Division *of*
Risk Management

Transcript for Webinar Series: Proactive Risk Management, Part 3: Root Cause Analysis

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Speaker: Del Brady (DRM Loss Control Manager)

Introduction & Welcome

Del Brady: Well, good morning, everyone. Thanks for joining us for this month's Loss Control webinar from the Division of Risk Management. My name's Del Brady, I'm the Loss Control Manager with the team, and we're excited to hear today from our engineer, Wes Whittington.

Before we get started, I just wanted to mention a few things. If you're hearing an echo from the audio, check if you're logged in through both the Zoom app and the browser. And if you are, close out one of those, and that'll help prevent the echoing.

Also, we'll be skipping the webinar and newsletter in July just because of scheduling and holidays, so we'll start back up in August.

But this webinar will be recorded and then sent out along with the newsletter, just as we have with any other month.

And if you have questions or comments as we go through the webinar, please go ahead and put them in chat. Young-Joo and I will be monitoring that, and then we can share those with Wes as he goes through the presentation.

So with that, I'll turn it over to Wes.

Wesley Whittington: Awesome. Thank you, Del. Can you hear me?

Del Brady: Coming through well, thank you.

Wesley Whittington: Perfect. Oh yeah, just like Del said, thank you, everyone, for joining. Today's going to be the third installment of our Proactive Risk Management series. Part three will be focusing on Root-Cause-Analysis, which you're going to do usually post-incident or post-near miss, something along those lines. It's

going to be a brief overview of a certain Root-Cause-Analysis method, but before we do, I'd like to recap kind of the last few that we've done, Del presented on.

So, in part one of our Proactive Risk Management series, Del—the topic was Risk Identification and Analysis, where Del went over how to increase safety for employees and patrons and customers. The goal was to help entities learn what is a risk, what is potentially a risk, and figure out ways to help develop procedures to identify, evaluate a variety of them—so, for property, general liability, cyber, enterprise. He covered the 4-square matrix to help evaluate workload and be strategic about where you invest your time and effort. And we also introduced the Risk Matrix—the big version of it—to help measure risk based on likelihood of it happening and severity of consequences of it happening.

In part two, we covered Risk Tolerance and Mitigation. And that got a little more in-depth look into risk matrices and where to best focus our risk management efforts. And we also introduced the Hierarchy of Controls for mitigating risks. As we all know, PPE is kind of the last-ditch effort to keep people safe.

I wanted to throw up the 4-square risk matrix that Del had spoken about in version one of this series, kind of looking at value based on value of the risk itself, and the urgency of its imminence of an occurrence happening, and then figuring out where you want to lay down your efforts to help mitigate which risk you want to focus on first.

And this is a risk matrix that I had created for a sidewalk slip, trip, and fall worksheet. And you can kind of see that on the top right—let's get this laser pointer going over here. So, a risk matrix: this one's based on the height of a lip. In my mind, that was kind of the impact of severity. So, the higher the lip got in concrete—whether it's a quarter inch, less than a quarter inch, on up to greater than two inches—as that lip got higher, the severity/impact of its severity got higher.

Whereas my likelihood of it happening is based on foot traffic, based on volume. So, if you have a very busy building on your campus and you've got a two-inch lip, you're going to have a high foot traffic volume coming into a greater than two-inch lip, so you're going to have an extreme hazard. So, in my mind, in a risk matrix perspective, this is going to be one of those topics or one of those risks that you definitely want to mitigate prior to any of them that have a low volume and are less than a quarter inch. You're just not going to see many incidents occurring from there.

So, you can kind of see as the—so, severity as the inches go up, obviously, the hazard goes up. And as the volume goes up, the hazards go up, or the risk of it actually happening. Go up.

And then Del had also talked about the Hierarchy of Controls. If you have a risk or a hazard and it's known, the best thing you can do is possibly eliminate it. Physically removing the hazard or physically removing people from the hazard is the best option. If you have a fall from height that's so high, but somehow you can change that level to where it's absolutely level, level surfaces, that's the best option. Whatever option it is, just eliminate it.

Substitution is the next best option. If you can replace the hazard with something else that's less hazardous, that's your next best option.

Engineering controls: isolating people from the hazard, whether it's like dust collection systems or anything that's been engineered to remove the hazard from the area.

And then administrative controls: like it says, change the way people work, limit the time of exposure they have to around these hazards, change the way they do certain procedures to eliminate it or eliminate/reduce the risk that they have from being exposed to it.

And then, in the end, PPE. PPE, like we said, is the last form of defense against a hazard, but sometimes that might be your only defense if you can't eliminate it, substitute it, engineer it out, or admin control it out. But in theory, you should hopefully be able to do one of these three—at least top three—before getting into admin controls and PPE, because we all know how humans work.

