Welcome to this special edition of the Houston Methodist Hospital Department of Pathology and Genomic Medicine Newsletter: The Laboratory Report. If you have contributions or feedback for upcoming newsletters, please email us.

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Message from the Chair

Dear Colleagues,

The last two months have been extremely challenging for all of us in the Department of Pathology and Genomic Medicine, the Houston Methodist Hospital System, and metropolitan Houston. I am extraordinarily proud of the astounding dedication and professionalism that each and every member of our Department has displayed during this unprecedented period for Houston Methodist, the city we love, our country, and the world. Your efforts have defined professionalism and illustrated what it means to place our patients before self and family. I could readily write a long book about the many times every day that I have been heartened by your tremendous efforts. Your efforts have been the glimmer of hope and sanity in my life as we have all watched our brethren be affected by the vicissitudes of SARS-CoV-2. I applaud each and every member of our Department, and I will do so daily for the remainder of my career.

As we collectively bend the COVID-19 curve, I look forward to continuing to work shoulder-to-shoulder with you to help bring our Department and institution back to whatever will constitute a new normal. I have zero doubt that the resiliency of our Department will always win the day, regardless of the nature, intensity, and length of future challenges.

I am extraordinarily honored to be able to have you as my colleagues.

Sincerely,

Jim

News from the Department

Houston Methodist Hospital First in Nation to Use Convalescent Plasma Therapy to Treat COVID-19 Patients

On March 28, Houston Methodist Hospital became the first academic medical center in the nation approved to perform convalescent plasma therapy for COVID-19 patients. Under the direction of principal investigator Eric
Salazar, MD, PhD, an emergency investigational new drug (eIND) protocol was rapidly created and approved by the FDA, allowing a potentially life-saving treatment to be provided to critically ill COVID-19 patients within a matter of days. A clinical trial IND has also been approved for the HMH system.

In use since the late 19th century, convalescent therapy imparts passive immunity to recipients through the introduction of antibodies found in blood products from donors who have previously recovered from a specific pathogen. Convalescent therapy has been used successfully in the past to treat diphtheria, Spanish influenza, Ebola, and MERS-CoV.

While no studies have evaluated the overall safety and efficacy of convalescent therapy, it nevertheless represents a promising resource, especially considering the paucity of other treatment options for COVID-19. Dr. Salazar has stated that, “Convalescent serum therapy could be a vital treatment route, because unfortunately there is relatively little to offer many patients except supportive care, and the ongoing clinical trials are going to take a while. We don’t have that much time.”

Congratulations to Dr. Salazar and his team for their outstanding work!

Dr. Chévez-Barrios Recommends COVID-19 Guidelines for Ophthalmic Pathology

Patricia Chévez-Barrios, MD, served as lead and corresponding author for a set of new recommendations for ophthalmic pathologists during the current COVID-19 outbreak in a forthcoming issue of *Ocular Oncology and Pathology*. These recommendations are intended as a resource for the consideration of practitioners in the field and have been reviewed and approved by the board of the American Association of Ophthalmic Oncologists and Pathologists (AAOOP). The guidelines may currently be found at the website of the AAOOP.

HMH Labs Create Rapid Assays for COVID-19 Testing

From the outset of the current novel coronavirus pandemic in the United States, the laboratories of our Department have been at the forefront of innovation in the rapid development, validation, and implementation of SARS-CoV-2 testing options for Houston Methodist patients.

First Rapid Assay Developed by Molecular Diagnostics Laboratory
The day after the first US case was reported, the Molecular Diagnostics Laboratory team began formulating plans to develop a rapid PCR assay. Less than one month later, their assay, based on a protocol from the World Health Organization, was ready. The first patient at Houston Methodist was tested one week later. The laboratory has subsequently expanded the capacity of the initial assay by implementing higher throughput extraction robots and validating multiple newly available testing platforms. The assay is currently performed on the ABI 7500 Fast Dx instrument.
On April 3, the MDL went live with a second platform for COVID-19 testing at HMH. The Hologic SARS-CoV-2 test is approved by the FDA’s emergency use authorization (EUA), and is a real-time RT-PCR assay performed on the laboratory’s newly-acquired Panther Fusion instrument. The Panther Fusion is capable of performing over 1,000 SARS-CoV-2 tests per day, which represents a significant increase in our COVID-19 testing capacity for Houston Methodist patients.

