MSON Webinar Script  
April 2, 2025

Slides 1-9 Bailey

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**S1 Title Slide/Welcome**

Hi everyone, it’s the top of the hour so we will go ahead and get started with today’s session. Thank you everyone for being here today. My name is Bailey Sterling, and I am the Student Engagement and Marketing Strategist for Region 3 of the Network of the National Library of Medicine. Teaching with me today is Margie Sheppard, Community Engagement Coordinator for NNLM Region 3.

**S2 Using Zoom**

We have just a few technical items to cover:

We have captioning available today. You can click on the CC button at the bottom of the screen to start the live stream for yourself.

All attendees have been muted, but we welcome your questions and comments in the Chat anytime, but we will have some time for questions at the end of the presentation.

Please be sure to select “Everyone” from the drop-down menu when posting your questions and comments in Chat so everyone can see them.

**S3 Before We Get Started**

We’re recording today’s session and it will be available in about a week.

As a reminder, by registering for this webinar, all attendees have agreed to abide by the NNLM Code of Conduct. It’s a reminder that we are all here together professionally and we want to be inclusive and respectful. Your cooperation is appreciated.

This class is eligible for 1.5 Medical Library Association Continuing Education credits, and qualifies for MLA’s Consumer Health Information Specialization. You can also earn Illinois Continuing Education for Nurses (CNE). And this class has also been approved for Certified Health Education Specialist (CHES).

We’ll share an evaluation link with the CE information at the end of our time here today. When you complete the evaluation, you will receive a MLA CE code for your credit. Your feedback helps us improve future events, so please take a moment to complete it whether you want the CE or not.

And finally, we do have a worksheet that accompanies today’s class. We will link that in the chat shortly. We also have a link to today’s slides.

Link downloads PDF Handout - <https://lor.nnlm.gov/op/op.Download_Share.php?documentid=3967>

Class materials (slides): <https://nnlm.gov/training/class-catalog/making-sense-numbers-understanding-risks-and-benefits-communicating>

**S4 About NNLM**

I know some of you are already familiar with us but for those who aren’t I’d like to share a little about who we are.

The National Institutes of Health is the nation’s leading medical research agency. Many of you might be more familiar with the National Cancer Institute which is one of the many institutes and centers at NIH.

NLM or the National Library of Medicine - is one of the 27 institutes and offices of the National Institutes of Health. It’s the world’s largest biomedical library and produces online resources like PubMed and MedlinePlus.

NNLM - the Network of the National Library of Medicine - is an outreach program of NLM, working to ensure health professionals and the public have equal access to health information.

NNLM is made up of 7 regional medical libraries, 3 national offices, and 4 national centers, all providing training, funding, and engagement opportunities to over 9,000 NNLM member organizations.

**S5 NNLM Map**

Here is a map to show you how our Regional Medical Libraries are geographically divided. If you would like to learn more about your region and how your organization can become part of the network visit our website at nnlm.gov. The link is in the Chat.

Post in Chat: NNLM website https://www.nnlm.gov/

**S6 Objectives**After this session, you will be able to: (read objectives from slide)

**S7 Agenda**(Review agenda)

**S8 Definitions:**

**We’ll start with some definitions so we’re on the same page.**

 Numeracy: Ability with or knowledge of numbers

 Risk: Possibility of loss, injury or other adverse or unwelcome circumstance

 Outcome: The way something turns out, a result

 Benefit: Advantage, profit, good

 Statistics: Systematic collection and arrangement of numerical facts or data

 Evidence: Something serving as proof

**S9: Definition cont.**

One key concept to understand when communicating risks and benefits is the difference between relative risk and absolute risk.

Both ways of explaining risk are accurate, although they are easily confused and could change the health outcome/plan for someone.

An easy way to tell the difference is to think about where the number, or percentage, or statistic appears in the sentence.

When you’re talking about relative risk, the statistic is usually in front of the outcome: 50% increase in trouble sleeping. Expressions of relative risk often also include comparisons, the 50% increase is relative to a baseline absolute risk of trouble sleeping.

With absolute risk, the statistic is usually in front of the population: 3% of patients.

Imagine that you have two groups of arthritis patients, and each group has 100 people. The first group of patients takes a new drug, and the second group doesn’t take anything. Now suppose the group of patients who don’t take the drug has 2 people with sleep problems, and the group taking it has 3 people with sleep disturbances. That is a 50% increase in sleep trouble. But the absolute risk for someone taking the drug is still rather low—at least, lower than you might expect if you hear that the drug increases your risk of sleep problems by 50%.

