

Whitewash? Quincy Veterans' Legionnaires' disease report by Illinois Auditor ignores Expert reports' findings and recommendations

by Tim Keane

The State of Illinois Office of the Auditor General released an excellent, must read report this week titled, "Performance Audit of Legionnaires' Disease at the Quincy Veterans' Home March 2019"

The introduction of the Illinois Auditor's report has the following statement, "This is our report of the performance audit of Legionnaires' Disease at the Quincy Veterans' Home, which includes a review of the Illinois Department of Veterans' Affairs' management of the Legionnaires' disease outbreaks at the Quincy Veterans' Home."

In addition to the Illinois Auditor's office directed by the Senate to audit the Quincy Legionnaires' disease issues, the State of Illinois also contracted with two consultants to provide Subject Matter Expert engineering audits of Quincy water systems and resolve ongoing Legionella issues. The Illinois Auditor's report is a very good forensic analysis of facts by Auditor's, lots of work was put into it, but it completely ignores Subject Matter Expert findings, recommendations and conclusions. Listed below are just a few of the more serious issues where the Auditor's findings appear to try to ignore or coverup findings by Subject Matter Experts.

Issue #1 – Exclusion of expert findings from Auditor's report.

The Auditor's report states, "Audit standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives"

Why did the March 2019 auditor's report on Quincy fail to include analysis from multiple reports written by two independent Subject Matter Experts (SME's), Virginia Tech (VT) and Legionella Risk Management, Inc. (LRM), hired by the State of Illinois in July of 2018 to identify and resolve building water system Legionella issues at Quincy Veterans' home?

Did the Auditor feel the subject matter expert reports were not appropriate evidence or that the findings of the experts conflicted with the audit objectives?

The answer I'm told is because this audit report is on costs incurred by the State in FY 2016 thru 2018 and the expert report costs were incurred by the state in FY2019. While there is an accounting reason not to include these expert costs in this auditor's report, there is no reason to exclude these expert findings from the Senate and the public. These expert report findings, not mentioned in the auditor's report, discuss in detail some of the root causes that were responsible for the more than 3-year failure to resolve Legionella issues at Quincy. The Senate resolution contained six determinations directing auditors to review. Three of the six items

required by the Senate were discussed in detail in the SME reports and those SME findings were ignored by the Auditor.

Why were these expert findings not included in the auditor's report?

Governor Pritzker, I think your office should investigate this issue.

I also think the Senate should ask why this requested information was not delivered.

Issue #2 – Quincy Veterans' Home had no plan in place at the time of the 2015 outbreak.

From the outset “there was no water management plan or specific legionella plan in place prior to the 2015 outbreak. Finally, the Quincy Veterans' Home engineering staff had no experience or training with legionella prevention or remediation.”

The above auditor's comment is true but it seems that the background for this should be explained.

- 2001 - Joint Commission implemented a standard for all hospitals it inspected requiring a Legionella Risk Management plan but then never enforced that standard.
- 2003 – CDC Environmental Infection Control Guideline recommended only two methods for Legionella control in healthcare facilities, it did not recommend a risk management plan. The methods were environmental monitoring (testing water only) and clinical surveillance (testing patients for Legionnaires' disease). This guideline concluded, “Conducting environmental surveillance would obligate hospital administrators to initiate water-decontamination programs if *Legionella* spp. are identified. Therefore, periodic monitoring of water from the hospital's potable water system and from aerosol-producing devices is not widely recommended in facilities that have not experienced cases of health-care-associated legionellosis.”
- 2008 - CMS did try to add Legionella to the list of Hospital Acquired Conditions that would not be reimbursed under Medicare but after protests from healthcare organizations including APIC and ASHRM, CMS dropped this issue.
- 2016 – Tim Keane presentation at the Emory conference focused on two issues, the need for CMS to act; 1) require water management plans and 2) address temperature issue <https://www.youtube.com/watch?v=fXOHXx33zc8&feature=youtu.be&t=56m11s>
- 2017 - CMS for the first time acts to address Legionnaires' disease and issues a memorandum and requires healthcare facilities have a risk management plan but fails to address hot water temperature issue of scalding vs Legionella risk.
- 2017 Survey of 84 hospitals in Minnesota conducted prior to release of CMS memo revealed:
 - 27% had a water management program
 - 51% had knowledge of ASHRAE 188
 - 76% expressed interest in health department providing assistance in setting up a program