Verification of the new test was completed in record time by Molecular Diagnostics Validation Technologist, Erika Walker. From the receipt of SARS-CoV-2-specific reagents to go-live, verification of the assay was accomplished in just 8 days. This incredible turnaround time is thanks to the efforts of everyone involved, including the MDL team, laboratory leadership, and Lab-IT.
Third Assay is Deployed

A third assay was implemented as a joint project between the Microbiology and Molecular Diagnostics Laboratory teams. Spearheaded by S. Wesley Long, MD, PhD, and Randy Olsen, MD, PhD, the Xpert Xpress SARS-CoV-2 test is also approved under an FDA EUA, and is an automated molecular test that provides rapid detection of SARS-CoV-2 viral RNA. Performed on the GeneXpert Infinity platform, the test provides results on a single test within 45 minutes, and can run 32 samples simultaneously. The automated system requires less than one minute of hands-on time by a technician to prepare the sample from swab to cartridge. HMH is a priority site for the Infinity platform, and testing started April 13.

Congratulations to all of our laboratory staff on their incredible efforts!

Molecular Diagnostics Laboratory Updates

From Molecular Diagnostics Laboratory Director, Randall J. Olsen, MD, PhD:

The technical staff in the Molecular Diagnostics Laboratory are leaders in patient care. On a daily basis, team members have volunteered to start early, stay late, and take extra shifts in order to maintain the most timely and highest quality service possible. Many young leaders have emerged. Many thanks for their tireless efforts!

As the Molecular Diagnostics Laboratory has shifted resources to focus on coronavirus testing, many less urgent tests have been rerouted to a reference laboratory. The Referral Laboratory staff have done a tremendous job in managing the large volume of send-out tests and have maintained a very high level of clinical care.

The Molecular Diagnostics Laboratory thanks the many nurses recruited from the labor pool who have helped the laboratory. They, and others, have helped stock inventory, receive and accession specimens, triage and process specimens, and courier reagents to workstations across campus. Their efforts enable our technologists to focus on patient testing.
Clinical Informatics Group Creates Houston Methodist COVID-19 Patient Dashboard

Under the direction of David Bernard, MD, PhD, and S. Wesley Long, MD, PhD, Clinical Informatics and Chemistry Fellow Paul Christensen, MD, along with Clinical Informatics and Chemistry Fellow Ghazaleh Eskandari, MD, and Sishir Subedi, created a virtual dashboard that tracks COVID-19 patients throughout the HM System. The tool is used daily by laboratory and hospital leadership to understand trends in testing volume, positivity rates, and patient demographics, and the data are crucial to supporting patient care across the HM System.

The dashboard has been shared with various researchers as a mechanism to identify and enroll patients for clinical trials or obtain additional data for future research. It is highly automated, real-time, and is sophisticated enough to capture patients with in-house testing, send-out testing, and outside results in one place. As of May 4, the report data has been accessed 17,338 times by 381 unique computers within the HM System.
HLA Updates

From Todd Eagar, PhD, Medical Director, Histocompatibility and Transplant Immunology:

The HLA lab is actively involved in testing COVID-19 convalescent serum for HLA antibodies to prevent complications in transfusion for the recently FDA-approved convalescent serum protocol. We are validating a new assay to perform rapid screening of patient samples.

The HLA lab relocated part of the laboratory from Brown to Scurlock to provide expansion room for the Molecular Diagnostics lab for SARS-CoV-2 testing. The HLA lab and Microbiology lab worked together to successfully move our HLA accessioning area and
DNA extraction equipment. There was no disruption to the workload for the HLA team. Kudos to both the HLA and Microbiology teams for their hard work!

Teamwork Spotlight

As the SARS-CoV-2 pandemic was just reaching Houston in early March, the Molecular Diagnostics Laboratory team needed assistance in shifting some testing in order to free up resources for COVID-19 testing. The Microbiology Laboratory had a meningitis/encephalitis assay that had been validated, but the test build still needed to be done. Our amazing Lab IT team stepped in and built and validated the test in Soft, the Epic Orders team built it in Epic, and billing was validated, all in a single day. Special thanks to Dr. David Bernard for his leadership support in ensuring that this project was completed; pathologists Dr. S. Wesley Long and Dr. Paul Christensen; Pat Cernoch, Oluwatobi (Tobi) Adelanwa, Bonnet Bazile, and Robel Alemayehu, who helped with testing and validation in Microbiology; Marisol Belmares in Billing; Artur Yudzinsky, Claude Moussa, John Valenzuela, and Melissa Chamberlain from the Lab IT Team; and Marina Klimovich and Hanna Pascual on the Epic Orders Team.

