Digging Deeper into Safety and Injury Prevention Data

Amanda Schwartz: Have you ever wondered how you could make your center safer using information you already collect? I'm Amanda Schwartz from the Head Start National Center on Health, and today we're going to explore ways to pull together your data, so that you can dig deeper to improve injury prevention in your program.

During this health chat, I'll give you an opportunity to stop and reflect, jotting down notes about the way you want to analyze your data. Please download and print the "Reflection" handout so that you can follow along with this activity. I will also be referring to some supplementary materials that you can look at after you view this health chat. They will help you plan evidence-based safety and injury prevention strategies in your program.

During today's health chat, we will quickly review four data activities developed by the National Center on Program Management and Fiscal Operations. We'll aggregate data to tell the story of injury prevention. We'll use analysis techniques to dig deeper and reveal more questions, successes, and challenges. Then, finally, we'll define a few next steps you can use, after you have viewed this health chat. So, let's get started.

The National Center on Program Management and Fiscal Operations has introduced four data activities your management team can use to tell the story of your program. They are: Prepare, collect, aggregate and analyze, and use and share. You can use these activities with any of your program's data. In this case, we'll apply it to safety and injury prevention data to help you determine strategies that may reduce the number of injuries and incidents in your program and keep children safe.

You can use each of these activities at any time. You don't always have to start from the beginning. In the case of safety and injury prevention, you already collect a lot of information. Working on understanding what it means and how you can improve your safety and injury prevention practices is a great place to start. Aggregating and analyzing the data helps you tell the story of your program, so that you can understand your successes and challenges.

As staff from the National Center on Health have worked with programs on connecting the data activities to health services, we have heard time and time again that aggregating and analyzing data is a major challenge. Therefore, today's health chat has been designed to help you think about new ways to look at the information you already have, using some simple techniques.

Let's start with "aggregate." "Aggregate" means "a whole formed by combining several elements." In other words, aggregate is how you pull all of your data together to tell the big picture. In safety and injury prevention, you will be able to get a sense of any program-wide strengths or challenges. Following the vision of the National Center on Program Management and Fiscal Operations, aggregate is really about looking at data at the program level.

What are some strategies you use to move from collect to aggregate? Do you use environmental safety checklists and maintenance data that you compile into maintenance logs? Do you use injury and incident tracking systems that organize all of the data from injury and incident reports? Or do you use hazard mapping to aggregate the location of hazards, incidents, and injuries? Each of these tools helps you understand more about safety and injury prevention in your program by pulling information together into one format.

An Environmental Safety Checklist is a tool that your program can use to collect data about your program's environment. This sample is taken from the new Health and Safety Checklist for Early Care and Education Programs based on "Caring for Our Children National Health and Safety Performance Standards, 3rd Edition." It comes from the California Child Care Health Program at the University of California San Francisco School of Nursing. You can find this one on the Early Childhood Learning and Knowledge Center and in the supplemental materials for this health chat. Individually, it provides you with a snapshot of a program's environment. But when organized into a maintenance log, the aggregated form tells so much more.

Information from the Environmental Safety Checklist is entered into the first three columns of the maintenance log. Then, the next four columns allow you to include the next steps, responsible parties, status of repair, and date of completion. When looking at this data as a whole, you get a sense of the wide range of hazards your program experiences, the steps you take to resolve them, the individuals responsible for repair or replacement, and the time frames for completion of maintenance.

In an aggregated form, all of this information helps you make decisions about your budget, staffing, resource allocation, and communication. In order to really understand this data, it needs to be managed in a system like a database that allows you to run reports that pull graphics and statistics. Staff also collect data about incidents and injuries using report forms. The most useful forms gather information about the details of injury and incidents in your program.

Having a tool that collects all of this information will help you understand the who, what, where, when, and how of injury as you aggregate and analyze it. This report form comes from "Caring for Our Children, 3rd Edition," and you can find it in your supplementary materials for this health chat. Once again, the individual forms provide only a data snapshot. But, when pulled together into a tracking system, it shows a full picture of injury and incidents in your program. Aggregating this data helps you to determine how frequently injuries occur, what kinds of injuries children experience, where children were injured, when children were injured, what happened, and what your program did as a result of the injury. Remember, in order to really understand this data, it needs to be managed in a system like a database that allows you to run reports and that pull graphs and statistics.

