCSLPH has sought to address this issue through its recent purchase of licenses for Adobe Connect web conferencing software. This product will allow staff to complete required trainings and continuing education at their worksite using a computer with internet and phone access.

On January 21, 2011, Laboratory Improvement held the first statewide web conference to introduce local health department laboratory managers to the capabilities of this new product. The presentation demonstrated the numerous features that make this system an effective teaching tool. Conferences and meetings may be customized for different audiences, program presenters and participants have the ability to interact, cameras may be interfaced to view images from microscopes and other equipment, screens may be shared with the audience for visual comments and edits, and a list of attendees may be viewed as they enter the online conference room.

Approximately 80 participants attended the January 21st conference. For many, this was their first exposure to a web conferencing tool. Participants were asked to complete an evaluation after the presentation to indicate their level of satisfaction with Adobe Connect. The comments indicated that the majority felt the system was easy to use, and the ability to interact was very beneficial. Laboratory Improvement plans to develop a number of online trainings throughout the year in response to the positive feedback. As one participant stated, “I really enjoyed the format. It was easy to use. I love the fact that I don’t have to travel. Very cost effective for CE.”

Date: January 26, 2011
Submitted by: Patricia Atwood, BSMT (ASCP)
Laboratory Improvement Coordinator, NCSLPH
Molecular Diagnostic / Epidemiology Unit
Expanding Capabilities

On March 1, 2009 the State Laboratory of Public Health (SLPH) welcomed onboard a new laboratory unit, the Molecular Diagnostic and Molecular Epidemiology Laboratory Unit. This unit performs certain routine testing, as well as providing technical support and serving as a resource for any molecular test performed at the SLPH. This includes research, development, and assay validation, troubleshooting, training, and molecular testing back-up.

Current routine testing being performed by the Molecular Unit includes pulse-field gel electrophoresis (PFGE) of foodborne organisms (Salmonella, E. coli, and Listeria), multiple-locus variable-number tandem repeat (VNTR) analysis (MLVA) of foodborne organisms (Salmonella, and E. coli), and real-time RT-PCR for the detection and sequence analysis of norovirus. The unit provides back-up testing for real-time PCR of the M. tuberculosis complex.

Recent projects completed:
- Spring of 2009, the Molecular Unit helped with the validation of Influenza real-time RT-PCR of the iCycler and ABI 7500 Fast during the peak of the H1N1 pandemic outbreak, this increased the Influenza lab’s capabilities from 32 reactions per run to 96 reactions per run.
- Spring 2010, the Molecular Unit completed 5 months of QA troubleshooting for the M. tuberculosis complex for real-time PCR.
- January 2011, the Molecular Unit completed a validation study for the sequencing of Nocardia sp. for the Mycology lab.

Recent projects completed for other agencies:
- Fall of 2010, the Molecular Unit was selected to participate in a CDC external-lab validation of MLVA for Listeria monocytogenes.
- Fall 2010, the Molecular Unit along with Idaho Technology, Inc. and the Department of Defense performed an evaluation of the JBAIDS Typhus Detection Kit for the detection of rickettsial agents.

New Projects:
- To increase the capacity for the detection and characterization of bacterial isolates associated with foodborne illness, the Molecular Unit has been selected by CDC/APHL to participate in the implementation and expansion of capabilities for multilocus variable-number tandem repeat analysis (MLVA) of Salmonella serotypes Enteritidis and Typhimurium, and E. coli O157:H7.

As part of the ELC Foodborne surveillance program and to complement pulse-field gel electrophoresis (PFGE) analysis, the SLPH has implemented MLVA procedures. Beginning November 30, 2010 the Molecular Unit began MLVA analysis for all toxin-producing E. coli received at the Lab, and performs the analysis upon request from CDC for any Salmonella serotypes Enteritidis and Typhimurium. Staff member, Katja Manninen, MS MB (ASCP) and Savitri Mullapudi, MS, received in-house MLVA training and received official CDC MLVA certification for Salmonella serotypes Enteritidis and Typhimurium and E. coli O157:H7 characterization.