As demands have grown and supply chains have been disrupted, items once taken for granted have become increasingly hard to find. Nasopharyngeal (NP) swabs are required for COVID-19 testing and supplies at HMH and throughout the Texas Medical Center were quickly dwindling as the demand for testing increased. Enter Dominik Sievert, founder and managing partner of German biotech company Inveox, who reached out to Dr. S. Wesley Long via LinkedIn. Mr. Sievert’s company had taken part in a TMCx startup incubator this fall, when he met Dr. Long. Mr. Sievert was eager to assist the Texas Medical Center community and had existing partnerships with Chinese production facilities which could produce swabs and transport media. These efforts ultimately secured orders of swab kits totaling nearly 500,000 units by early April. Dr. Long, along with Dr. David Bernard, David Peck and Leo Bermudez in the HMH Supply Chain and TMC Vice President of Strategy, Amy McPhail, led the efforts to ensure that the shipments were able to clear customs, pass FDA inspection, and be distributed equitably to our partner institutions in the Texas Medical Center. In addition to insuring the supply of these needed items, Dr. Long led training sessions and filmed a video for HMH on proper NP swab testing technique to make sure that adequate specimens were collected for accurate test results.

Dr. Long conducts training session on NP swab testing at Butler Stadium.

Dr. Long demonstrating proper NP swab testing attitude.
Community Donations: Three Examples of Many Generous Gifts

Erik Salas, General Manager of the Memorial Drive location of Snap Kitchen reached out to members of the medical community and graciously offered to cater lunch for the Histology team. Snap Kitchen provided a wide variety of healthy meals, including gluten-free and vegetarian options. **Alexandria Montes,** Medical Lab Assistant in Histology reports that, “It was greatly appreciated amongst all of us in Histology!!”

![Histology team enjoys lunch from Snap Kitchen.](image)

The Original Kolache Shoppe and Zeppelin Coffee donated breakfast for members of the Molecular Diagnostics Laboratory and Blood Center as an expression of gratitude for the hard work being performed by medical employees across the world. The staff were treated to a variety of pastries from a long-time local favorite kolache bakery.

![Blood Center staff Amanda Meza, Javier Segura, Lamesha Seamster, Tracie Easley, Johndrea Slay, Aurora Ramirez, and Cindia Medina (left to right)](image)

![Molecular Lab staff Duong Pham, Erik Walker, Alexia Romero, Dorothy Munoz, and Natu Puntachart (left to right)](image)

Many thanks for the generous support from our Houston community!

Updates from the Community

**From Andrea Diaz De Vivar, MD, Medical Director,**
Houston Methodist Baytown Hospital has been among the community hospitals in our system with the lowest percentage of patients testing positive for COVID-19 so far. These percentages ranged from 5% towards the end of March to 11.5% in mid-April. We have tested a total of 350 patients, 40 of whom were positive.

Due to the expected surge in cases, the laboratory has developed active measures to address new and unprecedented needs, including the adjusting of staff schedules and working around the clock to secure laboratory supplies, some in very high demand (wipes, gowns). A courier system responsible for transporting samples for COVID-19 tests was implemented in order to optimize turnaround time (TAT), including personnel transporting samples to the HMH Molecular Laboratory every two hours and/or STATs.

System wide measures have been successfully implemented at HMBH, including restricted access to the hospital; screening points; cancelation of non-urgent and elective procedures; implementation of virtual meetings and tumor boards; and the appropriate and judicious use of personal protective equipment (PPE), among others. The national shortage of blood has been emphasized not only via e-mail to our smaller community group of doctors, but was also addressed in the weekly Medical Staff Town Hall webinar presented by Dr. Boom and Dr. Phillips and in the biweekly HMBH Town Hall presented by Chief Medical Officer Dr. Shawn Tittle.

On April 2nd, the collection of used N95 and tie-back surgical masks for sterilization/disinfection and reuse was implemented. Collecting bins were placed in accessible area throughout the campus. Our next step is the implementation of the “Surveillance testing” for healthcare providers directly caring for COVID-19 patients. Testing is set to occur at Baytown on April 14 and April 20. Nasopharyngeal swabs for PCR testing and blood for banking and potential future serologic testing will be obtained for those providers who choose to be tested. As of now, we have 90 staff members who have signed-up.

The Houston Methodist Primary Group Mont Belvieu screening site opened on April 15 and will test for Respiratory Pathogen Panel (RPP), Group A Strep, Rapid Ag (RSS), and COVID-19. This site is open for all patients (including private practice physician patients), employees, and physicians.

