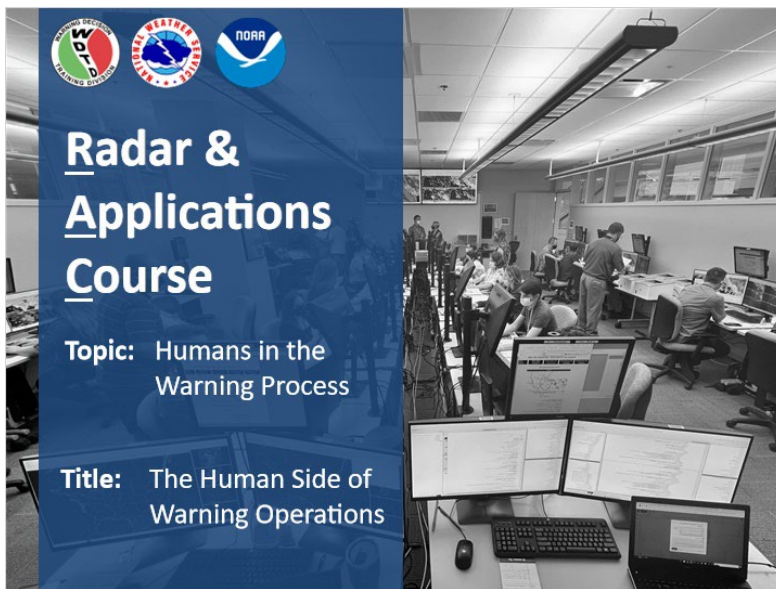# Table of Contents
Topic: Humans in the Warning Process

Click to jump to lesson

The Human Side of Warning Operations

Notes:

Welcome to the RAC topic on Humans in the Warning Process. This module will reflect on the human side of warning operations.

Learning Objectives: After completing this module, you will be able to:

1. List ways you can increase your team's trust in you.

2. Describe "scientifically supported" and "intentional" warning decisions.

3. Rank the contributions of humans, science, and technology to errors in warning operations.

4. List measures you can take to decrease your stress during and after warning operations.
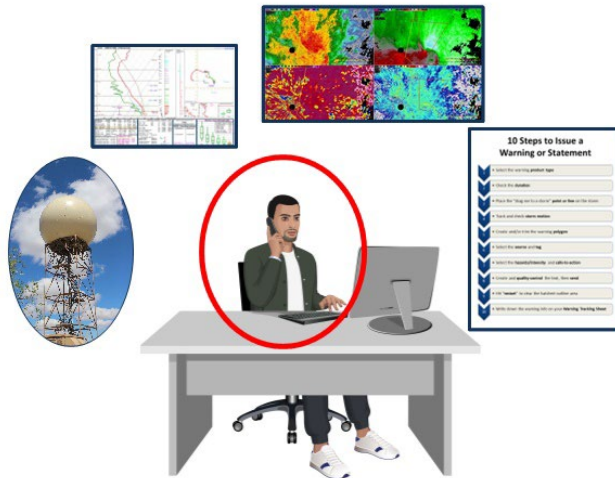
Notes:

You've seen a lot of training now about the radar components and products, diagnosing the storm environment, interpreting radar characteristics, and the process of issuing warnings. There is one important piece in the warning process, though, that we haven't really covered until now: You, the human doing the warning. We're going to start some conversations about being a human in warning operations, including the impact that warning operations can have on you and how your decision process impacts warnings.
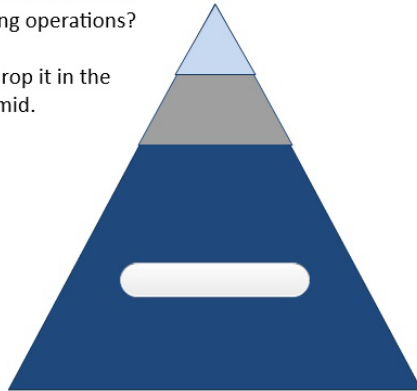
Sources of Errors in Warning Operations

Which source of error contributes the largest portion in warning operations?

Drag your answer and drop it in the blank space in the pyramid.
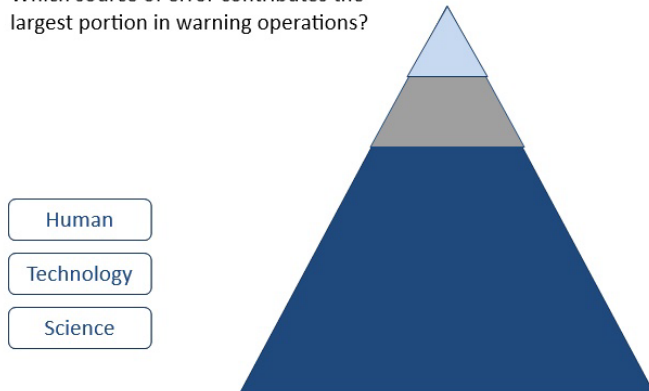
Human

Science

Technology

Notes:

A past study by WDTD looked at the root-cause analyses of a number of severe weather events when things went awry, then put the results into three categories: science, human, and technology. Among those three categories, which one do you think caused the majority of errors? Drag the label to the widest part of the pyramid.

Sources of Errors in Warning Operations

Which source of error contributes the largest portion in warning operations?

Human

Technology

Science

Notes:

Human factors make up the majority of errors during big events - 64%! Lapses in applying the science, and technology failures, also contributed to errors. Knowing this, we know that it is important to include the human side of warning operations in our training. We simply cannot separate the human from the warning process, and we cannot talk about the warning process without talking about YOU – the human in the process!

Notes:

As the human in the warning process, we influence how the process plays out – and it also influences us and impacts us. Let's explore how we humans and warning operations influence each other. Click on each thought bubble to explore the topic. After you have visited all three topics, click on the "Summary" button for a recap, and finally, click on the "Quiz" button to take the quiz and complete the module.

Build Trust in Your Team

Team trust aids the warning process!

What are some things you can do to build trust with your coworkers?
(Type 1-2 examples below.)

type your text here

Notes:

Trust in your team aids the warning process. Getting to know each other will help you build trust in your team. You may not like or be friends with your coworkers – or you may be great friends with them and socialize together every weekend – or you may be somewhere in between. Whatever the case, you and your coworkers have to work together as a team in a professional way when you are at the office together.

It may take time to build that trust, as a new person on the team. Can you think of some ways to help build trust with your coworkers? Type one or two examples here.

Build Trust in Your Team

Team trust aids the warning process!

What are some things you can do to build trust with your coworkers?

Some ideas include:

• Ask questions
• Learn from mistakes
• Stay present

Notes:

Great! Some ideas we had include asking questions, to show a willingness to learn from the experience of others. Also, be willing to reflect on and learn from the inevitable mistakes that you will make, as we all do. Finally, stay present and attentive on your shifts so that your team knows that they can rely on you.