Ongoing Projects:
- Troubleshooting new CDC PulseNet procedure for PFGE of Listeria monocytogenes
- Validating new GelRed staining method for PFGE, to eliminate the need for using the carcinogen Ethidium Bromide (EtBr) for staining.
- Comparison of techniques for distinguishing MRSA using PFGE and MLVA

The Molecular Unit is comprised of six members; Dr. Shermalyn R. Greene (program manager / public health scientist), Shadia Rath (molecular medical laboratory supervisor), Denise Griffin (PFGE medical laboratory specialist), Katja Manninen (nucleic acid based technologies medical laboratory specialist), Savitri Mullapudi (medical laboratory technologist), and Kim Preuss (medical laboratory technologist).

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Also as part of this proposal, PFGE will be expanding their capabilities to allow them to test all *Salmonella* specimens received in the Lab, in addition to all *E. coli* and *Listeria monocytogenes*; basically doubling our workload in PFGE. Therefore, the additional funding has allowed us to hire two temporary full-time technologists to help the PFGE lab.

The Molecular Unit received APHL funding for participation in an in-house validation study to implement, and to adapt standard operating procedures (SOP) for molecular serotyping of *Salmonella*. Once validated, this assay will be passed to the Enterics lab to incorporate in their routine testing algorithm. The main goal is to continue to improve and expand laboratory capabilities and capacity for molecular detection and characterization of bacteria associated with foodborne illness. The NCSLPH receives more than 2,000 *Salmonella* each year. Currently the *Salmonella* specimens received at the NCSLPH are characterized utilizing conventional serotyping methods, pulse-field gel electrophoresis (PFGE), and multilocus variable-number tandem repeat analysis (MLVA).
NC Public Health Association’s Annual Educational Conference

Charlotte Hilton University Place
8629 J M Keynes Drive
Charlotte, NC 28262

Date: September 21st–23rd, 2011

Save the Date!

Charlotte, NC

We Invite You to Sponsor and Exhibit!
The Safety Corner
What’s Right with This Picture?
Electrical Safety

While most of us know the dangers of electrical hazards, they are still one of the biggest violations seen in an office or laboratory setting. It is important to look for electrical hazards in your facility and make sure everyone is in compliance. It’s not just an OSHA violation; it also puts you and your co-workers in great danger!

Not sure what to look for? Start with the following questions:

- Are electrical cords placed where they will not trip passersby?
- Are electrical cords used properly (not run under rugs)?
- Are electrical cords in good condition (no frays or splices)?
- Do extension cords being used have a grounding conductor?
- Does all electrical equipment have UL® approval or some other nationally recognized testing laboratory approval?
- Does the interior wiring system have a grounded conductor?
- Are electrical appliances such as vending machines, microwaves, etc. grounded?
- Are all circuit breaker switches marked or labeled?

Also ensure all employees are aware of electrical safety precautions. Ask your co-workers if they know what to do when they find malfunctioning equipment, frayed or broken electrical cords. Additionally, ask if they routinely turn electrical equipment off if not used for a period of time. All employees should be aware of their surroundings and should report any electrical concerns such as frayed cords immediately.

Surge protectors are wonderful tools, but only if used correctly. They should only be used for equipment that needs to be protected against power surges, such as computers and printers. Do not use them for high amperage, high draw appliances like space heaters, coffee pots, and refrigerators. Also, NEVER “daisy chain” surge protectors, hooking one surge protector into another either to increase the number of available outlets or extend their reach. I have included a picture below. If you cannot reach the outlet or need more plugs, consider another layout for your office or laboratory. Another option may be to get another permanent outlet installed. Most maintenance groups can do this fairly quickly and easily.

If you have any questions regarding this or any other safety issues, please contact Kristy Breedlove at kristy.breedlove@dhhs.nc.gov or (919) 733-7186. Look for the next installment of The Safety Corner when we will continue with the series, “What's Right With This Picture?”