Lastly, on a more personal note, I would like to wholeheartedly applaud the efforts of those who were (and are) involved in the development of tests for COVID-19 in our institution, particularly those in the Molecular Diagnostic Laboratory and Microbiology Laboratory. And what about those involved in the expeditious approval of convalescent plasma therapy for COVID-19? The response of our Department to this pandemic has been nothing but spectacular, and I feel very proud. Our front line doctors, nurses, technologists and above all, our patients, are fortunate to have such a fine team of professionals working non-stop in order to improve outcomes.

Below is a picture of HMBH with signs that were placed by members of our community to demonstrate their support and appreciation.
From David Alrahwan, MD, Medical Director, Houston Methodist Clear Lake Hospital (HMCL):

The Houston Methodist Clear Lake (HMCL) Laboratory has developed a staffing plan for a potential surge in patients. The HMCL Lab is closely monitoring supplies and blood product inventory to ensure that patients’ needs are met, and in preparation for a potential patient surge.

- Shortage of influenza testing supplies has led to us correlating an alternate kit for testing.
- Communication has been forwarded to all local physicians regarding blood product conservation.

To support the hospital in focusing on urgent/emergent surgeries and procedures, the pathologists, in collaboration with other departments, are holding weekly cancer conferences to accommodate the need for clearance of scheduled cancer surgeries that may or may not be deemed “urgent.”

Also, HMCL holds a weekly WebEx update led by hospital leadership for all HMCL employees and physicians. Updates cover supply status, census info, proper PPE usage, surge planning, etc.

From Seema Mullick, MD, Medical Director, Houston Methodist Sugar Land Hospital (HMSLH):

I believe the first case tested for COVID-19 originated at Houston Methodist Sugar Land Hospital (HMSLH) on March 5, 2020. That is the day when hospital and laboratory processes and operations entered new and uncharted paths at HMSLH and the entire HM System.

The key issue in this COVID-19 crisis was, and remains, accessibility to accurate and rapid testing. In this regard, our own HMH Molecular Diagnostics Laboratory came up with a new in-house test developed almost overnight. This initiative was led by Drs. Bernard,
Initially, as you know, tests were being sent to the CDC, then the local city health lab, and then finally fully performed at our very own molecular lab.

HMSLH was the first hospital that had a large number of cases, rapidly advancing from 1-2 cases to a maximum of 42-43 cases over the week of March 16-20. Of these, almost 25% of specimens tested positive. Our HMSLH lab geared up to provide sample collection kits and requisitions in record time. We set up directed courier runs to the HMH Molecular Lab and worked closely with our local infection control personnel to get the results back. This process changed from requiring two swabs per patient to one only; we were also having swab shortages, and it was strange to think how a thin little plastic swab was almost breaking the camel’s back!

As we were working with the hospital staff and physicians in our supporting role as laboratorians in this situation, the guidance and constant flow of information via emails, texts, and WebEx communications from HMH and the system as a whole was very reassuring.

The lab personnel at HMSLH have handled all these challenges in stride. We are all at work, available to help, and support hospital, local, and national initiatives whether it be hand hygiene, social distancing, or judicious use of PPE.

HMSLH is participating in local blood draws to supplement our inventory in this time of limited availability of blood products.

In the meantime, our own HMH blood banker, Dr. Salazar, made news about the use of convalescent plasma as a form of treatment for advanced cases. That was incredible; it happened so quickly. I have been personally approached about this treatment from members of the local community with afflicted loved ones, and we have currently used it on several patients at HMSLH. I have a patient recovering from COVID-19 who is eager to donate their plasma.

So, while we are still in the midst of this crisis, I can say that handling issues on a day-by-day basis, preparing for the worst and hoping for the best, is the approach that we are taking.

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From Hazel Awalt, MD, Medical Director,
Houston Methodist the Woodlands Hospital (HMTWH):

As laboratory staff began receiving specimens for novel coronavirus testing, the staff were being updated on specimen collection, transport, and submission by Laboratory Director Anita Farr and Laboratory Manager Buena Umali, sometimes on an almost hourly basis. HMTWH chaplain Brett McClenehan visited the laboratory to give a prayer of inspiration and healing whom all in the laboratory, including our housekeeper, an instrument service representative, and a nurse present in the laboratory for point-of-care training, paused to participate in. Staff attentively listened to presentations by Drs. Boom and Phillips whenever possible. The anatomic pathology staff invited HMTWH Chief Medical Officer Dr. Jason Knight for a safety and informational chat on COVID-19. Our pathologists stepped in to speak proactively with clinicians regarding blood transfusions to help preserve our precious blood supply. And soon the greeting and farewell in the laboratory became, “Wash your hands!”