Issue #3 – Experts’ recommendations that conflict with CDC / VA recommendations, have not been implemented to date at Quincy

A key recommendation from these SME reports to resolve root cause disinfectant stability issues was implemented at Quincy on 12/6/2018 by switching from free chlorine to chloramine, the results were exceptional and immediate. The LRM report dated 1/11/19 includes the following quote from Dave Clifford, the Chief Engineer at Quincy Veterans’ Home, ***“I am sleeping well for the first time in a long time!”***

However, other LRM recommendations for Quincy water systems to reduce the risk of Legionella have not been implemented. I was told these other recommendations not implemented, conflicted with recommendations made by Centers for Disease Control and Prevention (CDC), Department of Veterans Affairs (VA) or Illinois Department of Public Health (IDPH). The LRM reports detail the significant impact CDC and VA recommendations and / or policies have had on Legionella control and ongoing illness at Quincy from 2016 through 2018.

Why is this serious issue completely missing from the Auditor’s report? Governor Pritzker, I think your office should investigate this issue. If the Senate truly wants to get to the bottom of this issue, they should ask why the Auditor’s report excluded these expert findings.

Issue #4 – Failure to understand and resolve key root cause – chloramine vs free chlorine

The 2018 Quincy report by CDC Epi-Aid team, written more than 3 years after the 2015 outbreak and after additional outbreaks occurred at Quincy in 2016, 2017 and 2018 includes a conclusion that is a perfect summation of the issues discussed in this article,

“As the root cause(s) of Legionella growth and transmission associated with these particular building water systems continue(s) to be unclear, engineering controls, building water system modifications, and/or closure of specific buildings may be considered in an effort to prevent additional cases.”

The LRM 10/26/18 report states that, “The CDC epidemiological investigations were very beneficial however the CDC environmental reports did not provide useful direction. This is not uncommon.” CDC personnel, over multiple years investigating the Legionella issue at Quincy failed to resolve the plumbing system Legionella issues and in 2018 suggested demolishing buildings to resolve the issue. To my knowledge none of the CDC personnel visiting Quincy over the years had any engineering background or building water system expertise. Subject matter experts proposed conversion to chloramine, a simple solution, months before even visiting the site, a solution which evidently neither CDC nor VA auditors ever mentioned, a solution which in December of 2018 ended up largely resolving the Legionella issue quickly once implemented. What is most perplexing is CDC has been recommending chloramine for control of Legionella for almost 20 years. So why is there no recommendation in any CDC Quincy report about chloramine to resolve the Quincy Legionella issue.

Based on lessons learned from Quincy does CDC still believe Microbiologists, Epidemiologists, Industrial Hygienists and HACCP certified account managers are best suited to audit building water systems and resolving root causes of outbreaks?

These issues have been discussed with CDC, VA, and EPA for years at least since 2013 when CDC and VA began offering sales and marketing support for HACCP and Phigenics and again in 2014 when CDC, VA and EPA presented at a HACCP sales and marketing conference. For years CDC, VA and EPA have ignored these concerns. Will CDC listen now?

Why is this very serious issue completely missing from the Auditor's report? This issue is discussed in detail in the LRM report.

Governor Pritzker, I think your office should investigate this issue.

Issue #5 – Should CDC have said hire an engineering expert in 2016?