Submitted by:
Kristy Breedlove, BS,
Laboratory Improvement Consultant,
NCSLPH
North Carolina State Lab of Public Health

We have two new supervisors in Newborn Screening! We are so lucky to have employees of this caliber on board!

- Hari Patel, MS/MS
- Radish Persaud, FIA/GAL

Laboratory Improvement is excited to report we have a new Regional Consultant in the Asheville area. April will be working with the 28 counties in this area, 11 of which are under the oversight of the state CLIA contract. We are excited to have April join us and know that she will provide valuable experience and assistance to her area laboratories. Please join us in welcoming her aboard!

Our Microbiology section has also been lucky to hire some great employees. Cami Hartley submitted the following information!

- We have a new employee, Joanne Touchberry. She started in December 2010 and is our new Atypical Bacteriology Specialist (previously Marilyn Boyette's position). She comes to us from bioMerieux where she worked in Microbiology and before that, WakeMed also Microbiology. She has many years of experience and we are thrilled to have her as a part of our team.

- In September, 2010, we promoted Jigisha Shah from the Mycobacteriology (TB) to Med Tech II in the Enteric Bacteriology laboratory. Enterics is generally our highest workload area and it is a great relief to have the extra hands.

- In August, 2010, we hired Christy Spratt as our Med Tech II floater. She comes to us from Johnston Memorial Hospital where she worked in Microbiology and Point of Care testing. Christy has proven to be highly skilled and has trained through both Atypical and Special Bacteriology thus far.

Welcome to Christy, Jigisha, and Joanne! We are happy to have you all here!

Other employees we are happy to welcome to the State Lab are:

- Susan Herr-Molecular Diagnostics
- Katherine Murphy-Newborn Screening
- Tam Nyguen-Information Technology
- Ashleigh Pittman-Microbiology
- Sherrod Cauthen-Microbiology
- Christopher Tinsley-Microbiology

Cont. on page 11
Who’s New in Public Health cont. from page 10

- Sandra Wright-Microbiology
- Renee Rundenza-Virology/Serology
- Joe Ortiz-Administration
- David Whitt–Newborn Screening/Clinical Chemistry

Health Departments

April Jennifer Revak joined the laboratory staff at the Guilford County Department in December 2010. April earned an Associate of Science from Edinboro University in Pennsylvania and is ASCP certified. She has over eighteen years experience working in various labs, performing a variety of lab procedures. Cindy Toler says, “She has quickly become a valuable member of our team and Guilford County is fortunate to have someone of her caliber!”

Please contact Kristy Breedlove at (919) 733-7186 or kristy.breedlove@dhhs.nc.gov if you would like to recognize a new co-worker at your facility!

Kudos!

The NCSLPH will continue to recognize exemplary employees by awarding the State Lab Employee of the Quarter. Employees are encouraged to nominate co-workers who demonstrate great work ethics and always lend a helping hand.

The Fall recipient of the award was Ann Grush. Ann is an outstanding laboratorian and leader. She has excelled in all areas of her job. Her outstanding technical skills and “can do” attitude have shone brightly as she simultaneously performed the duties of two positions at the State Laboratory in the Newborn Screening Unit, FIA supervisor and Laboratory Consultant. Additionally, Ann has contributed countless hours to help bring the new Newborn Starlims application online. Her customer service and
professionalism are exemplary and her selfless efforts have ensured consistently accurate and timely testing and reporting. Ann is a superb teacher and coach and her exceptional efforts have resulted in the tremendous effectiveness and strong team unity of the Newborn Screening Unit and the entire State Laboratory of Public Health.

The Winter recipient of the award was Diana Scarborough in the Lab Improvement Unit. Diana Scarborough’s performance as both Lab Manager in Laboratory Improvement and as a continuing contributor to the STARLIMS application for Newborn Screening has been exemplary. She has put in many extra hours to help make both programs more effective, producing outstanding results. As Lab Manager in Laboratory Improvement, Diana has already proven to be a great asset to the Unit. She has a willing attitude and excellent technical skills which have resulted in numerous improvements, such as her identification of resources from different areas of the Lab in order to eliminate redundancy. In addition to her new duties, Diana continues to play a vital role in the STARLIMS project. Her expertise in the various areas of Newborn Screening led to the implementation of the system with fewer errors. She was also instrumental in training staff to use the new software application and continues to provide recommendations and assistance to the program. There is no job too big or too little for Diana—she is truly a team player!

