HFSC saw a nearly 77 percent increase in 2017 in the number of synthetic opioids identified, including extremely toxic fentanyls. HFSC’s seized drugs section gets more requests for analysis than for any other discipline, and in that role also has a good sense of drug trends on city streets and corners. As street trends and consumer preferences change, so do the drugs that come into the lab. Sometimes this is the first indication authorities have of a shift in drug types.

Like the rest of the nation, HFSC has seen a significant percentage increase in synthetic opioids, however, the overall number of cases remains low compared to other parts of the country and in comparison to other drugs that arrive at the lab.

In 2017, 23 of about 7,000 completed requests contained synthetic opioids, more than the 13 seen in 2016, but still far fewer than in parts of the Midwest where dozens of cases are seen annually.

“While we are not seeing the same numbers in Houston, the percentage increase is significant and the danger remains the same,” said James Miller, manager of HFSC’s seized drugs section. “Drugs laced with opioids such as fentanyl and even the elephant tranquilizer, carfentanil, pose a serious risk to lab analysts, law enforcement and first responders, as well as the community.”

Last year, HFSC changed access and protective gear rules in its drug identification lab after finding a case with 80 milligrams of carfentanil — enough for 4,000 people to overdose. The largest seizure last year was of three kilos of powder fentanyl, enough for 1.5 million overdoses.

Overall numbers for 2017 have not yet been compiled, but fiscal year data from June 2016 to July 2017 shows Houston’s most popular drug remained cocaine, accounting for 26 percent of the more than 16,000 drug identifications for that 12-month period.

During that same period, marijuana switched places with methamphetamine and became the number two spot at 23 percent. Methamphetamine dropped to number three at 22 percent.

One of the greatest anomalies in Houston is the relatively large percentage of PCP, a potent hallucinogen that has disappeared in most parts of the United States. Houston remained steady with about 4 percent of drug identifications attributed to PCP.

And unlike other parts of the country only 2 percent of drugs identify as heroin, one of the reasons the opioid crisis is not as significant in Houston.
Peter Stout, PH.D.
CEO/President

Dr. Peter Stout, HFSC’s CEO and president, initially joined the agency in 2015 as its chief operating officer and vice president. He has more than 15 years of experience in forensic science and forensic toxicology. Prior to joining HFSC, Dr. Stout worked as a senior research forensic scientist and director of operations in the Center for Forensic Sciences at RTI International. Dr. Stout also has served as president of the Society of Forensic Toxicologists (SOFT). He represented SOFT in the Consortium of Forensic Science Organizations and has participated in national policy debates on the future of forensic sciences in the United States. Dr. Stout has a doctorate in toxicology from the University of Colorado Health Sciences Center in Denver. Dr. Stout also served as an officer in the U.S. Navy Medical Service Corps.

Four years ago this month, the Houston Forensic Science Center, after two years of planning, took over management of what had been the Houston Police Department’s crime lab, Crime Scene Unit and parts of the Identification Division. Along with the title and responsibility, we received 131 City of Houston employees and less than a half-dozen HFSC staff members.

And we inherited the adjectives “beleaguered” and “scandal-ridden” often used to describe HPD’s crime lab.

HFSC had an uphill battle to improve quality and turnaround times and reduce backlogs. All with zero credibility in the public eye.

So where are we today? Where have we succeeded and where do we still need to improve? And what’s next?

We have successfully eliminated backlogs in all but two sections—forensic biology/DNA and latent prints. Turnaround times average 31 days, excluding latent prints. We have nearly 200 staff members, well over two-thirds HFSC employees. The Crime Scene Unit is civilian and will be accredited by the end of 2018. HFSC has one of the largest blind quality control programs, if not THE largest, in the nation. And a crime lab that often got criticized for hiding issues is now praised for transparency.

We have emerged from the 2003 “Worst Crime Lab in the Country,” New York Times headline to a 2017 quote in Rolling Stone magazine saying HFSC is “the answer” to forensic problems.

But I am not satisfied. By this time next year, the latent print backlog will be gone, and DNA almost there. We will expand the blind quality control program to 5 percent of casework. And HFSC will have a new, operational, cloud-based information management system. Evidence handling will be accredited. There is so much more we can do.

The sky is the limit. Keep thinking. Keep dreaming. I know I am.

Peter Stout, PH.D.
CEO/President

HOUSTON FORENSIC SCIENCE CENTER

A Few Words From Our PRESIDENT

As the Houston Forensic Science Center has transitioned to a new Laboratory Information Management System (LIMS) and a new network, it has noted these significant changes would impact operations and turnaround times.

And that time has come.

March was a tough month for HFSC, and the technology changes had the greatest impact on areas that have already been struggling with backlogs, especially the forensic biology/DNA section. There, backlogs grew in March and turnaround times slowed down.

Latent prints continued to chip away at its backlog, and as it dug into older cases it made the overall average turnaround time higher, knocking it up to 146 days. Without latent prints, though, the turnaround time was 31 days on average.