Finally, hazard mapping helps you look closely at where the injuries and incidents occurred, so that you can understand the role location plays. Pulling from the injury and incident tracking sheet, you see that the bathroom changing area, shelves, classroom door, and sink are areas that are problematic in this classroom. If you want to try hazard mapping in your program, you can find instructions and sample maps in the supplementary materials for this health chat.

Looking at the big picture by graphing the results of the incident log and the hazard map, you can prioritize your focus on areas in the room. You may decide that you're going to focus on the bathroom changing area, first, to understand the role of that environment and begin to get a sense of why these injuries are occurring. This is when you want to begin to dig deeper using some techniques to analyze what is happening in the environment.

Take a moment and think about your aggregated safety and injury prevention data. Ask yourself: What surprised you in your data? What questions do you have about it? What else do you want to look into? What data do you want to pull? Try connecting these questions to your broader program goals. Data is not useful if it doesn't help you determine whether your program is making progress towards your overall program goals and any school readiness goals related to safety and injury prevention.

Pause the health chat and take a moment to jot down notes on the “Reflection” handout. When you have answered these questions, you can press play again and continue on. You will have more opportunities to stop and reflect as you listen to this chat. This will help you develop a plan to start pulling reports that help you better understand safety and injury prevention in your program. Some of the techniques you may choose to use to analyze your data and help you understand what is happening, include disaggregate, compare, and mean, median, and mode.

So, let's start digging in to safety and injury prevention data. The Oxford Dictionary defines "disaggregate" as "separate into its component parts." Let's look at some graphs and see what separating elements out does to help us understand what is going on. Look at this graphic from the Centers for Disease Control and Prevention and think about what it says to you. It shows that the highest percentage of injuries occur inside and outside the home and that injuries occur least in the school or child care setting.

Why do you think that might be? What would your next question be? Disaggregating national data by location may make you wonder why fewer injuries occur in certain settings. In places like schools and child care centers where state and federal regulations have very specific requirements about safety and injury prevention activities, children are less likely to be injured. That's why following these requirements is so important. They work. Helping staff see this will help you decrease the percentage of injury in your own program, and working with families to understand the precautions they need to take at home and in the community will help you to decrease these percentages as well.

Also, using national, regional, state, and community data can help you understand the broader context of injury. You may look at your individual data and wonder whether your issues are something that other programs also face. It may lead you to ask: Is this just our issue? Are others dealing with this? Are there any programs who have success stories they can share? Seeing what is going on outside of your program helps you see the magnitude of a concern and helps you find other resources or strategies to solve it.

Now, look at this graph based on the aggregated data provided earlier. It disaggregates not only where the injuries occurred but when they happened. What do you observe? You may note that injuries occurred on the carpet near the door at 9:00 a.m., 11:00 a.m., and 5:00 p.m. Bathroom injuries were most likely to occur at 10:00 a.m., 12:00 p.m., and 3:00 p.m. And injuries occurred at the shelves at 10:00 a.m., 11:00 a.m., 1:00 p.m., and 3:00 p.m. Given those observations, you may wonder: What does the children's daily schedule look like?

Are there specific times when children are changing or using the bathroom? Are entry and departure times challenging for some children? Are shelves open during nap times? Are shelves well supervised during play times? In order to answer those questions, you may need to look at CLASS or other environmental checklist scores, staffing, teacher professional development, and classroom facilities and organization.

Digging deeper into that data may help you understand why these incidents happen in these locations during specific times of the day. Stop and reflect on your own practices. How can you disaggregate your data, so you can learn more? Maybe, you disaggregate by age to determine how it influences who is getting injured. Or you look at location, as we did in our hazard map.

Maybe, you look at type of injury to understand how often specific injuries occur. Finally, maybe you look at time of day or year as a way to determine when injuries are more likely to occur. Pause the health chat and take a quick note of the factors that interest you. You may select the factors listed here, but you might want to look at others that are more closely aligned with your questions. Jot down two or three ideas, then press play to continue watching the health chat and learn more techniques.