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From Thu Ngo, MD, Medical Director,
Houston Methodist West Hospital (HMWH):

Phones ringing, text messages flashing, emails popping up, nurses at the front window, audio prompts from stop watches, and instruments beeping...these are the typical sights and sounds of a normal day in the laboratory at HM West. However, like the graphs we all have been seeing on the news, the above events are multiplying exponentially during the
late winter announcing the arrival of the COVID-19 pandemic. Like everyone else in the HM system, HM West laboratory springs into early action, fully realizing the critical role it would play in this pandemic.

In anticipation of the increased demand for laboratory services, supplies and reagents were ordered, measures were taken to secure and conserve blood products, staffing and scheduling were reviewed, procedures and workflow were updated to include both volume and safety for the staff. Someone even went the extra mile to “MacGyver” a platform out of extra material from home so the smaller-statured members of the lab can be elevated higher and not have their faces close to the exposed opening of the biological hood when processing these infectious respiratory specimens. It was also quickly realized that our staff is the most valuable asset, and the critical key in the entire operation. Huddles were assembled to inform as well as to gather input from the staff. There was even an impromptu Q&A session from the Medical Director with the basic science of this novel virus.

Members of the evening shift staff were part of the history-making first-in-the-community hospital transfusion of convalescent plasma to a COVID-19 patient. They were especially honored to have Dr. Eric Salazar pay a personal “midnight” visit when he arrived with the convalescent plasma. His first words to the Medical Director immediately after the visit that night were, “Your staff are amazing!” Above all, like all other healthcare frontline heroes, laboratorians are normal everyday people who also have personal challenges, with elderly parents in strict isolation in Wuhan without help, with sudden and unexpected loss of loved ones in faraway lands, yet they continue show up at work every day and always give their best efforts.

With permission from the author, we share this note below from a lab team member to say we’re here, we can, we’re ready, and we care.

“My lab family,
I would like to express my heartfelt appreciation for all of your prayers and inspiring messages that you’ve extended to me.
I am in awe of the outpouring of support that everybody has shown to me, despite of all that’s going on right now, you still find the time to show your support and for that I am eternally grateful. You have shown me that I am not alone in my struggle.
The monetary donation that you generously shared with me for my late brother’s family will surely help support his young children that he left behind.

An HMWH team member on a MacGyver-ed platform.

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The monetary donation that you generously shared with me for my late brother’s family will surely help support his young children that he left behind.
It’s not easy being in a position where somebody in your family passes away unexpectedly, and you are thousands of miles away, unable to grieve with your loved ones. The pain is unbearable, beyond words. It happened to me twice already, first, my father and just recently, my brother. And with the threat of this deadly virus on our mind, the stress and anxiety can at times be overwhelming. What comforts me now is knowing that God, with his infinite wisdom, power and mercy is in control. Sometimes, we just have to tell ourselves to be still and listen to what the Lord’s message is and we will find peace.

May everybody also find refuge in their hearts during these difficult times.”

History in the making, with Dr. Eric Salazar and the HMWH night shift staff.

From Byron Moore, MD, Medical Director, Houston Methodist Willowbrook Hospital (HMWBH):

Dr. Leveque (Blood Bank Medical Director at HMH) asked us to "police" RBC and platelet usage in the expectation that our blood suppliers would have fewer blood donations. Around March 16, the American Red Cross also sent a notice asking us to reduce RBC usage by 25%. I sent a notice to the medical staff and communicated with the hematologist/oncologist in charge of the Infusion Center. During the first two weeks, I frequently investigated the need for transfusion (averaging three patients per day). Since that time there have been few physicians desiring to transfuse RBCs in a patient with a hemoglobin greater than 7 g/dL (usually zero requests per day). I thank my clinician colleagues on their tremendous progress!

On March 6, 2020, Detries Cowins was caught in the act (recognized for excellence). Dr. Dale Clark inquired with the HMWBH CEO about using our campus to have lab work performed. Dr. Dale typically has his lab work completed in the Medical Center, but in light of the current crisis he reached out to us. We were able to accommodate Dr. Dale and provide excellent service thanks to Detries (Dee) Cowins.
Dee Cowins modelling her PPE.

e-Card recognizing Dee Cowins for embodying ICARE values.

THE LABORATORY REPORT is a publication of the Houston Methodist Department of Pathology and Genomic Medicine

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