In 2005 when a community-wide Legionnaires' disease outbreak occurred in Rapid City, SD, CDC started their investigation in the middle of July and by the middle of September recommended the State of South Dakota hire an expert. On my first day at Rapid City I opened the yellow pages, contacted every water treatment company and every HVAC contractor and uncovered more cooling towers in a day than CDC had found in a month. Another telling lesson here which relates directly to the Quincy long term issues was the outbreak source in Rapid City turned out to be one of the first locations visited by the CDC EIS investigator and the only location with several confirmed cases of illness. The EIS investigator took a picture of the fountain but did not sample it because the investigator felt the risk of illness associated with this small ornamental fountain was too low to warrant sampling. When I found out about the restaurant in October and immediately visited the site, without even sampling, I immediately saw the huge risk associated with this fountain and told the building owner if I were him, I would shut down the fountain immediately because it most likely was the cause of the outbreak. The fountain was a 15-gallon pedestal fountain with 3 submerged, 150-watt incandescent lights, a coarse small spray, and a splash screen that created additional small aerosol droplets. This fountain had an extremely high heat load from the 3 submerged lights and a very small volume of water to dissipate that load resulting in high water temperatures. Additionally, the HVAC flow of air was across the fountain and into the faces of patrons in the small lobby area waiting for seats.

Imagine where the Quincy Vets home would be today if during the second CDC Epi-Aid audit on 8/8/2016, CDC recommended the state hire an engineering expert because the CDC investigators and their recommended HACCP consultant were unclear and baffled on root causes of continuing Legionella issues in the potable water system and associated illness. (Experts baffled by Vets' Home Legionnaires' Disease 12/14/17 WGEM)

Issue #6 – Impact CDC and VA policies have on State & City public health as well as building owners. Example poor IDPH proposed plumbing code changes

These CDC and VA public health actions are also mimicked by others in public health. IDPH proposed Illinois plumbing code changes published 12/28/2018 plan to codify a modified version of VA Directive 1061 plumbing recommendations requiring very hot water, 160°F, be circulated throughout the hot water system, prohibit use of master mixing valves and require all sinks have local mixing valves, exactly the opposite of what I recommended Quincy do. This IDPH recommended plumbing code based on VA Directive 1061 was implemented at Quincy in 2016 at a very high cost to install and a high cost to maintain and failed to resolve the ongoing Legionella issues. So why is IDPH now recommending this for all buildings under Illinois plumbing code?

Even when recommendations from CDC, EPA or VA for Legionella control in plumbing systems make no sense at all, or are proven to be of little to no value, or exceedingly high cost, or just outright fail, local code officials or those experiencing outbreaks such as Quincy Vets' home will typically follow those recommendations because they believe CDC, EPA and VA must know what they are talking about or they think following these recommendations is necessary to protect against litigation. I'm told IDPH even prevented on a trial basis in a Quincy non-healthcare building, the administration building, implementation of LRM recommendations to eliminate local mixing valves and install master mixing valves and prove LRM recommendations would be dramatically better in achieving risk reduction goals than these proposed IDPH plumbing code recommendations.

Why is this issue about plumbing code changes completely missing from the Auditor's report?
Governor Pritzker, I think your office should investigate this issue.

Issue #7 – CDC concludes Quincy water management plan was effective (2017) and optimal (2018)

The 2/2018 CDC report following their 2017 Quincy site visit concluded that *"IDPH and IVHQ staff have committed substantial time, effort, and resources to achieving control of Legionella growth at IVHQ through effective water management."* After the 4th outbreak at Quincy, CDC in their 5/2018 report stated, *"Despite the considerable time, effort, and resources committed to achieving an optimal water management program at IVHQ.*

The above quotes in the CDC report should be very troubling to anyone reading them. From FY2016 through FY2018 the Quincy Veterans' home spent ten times more money and more time trying to control the Legionella problem than I have ever seen before and still had ongoing illness year after year. How can CDC call this effective and optimal water management? What's scary is that these same CDC folks that think the Quincy water management plan was effective and optimal are providing training across the US to state health department and others on developing effective and optimal water management programs. In a 2017 presentation to NASEM, CDC stated,

“we’re seeing that now at CDC on our technical consult where these hospitals and other healthcare facilities are asking CDC for additional guidance on setting up these programs and also evaluating them. So, we’re really seeing a shift out there right now from just advising on water management programs, to now evaluating the effectiveness of a partially implemented or a fully implemented water management program.”