Once you disaggregate, you can make comparisons. According to the Oxford Dictionary, "compare" means "to estimate, measure, or note the similarity or dissimilarity between." Consider this graphic from the National Center for Health Statistics. Once again, national data helps you understand whether what is happening in your program is also occurring nationally.

What observations can you make? What questions do you have based on your comparisons? You may have noted that children four and under are more likely to fall than older children. Yet falls are the most frequent injuries for all children, regardless of age. You may also have noted that the only injury older children are more likely to experience is being struck by, or against, an object or person. And this is also the second most frequent injury for all children. This data may lead you to ask: Why are younger children more likely to be injured by falls? What can we do to reduce the likelihood the children we serve will be injured? And how can we support families with children in all age groups to keep them safe? Thinking about children's age and the type of injury helps you know what hazards to watch out for in order to minimize or eliminate the likelihood of injury.

Now, let's compare the data from the injury reports we discussed earlier. We already disaggregated the data to understand when injury is occurring most frequently. Knowing that falls are the most likely cause of injury for children you serve, we broke down the injuries by locations, so we could compare the kinds of injuries that are occurring in different locations throughout the classroom.

Take a minute to look at this graph and make some comparisons. The first thing you might observe when you compare locations is that falls are the only injuries occurring by the sink. You also may see that the same number of children who fall are experiencing injuries from being struck by, or against, an object or person near the classroom door and the shelves. They may be hit by others; things may be falling on them; the door may be closing on them, or they may be getting hurt by hitting people or things. Because these are happening at the same frequency, it is important to pay attention to both of them.

Finally, falls are least likely to happen in the bathroom changing area. Children are experiencing injuries due to being struck by, or against, an object or person or they're getting cut. Knowing this information, what kinds of questions would you ask? Would you want to know if there are flooding issues near the sink? Are the injuries near the shelves intentional or unintentional injuries? And finally, you may ask if the bathroom changing area is safe for children's use.

These questions may lead you back to your maintenance log and your injury and incident data tracking to pull out other factors. For example, items in environmental checklists specific to toileting and bathrooms, next steps and completion dates for maintenance, and summaries of what occurred in each injury. Deeper understanding of why those injuries are happening can help you find solutions.

As we did in our analysis of the classroom, we made comparisons between different locations within a classroom; but you can expand that to look at classroom sites and program options. You also may want to compare intentional versus unintentional injury to determine whether you need to supplement mental health services or a social-emotional curriculum. You may want to compare data to see what happened before and after you implemented a change. You may also want to compare data yearly, quarterly, monthly, or daily to see whether there is a specific time of day or year when injuries are more likely to occur. Weather, familiarity with the program, and developmental growth all impact your approaches to safety and injury prevention. Having this look through time will help you learn what strategies to use and when to use them.

Lastly, as you know, children at different ages are susceptible to certain kinds of injury. One of the reasons you might think children under four are most likely to fall is because they're building their gross motor skills and learning how to walk, run, jump, and climb. As you make comparisons here, you may want to consider looking through the ideas in the National Center on Health's resource, "Tips for Keeping Children Safe: A Developmental Guide." A link to this resource can be found as part of the supplementary materials for this health chat. Making comparisons will help you direct your attention to the right data sources but will also demonstrate, for you, areas of strength that you can build on. You may find that one site has a phenomenal record with safety and injury prevention. Learning why that site is so successful may give you some solutions to try in other locations.

Pause the health chat and take a minute, right now, to jot down some ideas of what factors you would like to compare when you are looking at your safety and injury prevention data. Once again, press play when you are finished, to learn some more strategies for analyzing data. The last techniques we want to share with you are: Mean, mode, and median. These techniques can help you understand how successful your strategies are and how much of a challenge you face. These statistical words may seem intimidating, but you will see they are basic concepts you already use when you problem-solve.