Alright, so today's focus is going to be on the 5-Whys method for Root-Cause-Analysis. Because in the end, we want to be able to identify a hazard or an incident that has already occurred, figure out what went wrong, and then in the future, hopefully prevent it.

So first, I want to ask people: Has anyone ever felt like you were fighting a dumpster fire with just a standard garden hose or a substandard garden hose? That's because reactionary work is always harder, it's always time-crunched, there's higher pressure, it's very inconvenient to try to fight a dumpster fire once it's already been lit and it's up in flames. And like the old saying goes, *"An ounce of prevention is worth a pound of cure."*

Now, with risk identification, evaluation, analysis, and mitigation, we should be able to prevent most dumpster fires before they start, and then you'll end up with... this. So, you've got a great place now, no smoking, the dumpster fire's not going to start. This risk manager on top of the tank's not going to allow it. So, we want to be able to identify what the risk was to prevent the dumpster fires from happening again.

Getting to the bottom of what a Root-Cause-Analysis is: I thought about putting a Webster's Dictionary definition of it, but it just makes sense to kind of state exactly what it is in our own minds: It's a way to stop problems before they happen again. Instead of fixing obvious stuff, we want to dig deep to find out why things actually went wrong.

The roots of a tree are hidden, but they are the most important part of the tree. They provide stability, they absorb water, etc. So, we want to find the root of the problem, that way we can prevent future ones, because it's not likely the stuff that we see on the surface that is causing the incidents.

In previous presentations, the focus on proactive risk management was there, but we all know that incidents are impossible to eliminate. And so this is what I like to call a *"reactively proactive"* risk management method to help reduce and eliminate claims.

So, a 5-Whys analysis is kind of exactly what it sounds like: You want to ask the question *"Why?"* repeatedly, at least five times, or maybe up to five times—and sometimes it doesn't take up to five times. But you want to ask *"Why?"* to a known problem to get down to exactly what the root cause of it is.

So, for the process overview, you want to gather enough people that have a decent amount of information or knowledge or experience with this type of incident. So in my mind, that meant maybe you assemble HR, General Counsel, custodians, facility maintenance, transportation—anyone who is involved or deals with or handles any type of incident or events that could create some type of occurrence or incident, and make that your team. I mean, that could even be teachers, it could be other staff not involved with it, it could be absolutely anybody, or just regular employees that you think would be a good fit for your team.

And then you want to identify what the problem is—what was the incident, what was the occurrence, what is the problem. And you want to clearly identify what that problem is, and then start asking, *"Why is it that way?"*

So, I thought I'd give you just a brief little example. So, start asking why:

- Why did the pipes freeze? Well, maybe the boiler stopped working.
- Why did the boiler stop working? The low-water cutoff shut the boiler off.
- Why did the low-water cutoff shut it off?

And then on and on and on until you get to the main problem of what it is. And then you want to keep going until that source is uncovered. And once you find the source issue, then you can identify ways to prevent future ones.

So, the three-step summary that I talked about earlier:

1. Define the problem clearly.
2. Ask *"Why?"* repeatedly (it usually says at least five times, though there could be incidents where it's just one time you ask why because it's a near miss or something easily identifiable, or it could be many Whys).
3. Identify and fix the root cause.

So, this is an example that I made up—well, I've made it up, but it's also been something I've experienced doing some of my walkthroughs.

So, let's say the problem statement: Staff are losing power because an electrical breaker keeps tripping. So, the problem is staff inside certain offices all of a sudden power gets shut off, and they don't know why.

So, when Facilities Management comes in and starts doing an evaluation, they find that, yeah, the breaker keeps getting tripped, and they know that it's an overload in the circuit. So, they trace the circuit down, and they find numerous space heaters plugged into that circuit. So, maybe there's a row of four offices that are on the same circuit, and at least three or four of them have space heaters within their offices.

So, you want to start asking why:

- **Why is the breaker repeatedly tripping?** Well, we found numerous space heaters plugged into the circuit.
- **Why are there space heaters in the offices?** Staff claim that they are cold and need the heaters.
- **Why are the staff cold?** The HVAC system is not operating properly in their office(s).
- **Why is the HVAC system not working?** The thermostat is located in one office with a space heater.
- **Why is the thermostat in the office?** It controls the temperature of the adjacent offices.

Anyone see where I'm going with this one? You have that one office: The first person brings in a space heater, it heats up that space. The thermostat thinks it's getting too warm in there and tries to cool it down. So, all the other rooms connected on the same HVAC control dampers start getting cooler too. So then everyone starts bringing in their space heaters. So now they've got numerous space heaters overloading the electrical circuit because the one space heater in the room with the thermostat has raised the temperature too much.