Build Trust in Yourself

- Overcome and review mistakes
- Understand your biases
- Strengthen your weaknesses
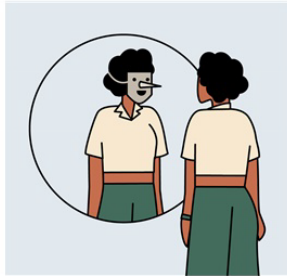
Notes:

You also have to learn to trust yourself, too, through practice, experience, and competency. Learn to keep going after mistakes and then review and study them later. Understand your biases – we all have them, and the more we acknowledge and understand them, the more we can recognize them when they show up. Of course, in addition to acknowledging a bias or weakness, it's also on you to work on strengthening those weaknesses. Aim to calibrate your confidence between being overconfident and underconfident – somewhere between Han Solo's "don't get cocky, kid!" and being paralyzed by imposter syndrome.
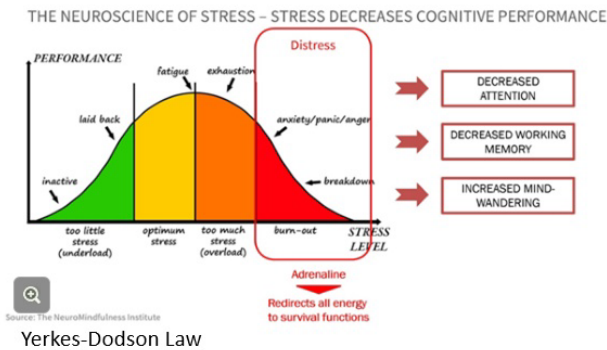
Stress and Performance

Yerkes-Dodson Law
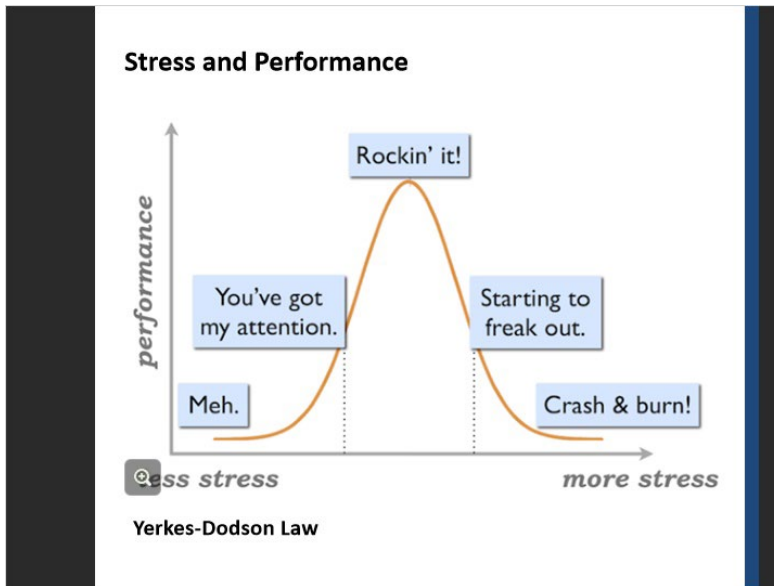
Notes:

This might surprise you to hear, but a little stress during warning operations is actually normal and good. It can keep you focused and vigilant. But at some point, the stress becomes detrimental – and that point is different for everyone and for different tasks. This phenomenon has a name: the Yerkes-Dodson Law. It is important for you to learn what your point is so that you can recognize when you're reaching it and take care of yourself to mitigate it. It's also important for team members to watch for stress in others – all the more reason to establish trust with your team. We often want to be the hero in warning situations, but others can help us stay honest with ourselves.

Image source: https://www.precisionnutrition.com/good-stress-bad-stress-infographic

Stress Decreases Information Processing

THE NEUROSCIENCE OF STRESS – STRESS DECREASES COGNITIVE PERFORMANCE

Yerkes-Dodson Law

Notes:

Stress that has gone past our tipping point decreases our ability to process information. When we are in distress, our attention and working memory both lapse, and our cognitive capabilities decrease. Our brain simply can't process pieces of additional information because it has turned to survival mode.

Source of image on the Yerkes-Dodson Law: https://magdatabac.com/the-good-side-and-the-dark-side-of-stress/

Overwhelm (Task Saturation)

Symptoms:
• Performance indicators
• Physical (stress) indicators

Treatments:
• Slow down, breathe, and do one thing at a time
• Trust team's input
• Accept help
• Ask for help

Notes:

When there are a number of stressors – or even when the warning process itself is a stressor – you may experience task saturation, which is a fancy way of saying that you're overwhelmed by the job in front of you. You may recognize it in team members, but it's much harder to recognize it in yourself. People who are getting overwhelmed may show performance indicators in warning operations such as failing to interrogate storms, letting warnings lapse before issuing a new warning, failing to do severe weather statements, or "carpet bombing" warnings (that is, blanketing large areas of storms or multiple storms with overly large warning polygons). There are physical symptoms, too, that are essentially amped-up stress indicators: fast heart rate, shallow breathing, clenching, irritability, and crying, just to name a few.

If you find yourself in a tangle: slow down, breathe, and tackle one thing at a time. Trust your teammates if they let you know that you are showing signs of being overwhelmed - because, remember, it's easier to see it in someone else than it is to see it in yourself. Accept help when someone offers it. If you have your wits about you to ask for help, that's even better.

https://hbr.org/2021/04/5-mistakes-we-make-when-were-overwhelmed

Image credit: https://bwatwood.edublogs.org/preventing-info-overload/

Stressors in a Warning Environment

What kinds of stressors do you think you might encounter during warning operations?

Type a few examples below.

type your text here

Notes:

What kinds of stressors do you think you might encounter during warning operations? Type a few examples in the space here.

Stressors in Warning Operations

- Backlash on media, including social media
- Volume of calls, chats, social media contacts
- Equipment/systems problems
- Coordination with other offices, ROC, national centers
- Staffing
- Remote communications
- Performance metrics (POD, FAR, lead time)

- Overconfidence
- Underconfidence (imposter syndrome)
- Fatigue (shiftwork and otherwise)
- Health
- Personality issues at work
- Pressure from management
- Worry about home, family, friends, neighborhood, community

Notes:

Here are just some of the many possible stressors that we came up with. They range from the metrics and boxes you have to check, to operational technicalities, to your own personal health and safety. Compare the list here to the stressors you identified – and let us know at the RAC workshop or via email if you've thought of stressors that we left off this list!

Mitigating Stress

During:
- Rotate to different role
- Take a break
- Breathe deeply

After:
- Disconnect
- Do things that calm, ground, recharge you
- Consult professional help

Notes:

When you've gone past your tipping point and into detrimental stress, what are some ways you can mitigate it during and after warning operations? During the event, you can rotate into a different role. You can take a break, ranging from a quick walk down the hall to a longer break (if possible, and in coordination with the shift supervisor). At the very least, take one or two deep breaths between each warning cycle to help soothe your nervous system. There are also some techniques you can learn, like box breathing, to help calm yourself intentionally.

After the event, allow yourself time to recharge. It's tempting to go home and start scrolling to see if reports came in, or continue to follow convection into the next CWA, but it's important to take some time to disengage from the event. Exercise, eat, spend time with family or friends or pets, or do other things that help calm and ground you. You may also consider seeking professional help, especially with events that cause casualties or damage to communities. NWS provides critical incident stress management training in WOC Human Factors (which is linked in the resources), and your office can contact the NOAA health and safety officer for support after high-impact events.