Although both ways of describing risk are accurate, the relative risk often makes people think that a treatment is more effective than it is. Relative risk can also make people think that bad side effects of the treatment are more common than they are. In general, talking about the absolute risk can be clearer to patients and other consumers.

**S10 Interpreting and Presenting…**

The way we present and how we Interpret numerical health information is important for each of us. But It’s even more important when supporting our target audience in using numeracy to make informed health decisions. Most people have at least a little experience dealing with numbers related to their health or the health of someone they know. To that end, we have a question for you:

**S11 Chat Question**

When looking at numerical health data, what information should we consider? Please feel free to type your responses into the chat. I will give about 30 seconds for responses to start rolling in.

Thank you everyone for your responses - please feel free to keep typing and communicating in the chat box!

**S12 Things to Consider**

To communicate numerical health information well, we need to ensure that we have a good understanding of how to interpret data; in other words, we should understand what information to look for and how to read that information in various formats.

When interpreting numerical health information from any source, consider the following:

* What is the topic primarily covered by the source in question?
* What population(s) are being described?
* Do the data apply to a specific group or groups?
  + Race? Sex? Age? Nation?
  + Health history?
  + Socioeconomic factors?
* What is the geographical area from which data was derived?
* What is the time range from which the data was derived?
* What is the time frame covered by the presented data?
  + 1 year? 5 years? Lifetime?
* Does the data describe something very broad or very specific? For example, when looking at a chart that communicates cancer rates, a broad scope might be “Cancer rates”. A very specific scope might be “Stage 4 colorectal cancer rates in women over 80 in Texas between 1990 and 2010”.
* What is being stated about absolute vs relative risk?
* What is being stated about the benefits and outcome? What outcome is being reduced? What benefit is occurring and by how much? When did treatment start?
* How is the data expressed? (Number, percentage, decimal)

These considerations can vary based on your specific needs or situation. We will briefly discuss data formats and navigate them more in the next few slides.

**S13 Presenting Health Info.**

Let’s explore some common ways that numerical health information is presented, such as fractions, decimals, percentages, and measurements, as well as data visualizations like infographics, pictograms, charts and tables. The way numbers are presented can change the way we see and understand data and make health decisions.

**S14 Percentages…**

Numbers can be presented in myriad ways. Take this example; 30% can also be expressed as a fraction (3/10) or a decimal (0.3). All these figures mean the same thing, but the way you express this number may change based on the context. If you or someone you know struggles with understanding one type of number, you can always express the number differently. For example, it might not be appropriate to express someone’s risk for diabetes as “0.3” - perhaps 30% or 3/10 would be more appropriate.

Question for the chat – Which format is the easiest to read and understand if we are using it convey someone’s risk for diabetes? Please put your answers in the chat.

We usually don’t express someone’s risk for diabetes as “0.3” - often 30% or 3/10 would be more appropriate. Saying 3 out of 10 people is the easiest for most people to understand.

**S15 Example**

Before we dig into this example, I want to be very clear: This data point is presented in a numerical format which is a common format for health data. It is not medically accurate and is made up for example purposes for this class.

“3% of people who undergo surgery develop a blood infection.” This information appears as words, formulated as a sentence. This is one way numerical data might appear.

While this sentence stands alone and might be clear to some people, this is not necessarily the case for everyone. It’s important to express numerical health information in a way that makes it meaningful. There are many other ways we can format this information.

**S16 Text**

Our first type of data presentation is using text. This health information appears as words, formulated as a sentence. “3% of people who undergo surgery develop a blood infection.” This is one-way numerical data might appear.

The text example uses a percentage (3%) but that can be switched out with “3 out of 100”. We’ve already discussed that using the decimal .03 isn’t as common or useful to people.

**S17 Tables**

Visuals, such as tables, charts, icons, infographics, and pictures can be effective tools for communicating health information. Visuals can make the presentation of complex information not only more attractive, but also easier to comprehend. They can also reinforce written or spoken health messages.

This table shows us one way the numerical data in our blood infection example could appear.

**S18 Charts and Graphs**

Charts can also be helpful in visualizing health information. In this example, you see our blood infection data illustrated in a pie chart.

When looking at charts and graphs, it is important to verify the populations, time frames, genders, race, etc. in a chart to be sure it suits your needs or situation. This pie chart is very simple and could be improved by including more information, but it does adequately express the data in our example.