The auditors’ report identified the facility was spending over \$400,000 in Legionella testing services per year in FY2016, FY2017 and FY2018. There is nothing optimal at all about expenses of over \$1 Million dollars in water testing costs, even \$100,000 per year in water testing costs is outlandishly high.

Does the auditor think a facility should be spending \$400,000 per year in water testing costs? Does the auditor have any idea what should be the cost of a well-managed Legionella risk management plan in consulting fees and testing fees? Does CDC really think a water management program is effective and optimal if it costs over a \$870,000 /year in direct costs for testing, consultation and submicron filters and millions more in related costs? These costs are discussed in the LRM report.

Governor Pritzker, I think your office should investigate this issue.

Your office should consider impact of CDC Environmental Health advice at Quincy.

Issue #8 – IDVA RFQ for Legionella Risk Management services

On 3/22/2019 IDVA issued a Request for Quote (RFQ) for Legionella Risk Management plans for two Veterans’ homes based on similar criteria used for the Quincy risk management plans from FY2016 thru FY2018. The only Vendor requirements in this RFQ are, “Vendor shall retain all necessary Federal and/or State and local licenses and permits.”

In the RFQ there was no requirements for the contracted vendor to have expertise or competence in consulting, engineering, water system audits or water treatment. I sent an email to the IDVA Procurement Officer with specific questions about issues with the RFQ’s. I received an email response thanking me for my comments and input and that he would provide me with an answer to my questions on the website so all bidders would be informed. There was no answer on the website, but the contract was awarded to the same supplier for Quincy.

Governor Pritzker, I think your office should investigate this issue.

Issue #9 – The auditor’s reports says Point of Use Filters on sinks were recommended by CDC in 2015 and had they been in place till 2018 the 2016, 2017 and 2018 outbreaks would not have occurred.

The LRM reports as stated earlier, found that Quincy personnel spent huge amounts of time and money trying to implement CDC recommendations. The CDC report in 2015 stated, “Point-of use filters should remain in place until successful remediation of the potable water system is

complete.” As a SME that has worked with CDC on many outbreaks, I have no idea what, “until successful remediation is complete” means. I’ve never seen this recommendation from CDC before.

Typically, after an outbreak, CDC will give clear direction and recommend point of use filters be maintained on sinks and showers until Legionella culture results of water system testing over a prescribed period, confirm no Legionella in the building water system. Typically, this testing includes three or more sample sets, collected over a minimum of a six week to three-month period, starting no sooner than 36 hours after remediation and occurring with a minimum frequency of every two weeks, and if any samples are positive for Legionella then the whole sample process starts over again before restrictions requiring use of filters are lifted.

The 2016 CDC report acknowledged point of use filters were only installed on showers and tubs and made no comments at all about point of use filters not being installed on sinks.

The 2017 CDC report states, “To further reduce the risk of *legionella* transmission, IVHQ could consider expanding the installation of point-of-use filters validated for the removal of *Legionella* from only showerheads to all potable water fixtures (including sink faucets) campus-wide. In general, the use of point-of-use filters is viewed as a temporizing measure, but they can be used on a long-term basis as a risk reduction strategy if properly maintained.”

The auditor’s report does not discuss this issue at all. This issue is also discussed in detail in the LRM reports.

Governor Pritzker, I think your office should investigate this issue.

Issue #10 – Why is CDC and not IDPH water restrictions discussed in conclusions?

The auditor’s report finds significant issues with IDPH communications and response but mentions nothing about IDPH recommendations. The report states, “According to IDPH, its role related to the outbreak at the Quincy Veterans’ Home was to provide recommendations on how to: (1) identify anyone potentially exposed and at risk for illness and (2) implement potential remedial measures.” “To minimize the risk of disease spread, IDPH noted it issued recommendations to the Quincy Veterans’ Home to implement water restrictions, which reduced the risk of further disease spread.” “The goal was to provide the facility with remediation steps to reduce the risk to health facility residents on an ongoing basis. According to IDPH, these recommendations typically required days of work to interview patients and conduct testing, and within a week, IDPH provided detailed remediation recommendations to the Quincy Veterans’ Home.”