Scientifically Supported Decisions

Supported by:
- Training
- Guidelines
- Directives
- Science (i.e. environment, radar, observations)
- Best interest of public

Notes:

In our warning process, we should be aiming toward making scientifically supported decisions. The most supported decisions are the ones that are best supported by training, guidelines, directives and the state of the science, and they are done in the best interest of the public. Scientifically supported decisions are supported by the environment of the storm, its radar characteristics, and observations of it, whether they are humans, cameras, or remote sensed. These decisions hold up even if the event doesn't work exactly like you thought it would.

I'll give a personal story here. I was working as the warning meteorologist on a supercell that was heading from southwest to northeast and had our biggest metro area in its path. It was in an environment that supported tornadoes, had radar indicators that it could produce a tornado, and had a history of producing observed tornadoes. Of course I issued a tornado warning for the metro area. Now, it turns out that the storm cycled over the metro and did not produce a tornado anywhere in the warning polygon over the metro. It produced again just on the northeast side of the metro. Did that warning verify? No. Was it scientifically supported? Absolutely.

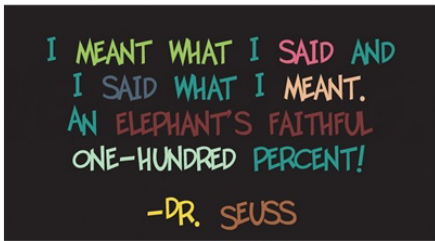Image source: https://researchoutreach.org/articles/decision-making-under-uncertainty-ambiguity-preferences/

Intentional Decisions

Have your full attention

Lead to end product that matches what you meant to do

Waylay errors from rushing, autopilot mode, inattention

I MEANT WHAT I SAID AND
I SAID WHAT I MEANT.
AN ELEPHANT'S FAITHFUL
ONE-HUNDRED PERCENT!

-DR. SEUSS

Notes:

We also want our decisions and actions to be intentional. What we mean by that is that whatever step it is in the warning process, give it the time and attention to ensure it's what you meant to do – including making decisions like whether or not a county or town is in or out of the warning, which threats are selected and their magnitudes, whether to let a warning expire or to reissue it, and when to not warn on a storm. Being intentional with your decisions will help waylay the sloppiness and errors that can come from rushing through the process, being in autopilot mode, and not giving the task your full attention.

Image credit: https://www.flickr.com/photos/87310047@N05/8723386467

Sphere of Control

Concern
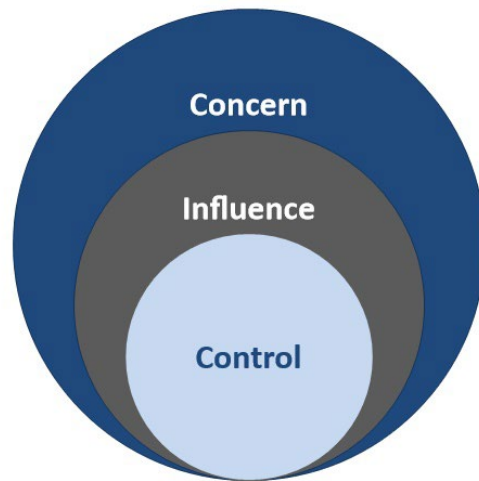
Influence

Control

Notes:

When it comes to those human factors in the warning process, it is important to reflect on the things that you can control, the things that you can influence, and the things that concern you but are outside of your control. We can control how we interact with our teammates, for instance, while how they interact with each other is in our sphere of concern or perhaps influence. We can't control all of the stressors that enter our work environment, but we can raise our awareness of our own level of stress, our need to take breaks, and the steps we take to mitigate stress after an event.

You – the human – are key!

Trust
- Build trust in yourself
- Build trust with team

Decisions
- Scientifically supported
- Intentional

Stress
- A little is normal
- Past a tipping point is detrimental
- Recognize overwhelm (task saturation)
- Understand common stressors
- Take steps to mitigate during and after event

Notes:

You, the human in the warning process, are a key component. It's important to build trust in yourself, as well as with the other humans around you – that is, your team. Your goal, ultimately, is to make decisions that are both scientifically supported and intentional. Your decision should be based on the best available science, guidelines, and directives, and your process should be done with care and attention to ensure your end product matches your decision. Stress can impact your ability to make decisions. A little stress is normal, but everyone has a point that tips them into detrimental effects. At the extreme, stressors can pile on to create overwhelm, or task saturation, which can impede your warning abilities. Understanding the common stressors in warning operations can help you prepare for and mitigate them. You can't control most of the stressors, but you can take steps to mitigate the stressors or their effects on you, both during and after an event.

For Additional Help

Check with your facilitator
(typically your SOO)

Send questions to RAC Help
and/or WOC Human Factors
email

nws.wdtd.rachelp@noaa.gov
nws.wdtd.humanfactors@noaa.gov

Notes:

For additional help, check with your training facilitator (typically your SOO) or send your questions to the RAC Help or WOC Human Factors email address on this screen. You may click "Exit" to exit the module.

Team Communication in Warning Operations - Speaker Notes

Communication and Team Dynamics
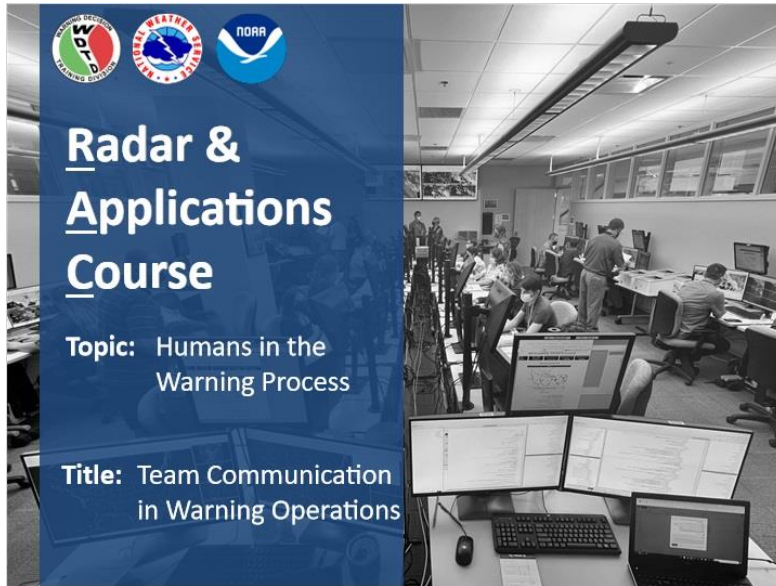
Notes:

Welcome to the RAC topic on Humans in the Warning Process. This module will cover communication and team dynamics during warning operations.

Learning Objectives: After completing this module, you will be able to:

1. List characteristics of effective communication.

2. Identify barriers to effective communication.

3. Choose pieces of information that are critical to communicate during warning operations.

4. Given examples on video, differentiate effective and ineffective team communications.

Team Communication Matters!