However, charts can be much more complex than this one. Some of you may have experienced charts that made information too difficult to understand. Good charts help us visualize data in a way that makes sense. This pie chart helps us to visualize how much 3% really is in comparison with the whole, which may affect health outcomes. The manner in which numbers are presented can change the way we see and understand data and make health decisions.

**S19 Icon Array**

Now, on to a favorite; the icon array. An icon array is a visualization where one shape is repeated a specific number of times to represent the “whole”; then, some of the shapes are altered (in this case, by color) to represent a proportion. Icon arrays are very useful when communicating numbers because they are generally easy to understand when used in the right context. This icon array does a great job depicting how many people develop a blood infection in our example.

When using visuals to communicate numerical information, consider this:

* Where should you look first?
* What path are you supposed to follow through the chart or diagram?
* What connections must you make to extract information from such formats?

I like how this icon array shows the 3 people highlighted at the bottom, which probably means I will look at 97 people who do not develop blood infection before getting to the 3 that will. This might be a great way to positively frame this data. We will talk more about framing later.

**S20 Measurements**

Moving on from our fictional example: let’s look at some real-world ways that data is expressed. This table shows numerical health data as measurements, in this case measurements of blood pressure expressed as ranges. Other ways to express measurements include mass, volume, length, height, and more. Think of someone in your life: would this table and measurement expression be a good way to communicate this data with them? If not, using what you’ve learned during this presentation, think about how this table could be improved to make it more understandable? It’s always important to consider the target audience when interpreting or presenting numerical health data.

**S21 Infographics**

Lastly, let’s talk about infographics. An infographic is an illustration that uses graphic elements to present information in a visually striking way. Technically, tables, charts, and icon arrays are infographics; colloquially speaking, however, images like the one on this slide are typically associated with the term “infographic”. The infographic here provides a visual representation of risks we can and can not control when it comes to heart attack and stroke. This information is generalized to all populations and refers to the “standard” risk that increases risk of heart attack and stroke. It does not address a specific population.

Within this graphic, you will notice pictograms (or pictographs), which are small icons that visually communicate a concept concisely. We have some of them highlighted and enlarged here. As you can see, numerical data is well-communicated about the age group that’s considered at risk for stroke by a green circle with “65+” inside of it that is labeled “Age”.

**S22 Practice**

Alright, let’s practice what we’ve learned. Look at this table and then consider our scenario:

A young person is searching for information about iron levels after a recent doctor's visit. They find this table but are overwhelmed by the information it contains.

What can we do to help this person interpret the data in a way that might better allow them to get the information they need from the table? Please feel free to type your answers into the chat. I’ll give about one minute before passing things over to Bailey

Thank you for your participation, everyone! Bailey, feel free to go ahead whenever you’re ready.

**S23: Evaluating Numerical Health Info**

When you’re working with someone who wants to understand health risks and benefits, it can be good to briefly review some strategies for evaluating claims that they are likely to encounter. Let's look at a process that can be used to help guide your searches and aid in helping others search for and evaluate on numerical health information.

**S24: Chat**

First, let’s start with a question, [read from slide, discuss answers that pop up] Chat Q2 - give 30 seconds

**S25: Evaluating Health Info**

Those were all great responses. In this section, we will look at 5 points to consider when evaluating health information. We will focus on MedlinePlus as our example, which is a great source of health information intended for consumers, but there are many databases that provide useful, relevant, and accurate information regarding health information. The NNLM has many courses on utilizing Medline Plus if you are interested in learning more about this particular NLM product.

**S26: Authority**

Ideally, information in a journal or on the Web should have an identifiable source or an author. This aids you to evaluate points such as authority and purpose. Does the author have expertise in the area they are writing on? Are they drawing on others with expertise?

An important clue to the identity of the publisher can be found in the Web address:

* *.edu A Web address that ends in ".edu" is owned by an organization that is associated with an educational institution such as a university.*
* *.gov An ending of ".gov" signifies that the web page belongs to a governmental organization.*
* *.com and .org are open to any registrant, with .org commonly but not exclusively used by non-profits and NGOs*

**S27: Accuracy**

When assessing the accuracy, try to determine whether the information is supported by evidence from scientific studies, other data or expert opinion. Look for corroborating, independent sources that support the information’s conclusion. Does it cite external sources? When evaluating its citations, are they reliable?

**S28: Currency**

Currency refers to how recently the information was published and is especially important for health information, which needs to be as up to date as possible

Consider: Is the information current? Is it reviewed regularly? What is accurate about a particular health topic can change rapidly and making sure that the information in a resource is accurate takes periodic revision.