So, the source and the solution would be: The space heater is heating the room with the thermostat, so the HVAC system is trying to reduce the air temperature in the room(s). Remove space heaters and adjust the dampers/thermostat to make the conditions workable for them without bringing in a space heater.

And I thought that'd be a quick little example. I've experienced it quite a bit in my travels throughout the state, because everyone seems to always have space heaters.

Del Brady: Hey Wes, quick question about that. For those of us not familiar with electrical systems, why is this such a big concern?

Wesley Whittington: For numerous reasons. If you're overloading an electrical circuit, that means your system is getting too warm, too hot. Too much electrical current is flowing through the system that the breaker's not designed to handle. Therefore, the breaker is tripping itself, but numerous repeated breakings of the tripper could cause connections to get hot, could cause a fire. Space heaters alone can start a fire. So, there's numerous reasons why we don't want to have electrical systems constantly overloading themselves. But the main one is just systems aren't made to do that. Breakers aren't meant to be tripped all the time, and the fix isn't just turning it back on. Hope that answers your question, Del.

Del Brady: Got it, thank you.

Wesley Whittington: Yep.

And then another example that we've kind of had recently—and if anybody who is involved with this claim is on the call, these are my opinions of what could possibly be, but without being there on-site and evaluating it, just take this with a grain of salt.

So, DRM received notice of water damage from an overflowing urinal, and we wanted to kind of do a 5-Whys on this one:

- **Why did the urinal overflow?** Automatic flusher self-activated and did not stop flowing water.
- **Why did the water not stop?** Automatic flush valve stuck open.
- **Why was the valve stuck open?** Internal components worn out.
- **Why were the internal components worn out?** Manufacturer defect, end of life, etc.

So, the source of it was internal components worn out, more than likely, within the flush device. So, they replaced all of the automatic flush mechanisms and others throughout the building. They took the flush device inside of here, replaced it with a new one, and then replaced all the other ones similar to it with similar age within the same building.

Now, my question to everyone else is: Are future occurrences fully prevented from that one action? Is there anything anyone sees within this picture that could identify a potential other root cause?

We got a floor drain right here. So, a floor drain, and we also have a drain within the urinal. So, we've got two drains that likely should have been able to keep up with the water flowing out of the urinal.

Alright, so I completed kind of a different 5-Whys on it, and it could probably even get expanded beyond what I did:

- **Why was there water in the hallway?** Water flowed out of the men's restroom.
- **Why did water flow out of the men's restroom?** The restroom floor drain was overwhelmed.
- **Why was the floor drain overwhelmed?** Plugged/obstructed drain (which could lead you up to another waterfall effect for root cause analysis).
- **Why was the floor drain clogged/obstructed?** Debris from recent renovation project or anytime prior (grout, mortar, refuse, dirt). Who knows the last time that drain was flushed and tested?
- **Why were these items in the drain?** Poor cleaning procedures, lack of proper water flow during cleaning, infrequent p-trap flushes.
- **Why is training poor?** No established SOP for handling drains.

If we take why the floor drain was overwhelmed back over here:

- **Why was the floor drain overwhelmed?** Urinal was overflowing.
- **Why was the urinal overflowing?** Automatic flush device stuck open.
- **Why was the device stuck open?** Internal components worn out from usage and water quality.
- **Why do the components wear out?** Age of installation, number of flushes, manufacture flaws, etc.

So maybe this one is one we can't really defeat, we can just kind of estimate how many years of installation an automatic flusher can handle before it wears out and starts getting stuck.

But if we come back up to this one—why was the urinal overflowing?

- **Why did the urinal drain not keep up?** Internal cup was not in correct position. (If we go back to the picture, I believe it's this little cup right here was not in the correct position and caused the urinal to overfill).
- **Why was the cup not in the correct position?** Poor training for cleaners, employees, etc. Anyone who's using it—it could have gotten knocked by someone dropping their cell phone in the urinal, who knows!
- **Why is training poor?** No established SOP.

I'm not saying training was poor. It's just a question in my mind of: Is there potential for fixing some of these remedies with training? Is there a way to improve standard operating procedures to check drains every so often—like maybe weekly or monthly, we check floor drains to make sure that they're flushing maybe a five-gallon bucket of water in a certain amount of time? That urinals, if they did overflow, are draining correctly, those cups are installed? And obviously, not being privy to most of all this information, this is just a guess of mine for establishing standard operating procedures to help reduce these types of incidents going forward.