Notes:

Team communication matters! This slide has a video set to music that shows team communication in action.

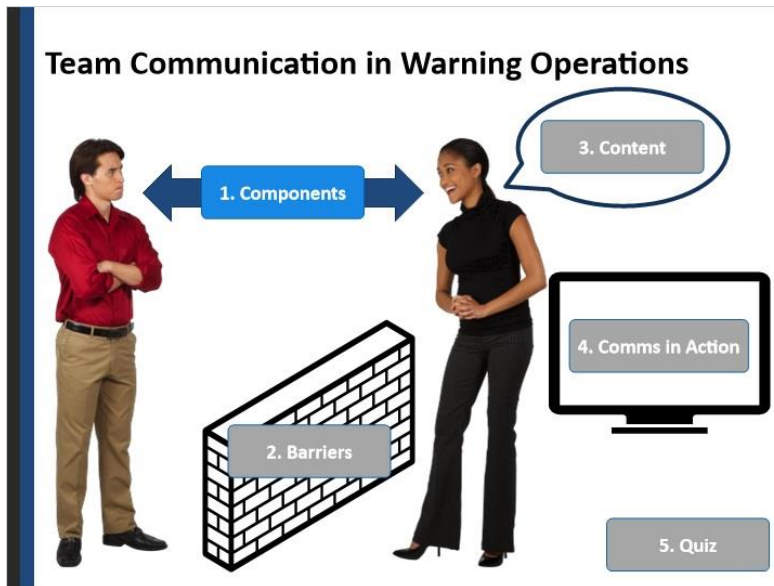# Communication in Warning Operations

Notes:

In addition to you, the human in the warning process, you work in a team of many humans in your office. Communication among that team is inseparable from and essential to the warning process. Warning operations are not just about clicking the right buttons and drawing the shapes. In warning operations, communication within the office is as critical to the warning process as the radar analysis and warning methodology.

Please click on the "Resources" tab in the upper right of this window and download the document titled "Team Communications Activity Sheet." There are a few places as we go through this module where we will ask you to write down your reflections in this document. If you are a RAC student, we want you to print it out and bring it with you to the RAC Workshop that you'll be attending soon so that we can talk about these reflections as a group. If you're taking this as a part of WOC Human Factors, we also want you to do the worksheet exercises, and you can talk it over with your training officer, others taking WOC Human Factors, or even with us, if you'd like. So, download that document and save it to your local computer or drive, or print it out and get a pen.

On page 1 of the handout, you'll see a space to reflect on this question: What are some situations in warning operations that you can think of where effective communication in your office is critical? Please write down 2 or 3 examples before you click "next" in this module to move on.

Image credit: Articulate

Team Communication in Warning Operations

Notes:

Let's explore team communication in warning operations. Click on the blue numbered boxes to visit each section. We'll start with the components of successful communication, then address barriers to communication in warning operations. Next, we'll go over the content of what is essential to communicate during warning operations. After you have visited those three topics, take a look at some examples of communication in action, for better or worse. Finally, click on the "Quiz" button to take the quiz and complete the module.

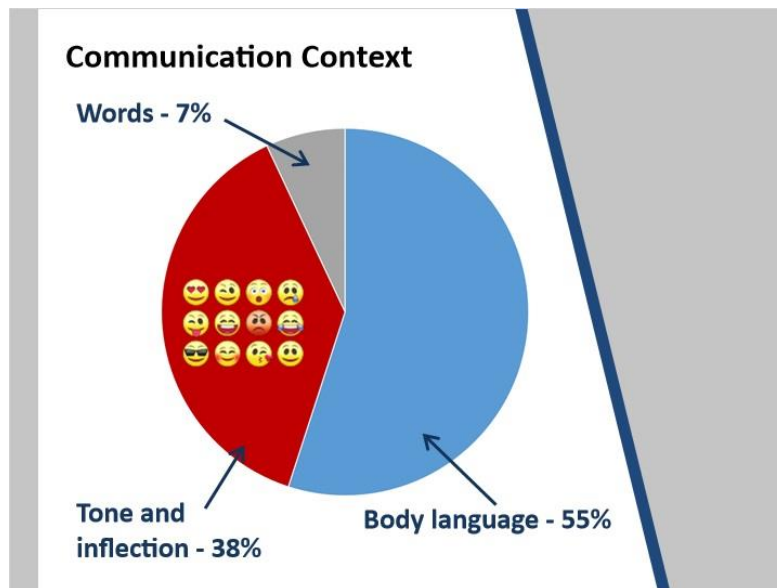## Components of Effective Communication
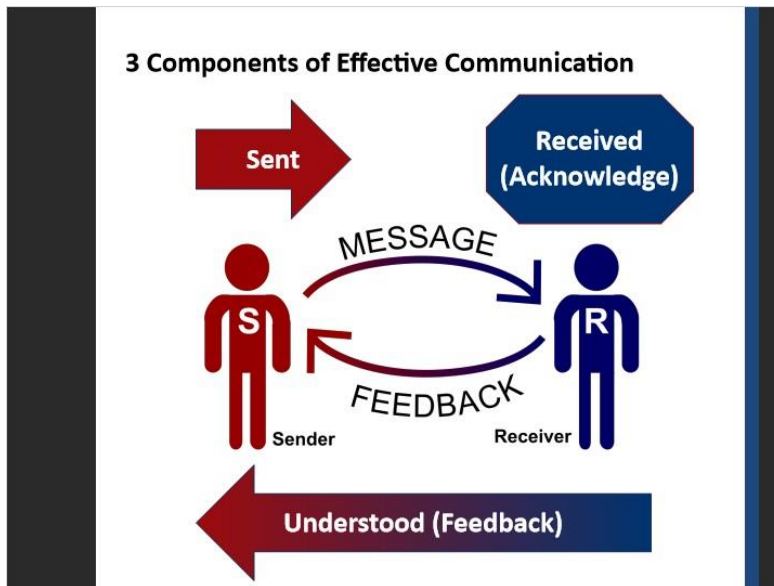
Notes:

Communication is effective when the message is sent, received, and understood. Communication is a loop, not in one direction. But how does the sender know if the message was received and understood? The receiver has to acknowledge receiving the message and give feedback to the sender that makes it clear that the sender's message has been received and understood.

There are a number of ways to acknowledge someone's communication. The most effective way is to echo or paraphrase what you heard (as in, "Tornado near Smithville, got it!") You can say a quick verbal (like "OK, thanks, got it, yep"). You can use a nonverbal cue or gesture, if you're sure the sender will see it (like a wave, thumbs up, or fist pump). If you say something and get no feedback, you should assume that your message was not received – but also, make sure you are looking and listening for that acknowledgment and feedback.