“According to IDPH, there are three components of IDPH’s response to the legionella outbreak at the Quincy Veterans’ Home:....Environmental Health Testing - determined the potential source of the outbreak to understand from where affected patients were infected. The goal was to recommend mitigation steps that the Quincy Veterans’ Home could implement to reduce the risk to residents and staff;”

“The chart below was provided by IDPH and reports the role of IDPH at Quincy Veterans’ Home.”

Epidemiological	Environmental	Infection Control
Retrospective disease surveillance	Recommend water restrictions	Recommend increased temperature checks on residents
Prospective disease surveillance	Review water management plan and employee knowledge of water maintenance	Recommend rapid Urine Antigen Test screening by local hospital
Determine facility baseline	Review water system operation and maintenance	
Investigate start, peak, and end of outbreak	Collect water samples after remediation	
Patient interviews for travel and onset dates	Provide specific remediation & decontamination recommendations	

What water restrictions and mitigation steps did IDPH recommend Quincy implement and why are these not detailed in the Auditor’s report?

Governor Pritzker, I think your office should investigate this issue.

CDC reports were made public. IDPH and VA inspection reports should be public also.

Issue #11 Sample Protocol

Another important item the Auditor picked up on without understanding the impact of the item is the water testing protocol. Below is from the Auditor’s report.

"Water Testing Procedure Changes Following the four residents who tested positive for legionella in February 2018, it was decided to install point-of-use filters on all fixtures at the Quincy Veterans' Home. In addition, changes were made to the water testing procedures at the Quincy Veterans' Home. In a letter on March 29, 2018, to the Illinois Department of Veteran's Affairs Director, Phigenics discussed the changes in the environmental validation sampling process. Beginning with water sampling on February 20, 2018, the Water Management Team requested that Phigenics start implementing "first draw" sampling for some of the testing sites. Up to this point and in accordance with the CDC guidelines, sampling was done via the "post-flush" method. The post-flush method contains the following sampling procedures:

- 20 second flush;
- test free Cl2 and pH;
- stabilize temperature for reading; and
- fill 1-liter bottle."

The CDC document titled, “Sampling Procedure and Potential Sampling Sites” in an outbreak investigation (<https://www.cdc.gov/legionella/downloads/cdc-sampling-procedure.pdf>) states, “Take bulk water samples: 5. After the biofilm swab is collected, turn on the water and let it run

for a few minutes until the water is warm but not hot. The goal is to obtain water currently in the distribution system along with any material shed from biofilm”.

I find it hard to believe CDC recommend this process. I've never seen CDC implement this protocol. I've never seen any health department allow samples to be collected that were not 1st draw in most cases and in some cases, 1-minute draw. I've never seen anyone collect samples that were not 1st draw, 1-minute draw or something in between 1st draw and 1-minute draw, such as 5 second or 15 second.

Here's what Janet Stout said at the Emory conference regarding sampling protocol, "what happens when you flush ... reduction in percent positivity as well as CFU. When you flush an outlet for 2 minutes prior to taking sample the significance of that is you go from positive to negative... There are people out there doing this intentionally to get negative results”

Governor Pritzker, I very strongly recommend your office investigate the impact CDC guidance, direction and recommendations including their sampling protocol had on illness and outbreaks at Quincy Veterans' home in 2016, 2017, 2018. Do you think it is fair for the Auditor to conclude Quincy personnel were responsible for illness between 2016 and 2018 when they were following guidance from CDC?

Issue # 12 - Future costs, the auditor's reports fails to discuss at all huge costs in FY2019 and \$250 Million planned for new buildings.

I was told by showing the Legionella issue did not require demolishing buildings, as suggested in the CDC report, that some in IDVA would be upset with my reports because \$250 Million was already appropriated for new buildings. New buildings are needed at Quincy to replace the old outdated structures, I'm not opposed to that. But new buildings are not needed because of Legionella issues as suggested by CDC, the Legionella issues with only part of my recommendations implemented, have been largely solved at a very, very low cost.