The Spring recipient of the award was Laura Fierke in the Virology/Serology Unit. She was nominated in the category of Significant Contribution to Morale or Effectiveness of the Lab. Laura volunteered to serve as the coordinator of SLPH Wellness Committee and has done an outstanding job leading this effort. She has worked tirelessly during the day and after hours to organize initiatives such as Red Shirt Day, Take the Stairs, the Walking Challenge (70 participants from the lab!), Friday Line Dancing, and a variety of Wellness classes. Laura keeps employees informed through posters and e-mails about opportunities available to employees at the lab and around town. She has demonstrated unflagging energy and enthusiasm to this role that is reflected in her own commitment to health and physical activity as a participant in running marathons and planning for a triathlon. Laura has accomplished all this through great teamwork while maintaining excellent performance in her demanding role as “floater” for the Virology/Serology Unit. Her efforts promote physical activity, good health and well being for all employees choosing to participate, either at free or affordable cost, which is a great morale booster in these difficult times.

Thank you Diana, Ann, and Laura for your many contributions to the improvement of the laboratory!

The State Lab also lost some wonderful employees over the last few months. Gaylen Daves from the Virology/Serology Unit retired after 39 years of service! Gaylen will certainly be missed not only for his expertise but also his warm smile. Patty Davis, clerical supervisor in Newborn Screening/Clinical Chemistry also retired at the end of April. Lastly, Lucy Burke, also from the Newborn Screening Clerical Unit is leaving us after many years of service! We’ll miss you all but wish you the best of luck in your retirement!

Please contact Kristy Breedlove at (919) 733-7186 or kristy.breedlove@dhhs.nc.gov if you would like to recognize a co-worker at your facility.
Newborn Screening Turn-Around-Time and You

If your facility has received a Newborn Screening report and it requests a repeat heel stick specimen, there are several steps you can take to ensure the most timely response and acceptable specimen. It is very important that you expedite requests for further testing. Newborn Screening is a program that screens newborns in our state for genetic and metabolic disorders that can cause severe debilitating health issues, irreversible mental retardation, and even death.

1. Be proactive with continuing education and take the online Newborn Screening Form Training, found at the State Lab’s website, http://slph.ncpublichealth.com. Find the heading Newborn Screening on the right side of the home page and left click on Form Training. This online training, available 24/7, provides instruction on form completion, specimen collection, and submission. It includes collection videos and photographs of unsatisfactory specimens. Upon successful completion of a quiz, participants will receive 1.5 contact hours of continuing education credit. Refer also to the State Laboratory’s web site for Newborn Screening disorder information, unsatisfactory policies, and testing information.

2. Collect a repeat sample as soon as possible; do not delay until the infant's next medical visit.

3. Fill out the form completely, including feeding types, birthweight, and collection date and time. All of the information is needed to properly assess the results and to return a report to your facility. Specimens submitted without a provider Employer Identification Number (EIN) will not be tested and you will not receive a report.

4. Collect a quality sample, using the guidelines from the online training. Check the expiration date on the filter paper before collection. If your filter forms have expired, contact the Mailroom (919-733-7656) for valid forms.

5. Allow your specimen to dry at least 3 hours before mailing. Protect the specimen with the yellow protective flap. Do not place in a biohazard bag, as this can cause deterioration of the blood spots. Do not delay mailing by batching specimens. Instead, mail as soon as possible, using the address on the upper left or back of the filter form.

Your appropriate response to a request for further testing is vital to the infant’s healthcare. If you have questions concerning Newborn Screening testing contact the Newborn Screening Consultant, Ann Grush (919-807-8881), ann.grush@dhhs.nc.gov or the Newborn Screening office, 919-733-3937.