And other disciplines recovered as the month progressed. For example, seized drugs ended the month with an average 9-day turnaround time.

For more information, please visit the HFSC website at www.houstonforensicscience.org
In April 2017, HFSC’s Crime Scene Unit _ reeling from headlines about problems with its work product and an ongoing struggle of who should be boss _ embarked on a journey. The unit would be civilianized.

A year later: all but two members of HFSC’s first-ever CSI Academy graduating class is operating independently in the field, response time to crime scenes has improved and all investigators are using the same evidence-handling procedures to ensure consistent, high-quality work.

This was no small challenge. CSU had six months to transition all classified officers _ more than a dozen _ back to the Houston Police Department. Crime wouldn’t stop or wait, so CSU had to move fast.

Cooperation and collaboration with HPD and a desire by both sides to succeed proved crucial. HPD pulled through.

CSU had six weeks to recruit, hire and create a 400-hour curriculum, recalled CSU supervisor Carina Haynes, who was crucial to the academy’s success.

HFSC received hundreds of applications within hours of posting the announcement that it was seeking inexperienced college graduates for the academy.

Of more than 400 applicants, HFSC selected 15. All but one completed the program successfully, CSU Supervisors and staff all helped train the new recruits.

CSI Jacob Lambuth, a graduate of the academy, said the training program provided him and his classmates the basics of forensic investigation. “Everyone was trained on the same level, and the expectations regarding quality and topics for our training were taught in easily-applied ways,” Mr. Lambuth said.

So why is this important? HFSC’s attention is no longer focused on putting out the next fire.

“We now have time to focus on techniques, quality and the importance of doing things right the first time,” said CSU supervisor Alison Hutchens.

CSU is working to become the last HFSC discipline to achieve ISO accreditation. This is expected to occur in July.

The Unit also hopes to expand so it is better able to respond to more property crimes and provide Houstonians with greater service.

Currently, HFSC’s CSU does not have the resources to respond to most aggravated assaults, rapes and high-dollar property crimes. Evidence collection is often done by patrol officers who respond to the scene and have no formal forensic training.

At its current staffing level, HFSC’s CSU is only able to respond to homicides, baby deaths and officer-involved shootings.

HPD and HFSC are working together to find the best solution, and to work together to preserve crime scene integrity.

“The citizens of Houston deserve the assurance that when a crime occurs the evidence collection _ where the science begins _ is done in a manner that ensures the integrity of the entire forensic process,” said Jerry Pena, HFSC’s CSU director. “HFSC’s CSU is now able to promise that level of quality at scenes where its CSIs respond.”
LIMS and Network CHANGE

The Houston Forensic Science Center has successfully transitioned from the Houston Police Department’s computer network to an independent, cloud-based network.

HFSC is now prepared to refocus on bringing additional forensic disciplines into the new Laboratory Information Management System (LIMS). However, because the new LIMS is not completely ready for all disciplines to be fully operational in that environment and HFSC had a March 31 contractual deadline to move off the HPD network, the legacy LIMS has been moved into HFSC’s cloud-based network.

So while an independent network gives HFSC greater control over its LIMS, there are still challenges. At the moment, one of the most significant issues is computer slowdowns while working in the legacy LIMS. For example, certain processes that once took only a few minutes in forensic biology/DNA now takes several times longer as personnel wait for computers to respond. Productivity has decreased as a result.

HFSC’s IT personnel know the priority is to ensure stakeholders have the right answer at the right time and are working to identify and resolve the delays so the analysts can go back to their previous levels of productivity.

HFSC will focus in the coming months on automating requests so it can move away from the current manual entry.

It may appear at this time that the obstacles and challenges associated with these changes outweigh the benefits. However, the new network and LIMS will in the long-term be more cost-effective and better serve HFSC’s needs, internally and externally.

DNA DATABASE: REAL LIFE LOOK AT ITS VALUE

On a Saturday night on Nov. 4, 2017, a 32-year-old woman separated from her friends at a Houston bar. Later that evening, she got out of an Uber at an apartment complex where the group agreed to reconnect.

She stood in the mild, balmy air outside the apartment complex waiting for her friends to arrive.

Suddenly, a man she had never met took her to the back of the complex. There, he assaulted her _ and the nightmare began.

At the hospital, a sexual assault kit was collected.

In Texas, the law says police have 30 days after they pick up a rape kit from a hospital to submit it to an accredited crime laboratory for analysis. The law grew out of the daunting realization about five years ago that thousands of untested sexual assault kits were sitting on shelves nationwide waiting to be analyzed. In Houston alone, there were more than 6,600 untested rape kits dating back to the early 1980s. City and federal grant dollars helped pay for the elimination of the backlog, but it is a constant challenge ensuring all kits are tested in a timeframe most relevant to investigators.