Yeah, so these were two 5-Whys I kind of wanted to go over. I know this one went into more 5-Whys, but that's the point of Root-Cause-Analysis: You ask *"Why?"* enough times, and you're going to start flushing out issues and concerns that you wouldn't have otherwise.

Maybe a lot of people—and I may have gotten stuck here when I first went there—were like, *"Oh, the urinal overflowed. That's too bad. Why did that happen? Well, the flusher got stuck."* And then I went home, and I was like, *"Well, they got floor drains, and they got urinal drains. Those things should have caught it!"*

So, not getting stuck on what seems to be the obvious answer, but moving on to those more deeper-rooted causes of the issues.

Del Brady: Hey Wes, we got a good comment from Rod McDaniel. He says a valid question might be: How quickly was the right intervention team notified? Was there a time gap in that reporting that contributed?

Wesley Whittington: Oh, so this one was a very lucky one. So, this happened right after hours, and we're guessing within an hour after the last employee left the office, another employee came back in to get their personal keys and drop off their work car. So they came inside and noticed water dripping from the ceiling above.

So within an hour, it got noticed, and I think within 40 minutes they had staff there shutting the water off and starting cleaning it up.

So, it was pretty quick, but you had the urinal overflowing for probably an hour and a half before it went off. And if it happened on a Friday and they came back on Monday, it would have been a lot worse.

Does that answer the question for you, Rod?

Del Brady: Yeah, yeah. Thanks, Wes. And I was just going to say, that's another good argument for those water detection devices.

Wesley Whittington: Yeah, absolutely! You'd have to have a monitored one connected to your building automation system or alarm system. But if you had a puck right down here somewhere—granted, you'd have to probably train the custodial staff not to hit it with their wet mop and send it off into false alarms—if you had floor pucks in the corners somewhere hidden, out of the way of the mop, if that experienced water, it could have set it off, and within 10 or 20 minutes of it flowing, it could have set an alarm, and people could have been responding a lot sooner for sure.

Especially for a weekend! Instead of flowing for 48 to 60 hours, it might be only flowing for an hour, hour and a half, or less. So that would be really nice.

Yeah, any other questions before I move on from these two examples?

Del Brady: Nothing currently.

Wesley Whittington: Uh, yeah, I don't think I have anything else. Anyone got any questions about the space heater one? I feel like that one was pretty straightforward, didn't really have any other branches it could come off. You could start looking at people's 5-Whys of like, *"Why are you so cold and this person isn't so cold?"* But we're not going to get into that kind of stuff.

Okay, I know it's a pretty interesting topic. There's not a whole lot to it, you just got to remember—we'll go back to the first few slides and just kind of reiterate what it takes to set up a 5-Whys Root-Cause-Analysis for a post-incident. You can also do it after a near miss. Near misses are probably the best time to do it because you didn't have an incident, but you're able to identify and evaluate the near miss incident itself with the 5-Whys to figure out exactly what you could do to fix it. So, kind of like an after-action review, post-incident occurrence.

So, yeah, I think near miss is probably the best time, but you're not always going to get near misses. You're not going to get a near-miss pipe rupture!

So, just remember:

1. Gather a team of people that make sense to be there.
2. Clearly define the problem you want to solve.
3. Ask *"Why?"* repeatedly to move past symptoms and uncover a fundamental root cause.
4. Implement mitigation strategies to reduce and eliminate future occurrences.

And I just noticed on this screen that picture you see—I think four of those guys are the same guy! That is a weird AI photo!

Okay, without that, if there's no other questions, I want to thank you again for joining the Division of Risk Management's Proactive Risk Management webinar series. It was a three-parter; Del took the first two, which I'm thankful for, and then I took the last one, stuttered my way through, so...

I'll stick around. I think Del probably has a few more things he'd like to cover before we close out, but if there's any other questions, please put them in the chat, and we can go from there.

Del Brady: Thanks very much, Wes. Really appreciate that.

I did want to add that this is something that's super easy. I mean, I've done this in a stand-up meeting in the hallway talking to the facilities management crew or someone else that was involved with the incident. So don't feel like this needs to be an absolutely formal, rigorous, sit-down-in-a-conference-room, schedule-a-meeting process. It can be something that you can do just while you're out and about in the field.

For those of you who joined after the opening, I just wanted to remind everyone that we'll be skipping the webinar and newsletter in July, so we will start back up in August. This webinar will be recorded and sent out or posted to the website along with the monthly newsletter, just as we have normally.

And if you have any questions, follow-up concerns, or topics that you're particularly interested in, please reach out to the Loss Control team. Any of us on the team will be able to help you, and we appreciate you attending today. So, thanks everyone for your time.