Image via Wikimedia:
https://commons.wikimedia.org/wiki/File:BasicElementsInterpersonalCommunicationsSmallvector.svg

Communication Context

Communication Context

Words - 7%

Tone and inflection - 38%

Body language - 55%

Notes:

The words alone that we use convey only 7% of the meaning to our listeners! Tone and inflection provide 38% of the context, which is why it is important to make sure your tone is intentional and matches the message you are trying to convey. Even vocal pitch matters, as studies find that those who speak in a lower pitch are perceived as more authoritative and more competent than those who speak at a higher pitch – a real bummer for people whose vocal pitch is naturally high. Body language provides 55% of the context of our message. This can include posture, hand gestures, facial expressions, and eye contact. For instance, you might have heard before that crossing your arms can imply being closed off to communication, and so can turning away from a speaker. Hand gesturing can imply enthusiasm and engagement, though some specific gestures, like pointing or hand blocking, can convey aggression or unwillingness to listen. The important takeaway here is to remember that it's not just what you say - it's how you say it.
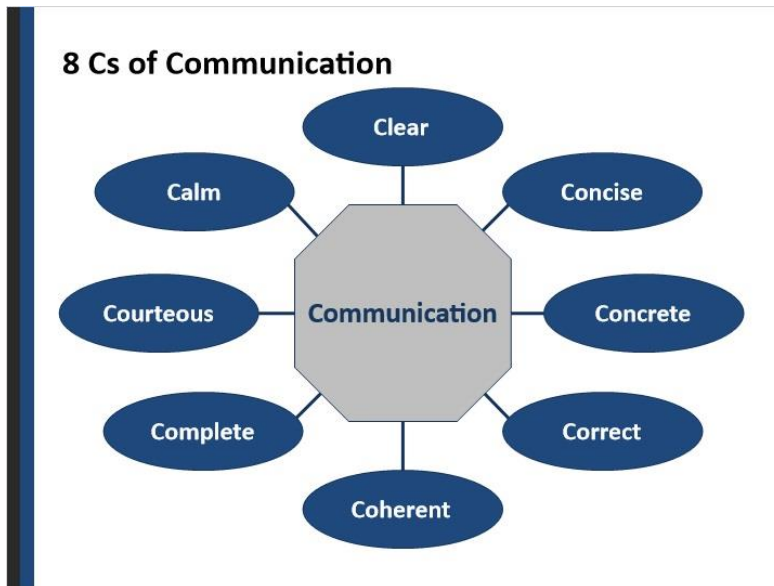
By the way, what about text-based communication like chat and text messaging, where we lose the important context of body language and tone? Believe it or not, emojis can help put tone back into the message and aid its interpretation. Just don't get carried away :) <smiling face>.

https://online.utpb.edu/about-us/articles/communication/how-much-of-communication-is-nonverbal/

https://sundial.csun.edu/81949/arts-entertainment/lifestyle/student-voices-do-emoticons-influence-the-way-we-communicate/

Image: Wikimedia https://commons.wikimedia.org/wiki/File:Emojis.png

Cs of Communication

8 Cs of Communication

Clear · Concise · Concrete · Correct · Coherent · Complete · Courteous · Calm · Communication

Notes:

It might help you to remember and make a habit of the "8 Cs of Communication": be clear, concise, concrete, correct, coherent, complete, courteous, and calm. In warning operations, where folks are often under high stress and receiving multiple inputs, it is helpful to provide information that gets to the point, relays accurate information, and maintains a supportive work environment.

7 Cs of Communication from https://www.mindtools.com/a5xap8q/the-7-cs-of-communication – with "calm" added by WDTD staff.
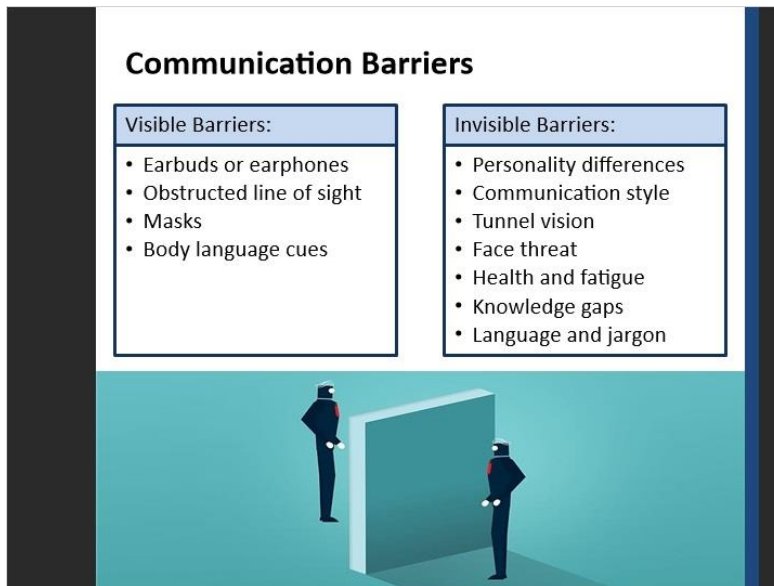
Communication Barriers
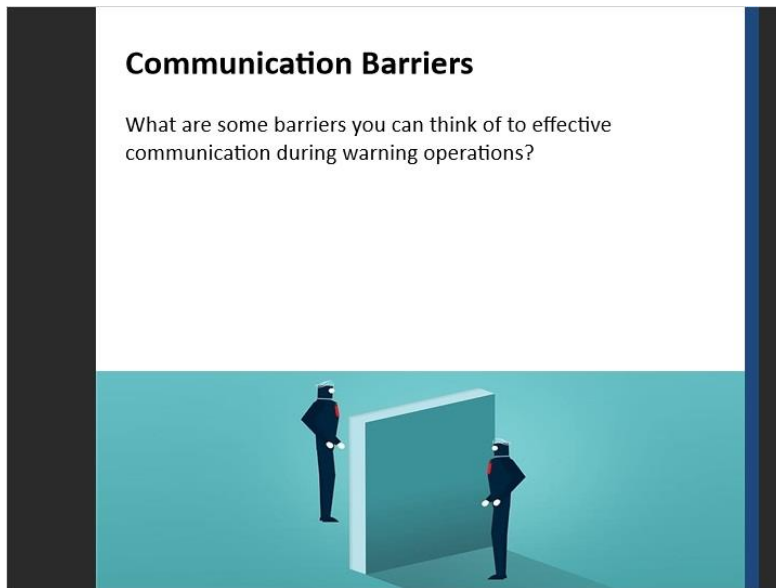
Notes:

Barriers are obstacles, whether real or perceived and whether intentional or inadvertent, that make communication more challenging. Let's go back to your worksheet, on page 2. What are some barriers you can think of to effective communication during warning operations? Try to list 3 to 5 barriers. Click "Next" when you're done and ready to move on.

Image credit: Piqsels

Communication Barriers

Notes:

There are many possible communication barriers. Here are just a few examples, broken into the categories of what we can see and what we can't.

Visible barriers are the things that physically or visually block communication in some way. Earbuds or earphones in an office cover your ears and at least give the appearance that you don't want to hear incoming communication from people in the room. It can be challenging to communicate with teammates when your line of sight is obstructed, such as by monitor stands. Face masks, though important for protecting health, also cover our lips and make it hard to read facial expressions, something we should keep in mind when we wear them. And finally, those body language cues can be a barrier, too – such as turning away, crossing our arms, shaking our head, rolling our eyes, or putting up a "talk to the hand" gesture.