Look for review dates. Often websites will lack review or even posting dates, which can make evaluating the currency of the content they include difficult.

One of the benefits of MedlinePlus is that the content is regularly reviewed and updated as indicated with the text in the red box on the bottom of the slide. Each page has the date it was last updated.

**S29: Relevance**

Do the facts and figures cited here back up the claim that the authors are making. Do I know what kind of risk they are talking about—absolute or relative—or does that seem confusing?” Also, as a general rule, look for agreement between two reliable sources. Experts can be mistaken; the results of a single study could be an outlier that doesn’t agree with most of the other studies on that topic. Using two sources that agree with each other makes it more likely that a piece of information aligns with the consensus of medical researchers and doctors.

**S30: Purpose**

Resources can be made for many different reasons, and that reason can shape the information provided by that resource.

* Everything is made for a purpose
* What does the purpose of a resource tell you about what the info it conveys is meant to accomplish? Is it trying to promote a particular opinion? Behavior? Political or ideological stance?
* Having a clear purpose or agenda in a resource doesn’t mean it’s not necessarily a reliable source of information, but it does impact what is presented, how it is presented and what information is used to support it. Being aware of the purpose is critical to evaluating a particular resource.

**S31: Break 10 minute**

Okay, that brings us to the end of the first section of this session. We’re going to go on a 10 minute break. See you all at [TIME] \*write down questions\*

**S32: Reflection**

Alright everyone, welcome back. I know some people might still be trickling in, so I would like to encourage you all to open the Notes on your phone or computer, maybe grab a piece of paper and pen/pencil/marker/tube of lipstick, and get ready to take about a minute to answer this question. This is only for your records, but feel free to share whatever you come up with in the chat.

Consider what you learned in the first part of the session. What are the most important takeaways so far?

I’ll be silent for about 1 minute while you mull this over, then I’ll be back!

Alright y’all, one minute is up. Thanks for taking a moment to reflect on what you’ve learned so far.

**S33: Communicating Numerical Health Info**

Now let’s move into communicating numerical health information. When we’re presenting numerical information, we want people to connect with the numbers for effective and evidence-based decision-making.

**S34: How Numerical Health Data is Used**

Generally, numerical health information will be used for the following purposes:

* Inform (screenings
* Compare (medications, treatment, therapy)
* Motivate (quit-smoking, exercise)

The needs of your audience and level of understanding will shape the format you will use in communicating risks and benefits or other health information.

Remember, there are many ways numerical health information can be presented to help people understand it, including:

* Words
* Numbers
* Charts and Tables
* Infographics, etc.

Use the following tips to help yourself or someone you know to make sense of numbers so they can be as informed as possible. Use these techniques with everyone—not just those with whom you think have limited health literacy.

**S35: Be Clear**After establishing your purpose (persuade, compare or motivate), you need to be clear about your message.

Firstly, always be clear about your message

* What data needs to be communicated?
* Is it formatted so that communication is as clear as possible?
* Are we looking at death? Injury? Diagnosis? Risk?
* How big is the risk? Benefit?

**S36: Use Appropriate Framing**

Next, use appropriate framing. Studies show that the way we hear and understand health statistics can be influenced by how the numbers are described. How we present the risk is important. You can present risk in a negative manner (focused on the negative outcome), or in a positive manner (focused on the positive outcome).

“More than 20% of Americans will eventually die of cancer” might sound less scary from a different perspective: “Nearly 80% of Americans will not die of cancer.”

The same information might seem clearer described as a ratio, which might sound something like: “Almost 4 out of 5 Americans will not die of cancer.”

**S37: Practice Framing**

Let’s practice this together! Again, this is not a real statistic; we are only using this to practice framing.

“4% of people who have the surgery have complications.”

I’ll give you a moment to think about that and respond. There’s no right answer, but in the context of what the patient’s needs are and where they are emotionally in thinking about the surgery, you might choose to frame this statement differently. Sharing this information another way could help if someone needs surgery but is nervous about complications.

Thank you for your input! I think one great way to frame this is as follows: “96% of people who undergo the surgery do not develop complications”. But this is not the only possible solution.

**S38: Communicate Risk**

Let’s talk about communicating risk.

There are two types of risk referred to in health care.