Why doesn't the auditor's report even mention these huge upcoming costs or the fact that experts hired in 2018 resolved ongoing, long term Legionella issues?

So, what should be done?

Here's two suggestions for Governor Pritzker and Senators Durbin and Duckworth.

1) As IDVA and IPDH appear determined to strictly follow CDC and VA recommendations, Governor Pritzker and Senators Durbin and Duckworth should ask both CDC and VA to review the LRM and VT reports and request the CDC and VA either;

- a) recommend the State of Illinois follow all the recommendations in the VT and LRM expert reports or
- b) list the recommendations they agree with and supply detailed explanations for any recommendations in the VT and LRM reports they disagree with.

2) If the State of Illinois has asked CDC or VA for assistance in developing Legionella policy, Governor Pritzker and Senators Durbin and Duckworth should send a letter to CDC and VA and ask, "Based on the lives impacted, the millions of dollars wasted, and the failure over the past three plus years of efforts by CDC and VA to resolve the Legionella issues at Quincy does the CDC and VA still feel they are competent to assist the State of Illinois in policy development for control of Legionella in building water systems or do they think the state should instead work with the experts that solved the problem quickly and at a very low cost?".

Thank you

Lastly, I would like to thank Mike Hoffman, the Virginia Tech team, Barclay Water Management and Spartan Bioscience, Inc. To date, we only had partial success in getting our changes implemented at Quincy, but we did get the major changes implemented and largely resolved all issues almost overnight having a huge impact on all residents and staff.

Before our efforts, all resident sinks were being flushed three times a day to try and maintain disinfectant residuals and control the Legionella. These, three times a day flushing's were at 6AM by nurses, later morning and then early afternoon by housekeeping. Now sinks are only flushed once a day during normal housekeeping rounds and housekeeping, nursing and residents are ecstatic. A tremendous amount of time and effort and disturbance to Veterans' has been eliminated.

I'm confident none of this would have happened without the efforts of Mike Hoffman. I would have never gotten the contract for phase 1 work to audit the system and prove our hypothesis without Mike's efforts. And I would never have gotten past the road blocks at IDVA, IDPH and IEPA for phase 2 to implement the chloramine program without Mike's efforts. Though I've seen no changes yet and continued resistance from IDVA and IDPH, I remain hopeful that Governor Pritzker will live up to his word. Too often in public facilities it appears not rocking the boat, even to prevent it from capsizing is the easiest course of action.

Governor Pritzker was quoted as saying, “The state of Illinois must provide a safe, healthy environment where veterans and their spouses receive quality care,” “This executive order will hold state agencies accountable to the people and ensure the state is delivering quality care to our nation’s heroes – and take action where the state has fallen short in the past. Veterans served us. Now it’s our turn to serve them.”

Below is a listing of the SME reports by VT and LRM submitted to the State of Illinois.

- 10/3/2018 - Investigation of continued *Legionella pneumophila* positivity at the Illinois Veteran’s Home in Quincy, IL Final Report on Initial Phase of Work (VT Report)
- 10/26/2018 - Project Title: Identify and resolve root causes of water system issues and deliver cost effective engineering solutions (LRM Report)
- 1/10/2019 - Investigation of continued *Legionella pneumophila* positivity at the Illinois Veteran’s Home in Quincy, IL 30-Day Progress Report After Switch to Chloramines (VT Report)
- 1/11/2019 - Project Title: Resolution of Legionella control issues at IVHQ (LRM Report)
- 2/8/2019 - Heterotrophic Plate Count Concerns at IVHQ (VT Report)
- 2/8/2019 - Response to HPC concerns and recommendations for addition of continuous chlorine dioxide feed to chloramine program. (LRM Report)
- 2/10/2019 - Public Comments by Tim Keane, Legionella Risk Management, Inc.
Reference: Illinois Register – Volume 42 Issue 52 December 28, 2018 (LRM comments)