Invisible barriers can be harder to trace and find, and there are far more examples than the few we've listed here. One difference can be in personality types, such as an introvert and an extrovert trying to communicate with each other, or one person who thinks more in details with another who thinks more in the big picture. Styles and preferences come into play, too - for example, one person might say something in a shorter and to-the-point style, while another provides a lot of qualifying or questioning statements. With tunnel vision, a person might be so focused on the task in front of them, like their AWIPS screen, that they don't really receive and understand the message sent to them. Face threat is a common communication barrier, when one person holds authority or power over another and creates an environment where the first person does not feel empowered to speak up. Health and fatigue factors can be invisible and important, because a person who is tired or doesn't feel well can be distracted from sending or receiving messages. Knowledge gaps can create a barrier in many ways, as well, when one communicator assumes that the other has knowledge that they do not. And finally, both language and jargon can be barriers to a person understanding the words being communicated.

Image credit: Piqsels

Communication Barriers

Overcoming Communication Barriers

For each barrier you wrote down on your worksheet, think of ways you can solve or overcome them.

We will discuss these as a group at the RAC Workshop. Truly stumped? Write that down, too, and see if the group can help!

Notes:

Now that you've thought about some of the barriers to communication, let's think about how to overcome them! For each barrier you identified on your worksheet, jot down a way to solve or overcome the barrier. You will discuss these either as a group in the RAC workshop or with your training facilitator. Truly stumped? Write that down, too, and see if discussion can help. Click "Next" when you're ready to move on.

Image credit: Wallpaper Flare

Content of Essential Communication in Warning Operations

Notes:

You've already thought about situations in warning operations where effective communication is critical. Let's go back to page 1 of your handout and look at the bottom half: What pieces of information are critical to communicate among your team during warning operations? Take time here to jot down a good 4 to 6 things. When you're done, click "Next" to continue.

Image credit: Articulate

Content of Essential Communication in Warning Operations

Content of Essential Communication During Warning Operations

What are 4-6 pieces of information that are critical to communicate among your team during warning operations?

- Hazard potential for the event
- Team roles
- Sectorization
- Warnings issued
- Reports received
- Elevated IBW tags
- Overlapping hazards
- Team support

Notes:

Here are some of the things on our list of what to communicate during warning operations. It's important to get everyone on the same page regarding the hazard potential for the event – in other words, the risks for tornadoes, hail, damaging winds, and flash flooding. The whole office team should communicate about who is filling which roles within warning operations, and if there is more than one warning meteorologist, how they will sectorize the storms now and as the storms evolve. Warning meteorologists should call out when they've issued a new warning, and those who receive reports should relay them to the warning meteorologist for that sector. Per the directives, and as you will learn in the module on impact-based warnings in the Warning Fundamentals topic, the decision to upgrade an IBW tag is a team decision, particularly for tornado and flash flood emergencies. Overlapping hazards are critical to communicate, such as when tornado and flash flood warnings intersect, so that calls to action and safety messaging are appropriate for both hazards. And finally, a hallmark of strong communication in an office is supportive communication among teammates - checking in on each other's well-being, offering help when one teammate has the capacity to offload something from another, and giving supporting and affirmative feedback (as in, "Great job on that warning!").

Image credit: Articulate

Team Communication in Action

Team Communication in Action

Notes:

Now that you've learned about the components of effective communication, barriers to communication, and the content to communicate during warning operations, it's time to look at some communication in action! We are going to show you a series of videos. For each video, we'll ask you to take notes on the blank 4th page of your worksheet on either the not-so-ideal communications practices you see or on the ones that are working well.

Team Communication in Action

Notes:

It's easy for communications to go awry, and you'll see a few examples in this first video. Click to play the video. As you watch it, take notes on instances you observe of less-than-ideal communication in a warning environment.

Team Communication in Action
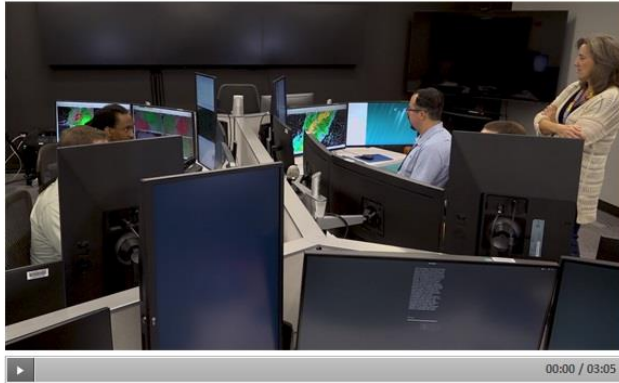

Team Communication in Action: Take 1

- Reports not clearly communicated
- Criticism
- Roles unclear
- Silence
- Off-topic distraction
- Interruptions

Notes:

As we watched this take, we saw several instances of reports not being clearly communicated and roles being unclear. We heard staff criticize each other, interrupt, or sit in silence. We heard off-topic conversations, which is fine in quiet weather but not great in high-impact warning operations.

Team Communication in Action

Team Communication in Action: Take 2

00:00 / 01:44

Notes:

Click to play the video for another look at communications going awry. Just like with the previous video, as you watch it, take notes on your worksheet on instances you observe of less-than-ideal communication in a warning environment.

Team Communication in Action

Notes:

As we watched this take, we saw a few examples of body language impeding communications, such as headphones and feet up on the desk with a body positioning away from the team. We heard silence again, as well as some unclear mumbling, and we heard communication go unacknowledged. We saw face threat and criticism from someone with authority, and we heard how unclear sectors led to two warnings on the same storm.

Team Communication in Action

Team Communication in Action: Take 3

00:00 / 03:05

Notes:

Now, let's watch communications in action that are closer to what we'd consider to be best practices. View the video, and as you do, take notes on your worksheet of examples of helpful communication in action.

Team Communication in Action

Team Communication in Action: Take 3

- Checking team wellness, taking brain breaks, offering help
- Clear roles and sectors
- Calling out and acknowledging warnings
- Coordinating IBW tag upgrade
- Asking for input
- Relaying and acknowledging reports

Notes:

Finally, we see strong communications in action with this team! The team starts on the right foot with a wellness check, followed by clearly delineating roles and sectors. The team members call out and acknowledge each other's warnings and coordinate an upgraded IBW tag, and they relay and acknowledge incoming reports. Team members ask each other for input. It ends on a wellness note, with a team member taking a brain break and then offering to help cover while someone else does the same.

Team Communication in Action

Team Communication, In Summary

List 3 communication challenges in your office that are in your sphere of control or influence that you can work on at RAC and at your office.

What can YOU do?

- Practice accountability - QBQ
- Look for and be part of solutions
- Choose every-level leadership

Concern
Influence
Control

Notes:

Remember, you can't control how others communicate, but you can control how you do. You can control your reaction to a situation and the choices that you make because of that situation. This is the sphere of influence and sphere of control that we talked about in the "Human Side of Warning Operations" module.

The "Question Behind the Question" (or QBQ) is the concept of asking questions to take accountability for finding a solution to a problem, rather than waiting for someone else to fix it. This includes the hard step of recognizing that you might be part of the problem and need to look for ways to be part of the solution instead. There is a book about QBQ that is linked in the "Resources" tab, if you'd like to read more. You'll also look more into this concept in WOC Human Factors when you go through the root-cause analysis exercises.