And even years later, when the lab eliminated the backlog, investigators were still able to connect back to old crimes after the DNA profiles from the backlogged kits were uploaded into the national DNA database, CODIS _ the Combined DNA Index System. In some cases where the statute of limitations had expired on a case, a CODIS hit could be used at a probation hearing or sentencing to ensure a convicted criminal stayed in prison longer.

What the backlog elimination project highlighted was the importance of quickly analyzing evidence and uploading profiles into CODIS.

In this case, the kit arrived at the lab on November 7, three days after the assault, for an initial screening. The kit included: swabs with samples from intimate areas of the victim’s body where the unknown man’s DNA might be found; swabs with samples from under her fingernails, hair combings and “debris” collected from her face and body.

Finally, she provided a sample of her own DNA so when the lab analyzed the items her profile could be excluded.

Between November 20 and the 22, the items in the kit underwent laboratory processing. First, two analysts extracted DNA from each evidence item. Then another analyst “quantified” the samples _ meaning she did testing to determine how much DNA was on each item. Finally, the items moved forward to amplification, when an instrument in the lab makes millions of copies of the DNA _ like a giant Xerox machine.

By January 31, analysis of the data had been completed and a report prepared. DNA profiles from two evidence items, including some found under the fingernails of the victim’s left hand, were uploaded into CODIS.

Two days later, on February 2, the profile hit to another Houston Police Department case. Four days after that, on February 6, the profiles hit against five additional crimes in Harris County: three burglaries, a sexual assault and an aggravated robbery. The first crime dated back to June 2010.

Between then and February 2018, the suspect could be linked to at least eight crimes.

On February 8, the crime lab provided investigators with the suspect’s name. And he was already in jail for stealing a phone. Police suggested additional charges.

Although the suspect could not be excluded from DNA found on three swabs from intimate areas of the victim’s body he said he had never met her before.

The key here was the quick turnaround between the CODIS hit and the name given to investigators. Imagine it had taken a few more days and the suspect was no longer being held for the theft of the phone? Police would have had to track him down. He may have been able to commit even more crimes.

It’s all about the right answer at the right time.
The Houston Forensic Science Center has concluded a pilot project designed to help validate a Rapid DNA technology. Potential benefits have been identified, but so were concerns about difficulties with evidence collection and other non-technical obstacles. The pilot, launched early last year, involved a validation study of the a Rapid DNA analysis system. Rapid DNA instruments are hands-free devices that provide results from a single source meaning only one person within 90 minutes.

The research HFSC participated in had two prongs: one part focused on collecting additional biological evidence from sexual assault victims and comparing results received through traditional DNA methods in the lab to those achieved by the Rapid DNA instrument. The second prong involved working with the Houston Police Department. HPD would run biological evidence collected at crime scenes through the Rapid instrument to help the lab prioritize which samples might yield the best results.

The goal with both studies was to validate the technology itself, while also finding ways to use it to help solve crimes during the crucial first hours of a police investigation.

"The technology is good," said Robin Guidry, HFSC’s DNA technical lead. "However, because I haven’t seen enough data, I have no opinion on the value of the instrument."

Only one Rapid-generated DNA profile arrived at the lab. The part of the pilot that involved collecting evidence from sexual assault victims never got off the ground due to concerns about the privacy and rights of the victim.

As for the second part of the project, evidence collection became a concern after HFSC needed additional biological evidence from a slide because initial testing did not yield a good enough result for analysis. When the analyst went back to the slide, the evidence was gone: an officer had taken all that was left to run through the Rapid instrument. The profile was good, but not eligible to be uploaded into the FBI-run national DNA database.

The FBI has not yet approved any Rapid DNA technology for use. This means that results generated by the machine cannot be entered into the national DNA database, or CODIS, the Combined DNA Index System. So although the Rapid results in this case may have been pristine, they were not useable for the investigation or in court.

The FBI is working on legislation that would allow Rapid DNA to be used in booking stations, but it is not final yet. "The potential for this technology is immense. We can all clearly see how a 90-minute DNA analysis can provide officers with crucial information in the first hours of an investigation," said Dr. Peter Stout, HFSC’s CEO and president. "Unfortunately, until the proper protocols and procedures are in place, the risk of losing evidence is too great. The FBI, Texas’ DPS and we here at HFSC are all in agreement on this."

HFSC’s pilot project designed to validate Rapid DNA technology came to a halt after it became clear that without proper procedures and protocols in place the risk of losing evidence was too great. HFSC’s two-pronged research one focused on sexual assaults and a second on crime scene evidence barely got off the ground. Privacy issues prevented additional collection of evidence from sexual assault victims. And losing crime scene evidence became a risky proposition even if the Rapid instrument provided useful DNA analysis because the FBI does not allow the results to be uploaded to the national database it oversees. That is the information police need to connect individuals to and between crimes. "The potential is there. The rules are not yet," said Dr. Peter Stout, HFSC’s CEO.
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