The first technique is mean, and it means the "average." In this graph, it's depicted as the line and allows you to see where you might expect incidents to fall. In this example, three-year-olds are likely to fall twice a year. Four-year-olds would be likely to fall two and a half times. And five-year-olds would be likely to fall almost three and a half times. The mode is the value that happens most frequently within a given set of data. We see here that two happens most frequently in our data, and therefore, two is our mode. So, more children are experiencing two injuries.

Median is the value or quantity lying at the midpoint. Therefore, in this data set, it's two injuries. That means that half of the children have two injuries or fewer, and half of the children have two injuries or more. Let's go back to our data from this particular classroom. Looking at the data can demonstrate the depth of one problem, but can also highlight other issues in the setting as well. In this example, when the team looked at the injury reports in greater depth, they discovered that the time, location, and types of injuries were caused when eight children became injured by environmental hazards including a loose shelf.

Three children had trouble separating from caregivers and family members. Three children fought over materials, and one child was learning to use the toilet independently. The mean is 3.75, indicating that children may be most likely to be injured due to trouble separating and insufficient materials.

Because three is also the mode and the median, trouble separating and insufficient materials are also the most frequent causes of injury, and other factors are equally more or less likely to cause injury. If you only looked at mean, median, and mode, these two areas would probably be the problems you would address first. Yet when you saw this graph, the first thing you probably noticed was the high number of injuries caused by environmental hazards.

Clearly, environmental hazards are an urgent issue needing to be addressed. But sometimes these random high numbers in one category can throw off all of your data. These extremes or outliers can change the way your data looks. While they should be examined and addressed promptly, you cannot ignore the other prevalent issues in your program.

Outlier means "a person or thing differing from all other members of a particular group or set." As you noted, it can change how you see all of the data, so it is important to look at it closely to understand what impact it makes on your data. When you compare both graphs shown, the outlier raises the average significantly and makes you aware of a significant problem, but also may hide successes and challenges that need your attention.

Let's add classroom data from the year before to demonstrate how this outlier has affected the data. Without the large number of environmental hazards which serve as an outlier, results look different. You are probably more likely to address all of the concerns, because you can see them more clearly. The best process is to identify the outlier and develop a plan to address it. Then go back to the rest of your data to determine the other issues you need to address.

This graph shows why using these techniques to look at data over time is critical to see trends. If you look at independent toileting, it was the cause of three injuries the year before. So the program changed their strategy and decreased the number of injuries to one. By looking at data over time, you can determine the impact of the changes you have made on safety and injury prevention throughout your program and find outliers demonstrating successes and new challenges.

Consider how you will use mean, median, and mode to understand your data. You may want to use them to prioritize your actions, focusing on the most urgent issues but making sure to address all of the concerns that appear. You may identify some working strategies that you have used and may want to build upon.

Maybe, the reason there was only one injury related to independent toileting was because you instituted new toileting and supervision strategies this year. You may be able to determine whether there are outliers that are skewing or changing your data to draw out some important concerns, but perhaps hiding others that also need to be addressed.

Finally, you may find new challenges that may not have been as significant the year before. Take our example of environmental hazards that grew by 100 percent, from one year to another. Perhaps, in a case like that you need to work closer with facilities management to resolve those issues quickly. Pause the health chat and take a moment to note how you will use these techniques to understand what is going on in your program's safety and injury prevention work.

What do you think will be the most useful for you to analyze? When you're finished, press play to listen to the end of the health chat. As you can see, there is a lot you can do with your data that you may not have yet considered. Most important is to think about how these different kinds of analyses will help you answer your questions and learn what is going on in your program. Think about what you need to know about safety and injury prevention to meet your program's goals and help children stay safe, so that they can learn and grow.

Using your notes from this health chat on your “Reflection” handout, complete the action plan on the final page to consider how your team will dig deep and find strategies that will work well for you and your program. If you have further questions about using data to promote safety and injury prevention in your program, please feel free to contact us, the Head Start National Center on Health. You can email us at nchinfo@aap.org or call us at 1-888-227-5125.

And remember, you already know a lot about keeping children safe. Sometimes, it just helps to think a little differently about what works and how you can make it work for you.