Leadership is a behavior, not a position. Every-level leadership is about the actions that you choose to take and how you move things forward regardless of your position.

We have one final question for you on your worksheet. List 3 communications challenges in your office that are in your sphere of control or sphere of influence that you can work on. If you're comfortable sharing these, we might talk about them in our communications activities at the RAC Workshop if that applies to you. WOC Human Factors students can talk them over with their training officer or with the WOC Human Factors instructors. If you're not comfortable sharing them, then you at least have a reminder to yourself of what you can contribute to create a supportive team environment.

Team Communication in Action
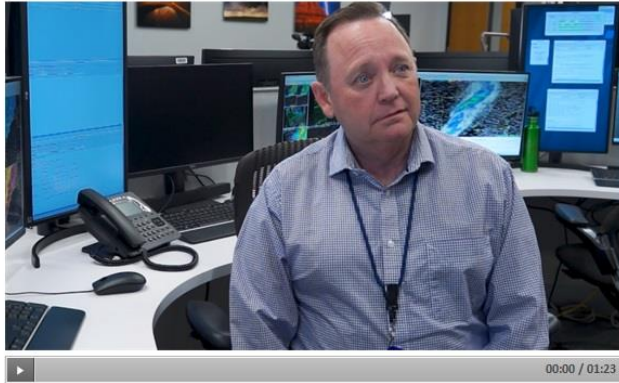
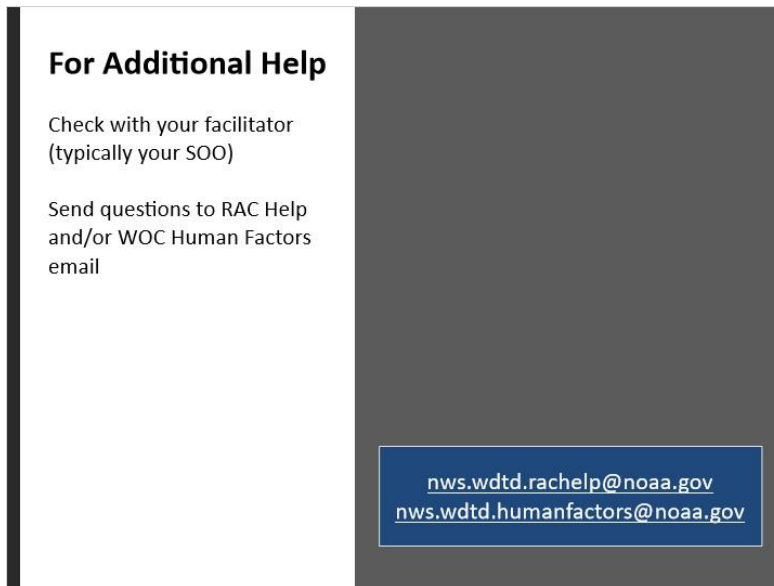**Notes:**

Click on the video for an amusing reminder that not everybody in an Office perceives a situation in the same way.

For Additional Help

For Additional Help

Check with your facilitator
(typically your SOO)

Send questions to RAC Help
and/or WOC Human Factors
email

nws.wdtd.rachelp@noaa.gov
nws.wdtd.humanfactors@noaa.gov

Notes:

For additional help, check with your training facilitator (typically your SOO) or send your questions to the RAC Help or WOC Human Factors email addresses on this screen. You may click "Exit" to exit the module.

Addressing your Health During Warning Operations - Speaker Notes

Addressing Your Health During Warning Operations

Notes:

Hello my name is Melissa Lamkin, and welcome to this lesson on addressing your health during warning operations.

Homepage Addressing Your Health During Warning
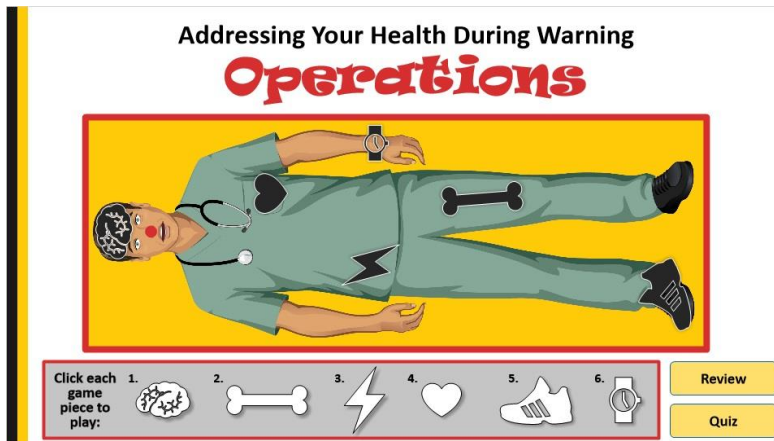
Notes:

Welcome to the homepage for this lesson. You will notice that we are going to play the game of operation, and there are 6 game pieces below. You must click through each of these game pieces before moving on to the review and quiz.

Importance of Maintaining Physical and Mental Health
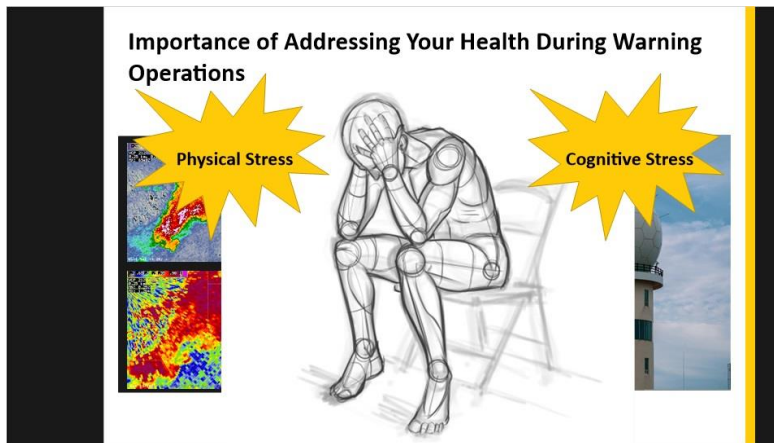
Notes:

Up to this point, you have learned how to use the physical tools you need to be successful during warning operations, but do you know how to help yourself during these high stress events? The stress of prolonged warning operations can take a toll on your health and your occupational wellness. You may not even notice the signs of physical or cognitive stress while working in a high stress environment until the event is over.

Importance of Addressing Your Health During Warning Operations

Notes:

So why should you care about your physical health during warning operations? Research shows that it is important to maintain your occupational wellness to maintain or improve your overall health. Occupational wellness deals with the impact of your work on your health, and it is your responsibility to make sure that you are fit for the work you do. Occupational wellness also deals with prevention of work related injuries and diseases, and this is why it is crucial to develop healthy habits in your workplace, especially during stressful or high impact warning operations.