Absolute and relative

Absolute risk is the probability or chance of an event occurring in a specific population over a defined period. Often it is expressed as percentage or fraction

If we were to write it as a formula it would be Absolute risk = (the number of events in a group) / (total number of people in the group)

In our example 3 out of 1,000 nonsmokers may have a stroke in their lifetime expressed as a fraction would be 3/1000 or .3%

while 6 out of 1,000 smokers may have a stroke in their lifetime,” or 6/1000 or .6%

Absolute risk provides an absolute measure of the likelihood of an event occurring in a specific population. It is useful for:

Understanding the overall risk of a disease or health condition

Comparing risks between different groups or populations

Estimating the potential impact of interventions or treatments

Relative risk is the risk of a certain event happening in one group compared to the risk of the same event happening in another group. It is expressed as a ratio.

The second example shows the relative risk of smoker’s vs non-smokers of having a stroke in their lifetime. "Smokers have 2 times the risk of having a stroke in their lifetime. “ expressed as a ratio of 6:3 or 2:1

A risk ratio greater than 1.0 indicates a positive association, or increased risk for developing the health outcome in the exposed group. In our example the risk ration of 2 means smokers have 2 times the risk for stroke in their lifetime.

Both examples show accurate data, but it’s important to think about how particular framing might motivate people to do something, or to start working with health care providers to improve their health.

**S39: Choose Numbers Wisely**

Limit numbers

Besides the confusion about absolute risk and relative risk, another possible source of confusion is that you might come across different figures.

* 3/50 and 60/1000 both = 6%
* 3 out of 1,000 people who have diabetes improved as a result of taking a **medication**
* 2 out of 100 (20 / 1000 people) people who have diabetes improved as a result of **dietary changes**.

**S40: Use Common Words**

Another tip for effectively communicating health information is to use common words and measurements. Avoid jargon or technical language wherever possible. Avoid long decimals. Find out which measurement system the target audience usually uses—metric or imperial. For example, say, "Would you like me to explain using ounces or grams?" It’s best to avoid making assumptions and just ask people their preferences.

**S41: Describe Numbers**

We can also describe numbers and define words. Use number formats and phrases that might make the most sense to your target audience. This strategy is often referred to as using “plain language.”

* For example, “myocardial infarction” means the same thing as “heart attack”
* In some cases, we can just say "about half" instead of "49 percent"
* It can also be helpful to define risk ash high, moderate, and/or low and what those look like in number form or visually

Additionally, check out MedlinePlus as a resource for further information on health topics, word definitions, etc. MedlinePlus is written at the 5th-8th grade reading level and also has specific pages that are tagged as “easy to read” that use very plain language.

**S42: Show Pictures**

Sometimes using visuals or analogies can help people put risk or probability into perspective. Using familiar icons or pictures can be helpful in helping others understand risk. I love this visual because quarters have nothing to do with heart disease, they are familiar to just about everyone in the U.S. The images depict men - which is who this statistic effects - and crosses one of them out, (one “quarter” of them) to communicate men’s risk of dying of heart disease. No actual numbers are used here, but the data is communicated very clearly in a familiar way.

**Bailey through the end**

**S43: Putting it All Together Bailey**

We have discussed interpreting data and the various ways it can be presented, we have looked at evaluating data and how to communicate data. Now, let's put it all together with some practice scenarios.

**S44: Scenario 1 Bailey**

*Read scenario.* How can we help Mary?

**S45: Scenario 1 Solutions Bailey**  
Utilize Medline Plus to define breast cancer terms and processes, help interpret the numbers . Explain that 97% won’t die from it. We could also say 97 out of 100 will live.

**S46: Scenario 2 Bailey**

*Read scenario.* How can we help Lucy?

**S47: Scenario 2 Solutions Bailey**

Break down the numbers differently

Now that we have discussed these two scenarios.

**S48: Wrap Up Bailey**

We covered a lot of ground, and we hope you are feeling more confident in your numeracy and evaluation skills!  
  
Some final points as we wrap up:

* Before you can communicate data, you need to ensure you can interpret it.
* When you’re communicating with someone about risk, as it relates to health or medicine, it’s important to provide context to the information you’re sharing.
  + Be clear about the message
  + Properly frame the information while using absolute risk
  + Limit numbers
  + Use common words
  + Describe what numbers mean
  + Show pictures
* Your particular needs and situation will determine the format you will use in communicating numerical health information. Always have the needs of your audience in mind!

**S49: Questions? Bailey**

**S50: Evaluation and CE Bailey**

We hope you’ve enjoyed the class today  
We will put the link to the class evaluation in the chat box.

Completing the evaluation is the first step in claiming the 1 and a half MLA CE credits for today’s session.

We really appreciate it if you complete the evaluation, even if you don’t want CE – it helps us make changes to the class and provides data on the usefulness of the class.