Importance of Addressing Your Health During Warning Operations

Notes:

There is a lot of research demonstrating that the unhealthy habits common during warning operations have a negative impact on your ability to process and retain information, and it is easy to fall into unhealthy habits while working these high stress events. Chronic stress is known to cause memory impairment, and can even cause permanent change to your brain structure. Now, not all stress is a bad thing, and research shows that minor stress can actually improve cognitive function, but prolonged stress, without addressing steps to mitigate its effects, can short fuse your cognitive abilities, which ultimately impedes the quality of your performance.

Signs of Stress

Signs of Physical and Cognitive Stress

Lack of Concentration	Fatigue
Body Aches	Blurred Vision
Tension Headaches	Many, many more
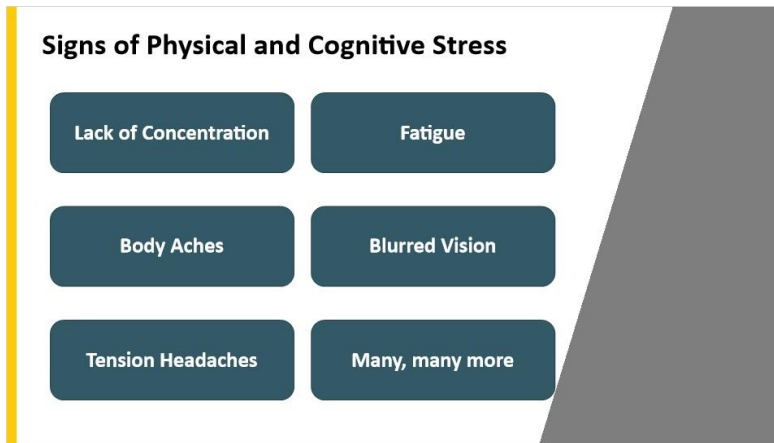
Notes:

It is important for you to be able to recognize the signs of physical or cognitive stress in a high stress environment, as well as identifying the root causes of stress. Common symptoms of physical or cognitive stress include lack of concentration, fatigue, Body aches, blurred vision, tension headaches, and many more. The result of this stress will ultimately impact your performance in operations, and can result in a decrease in the quality of your warning decisions. And as we all know, it is important that you are performing at your peak when making decisions to protect lives and property.

Physical and Cognitive Stress

Understanding the Causes of Physical and Cognitive Stress

- Sitting Too Long
- Poor Posture
- Shallow Breathing
- Eye Strain
- No Breaks

Notes:

Please take a moment to select some of the common causes of physical and cognitive stress during warning operations: You must click through all causes in order to advance to the next slide.

Sitting Too Long (Slide Layer)

Sitting too long: One common cause of physical stress is sitting too long. Lack of movement over an extended period of time can decrease blood flow and circulation which limits the flow of oxygen to your brain. This can limit brain function resulting in fatigue, reduced working memory, and inhibited cognitive functions.

Poor Posture (Slide Layer)

Poor posture: A similar stressor is poor posture. Sitting at your desk for hours on end with poor posture can lead to body aches, tension headaches, and fatigue, and these symptoms can follow you well beyond your shift.

Shallow Breathing (Slide Layer)

Shallow breathing: Another symptom of a high stress environment is shallow breathing. This can lead to oxygen deprivation which can cause lack of concentration, poor memory, cluttered thoughts, and blurred vision. Not breathing properly can also lead to fatigue, hindering your performance during warning operations.

Eye Strain (Slide Layer)

Eye Strain: An additional source of both physical and cognitive stress during warning operations is eye strain. This is caused by extended periods of uninterrupted screen time which can cause headaches, lack of concentration, poor memory, and blurred vision.

No Breaks (Slide Layer)

Understanding the Causes of Physical and Cognitive Stress

Sitting Too Long

Poor Posture

Shallow Breathing

Eye Strain

No Breaks

No Breaks

- Affects all areas of health
- Limits ability to process and retain information

No breaks: Sedentary activity is known to be detrimental to your health, and failing to take consistent breaks to stretch, hydrate or simply use the restroom, can not only have negative impacts on your ability to process and retain information, it can also have long lasting impacts on your body.

Ergonomics

Notes:

Ergonomics is the study of how to improve the fit between the physical demands of the workplace and the employees who perform the work, and acknowledging the best ways to set up your workstation ergonomically is very important to maintaining your health during warning operations

The overall goal is to take a proactive approach to reducing physical strain and reducing excessive effort, which is crucial during high stress situations.

You don't want to wait to find a problem in your physical workspace before you address it. Minimize factors that may contribute to musculoskeletal disorders as early in the process as possible, and we encourage everyone to be proactive and promote a healthy workplace.

We know that the tools and equipment available will vary from office to office and from workstation to workstation, but we can still set ourselves up for success by working with what you have available.

Improving the fit of your workspace often involves some trial and error, and it will require effort before each and every shift due to the nature of sharing workspaces within the NWS.

Remember, the differences in our abilities is what makes us valuable, the same considerations should be made for physical differences. If you need accommodation beyond what is typically available at a workstation, ask your management for help. We will talk about some best practices on the next slide

Ergonomics

Notes:

Click through the common recommendations for setting up your workspace at the beginning of every shift.
Chair & posture evaluation:
Make sure your chair height adjustable, and you want your feet to rest flat on the floor (or on a foot rest) with your knees bent at approximately 90-120 degree angle
Your shoulders should be relaxed, elbows bent at 90-120 degrees, arms and hands comfortably positioned at your keyboard, with your wrists straight. Your ears, shoulders, and hips should be lined up vertically
You want to be positioned square in front of monitors and keyboard (not twisted or contorted in any way)
Work surface:
With your chair adjusted properly, your work surface should be approximately elbow level (with relaxed shoulders).
There should be a 90 degree angle between forearms and upper arms with elbows close to your body and your wrists should be in line with forearms when typing.
You always want your mouse to be at the same level as your keyboard, and ensure that your most used items are within reach.
Monitors:
You want to make sure the viewing distance is approximately an arm's length away, and the top of the monitor is at or just below eye level so you are not straining to look up at your screen.
Make sure you adjust the contrast or brightness of screen level as room light changes. This may have to be done more than once a day.

Reducing Stress

Notes:

Okay now you've set up your workstation for your shift, what else can you do to reduce stress during operations?

Let's look at some stress management skills proven to increase your occupational wellness during warning operations:

Focused breathing is vital to your physical and emotional health. Oxygen deprivation causes lack of concentration, poor memory, cluttered thoughts, and blurred vision. Focused breath work can increase your alertness, concentration, and give you a feeling of invigoration.

Research concludes that frequent breaks in sedentary activity improve cognitive function. It is important to get up or move around about once an hour. Sedentary activity can decrease circulation and ultimately reduces the blood flow and oxygen to your brain.

You also want to maintain your normal routine outside of the office as much as possible as this has been shown to help you better sustain your physical and mental health during warning operations. This is especially true when it comes to your exercise routine, even if it is a shorter practice on days before/after a high impact event.

It is also important to take a break in screen time when you can get it. You can easily strain your eyes when they are focused on your computer screen for hours on end. We know that your job function may require constant monitoring of your computer environment, but a ten second break every thirty minutes or so can be greatly beneficial to lowering your cognitive stress.

One quick and easy way to incorporate these healthy habits into your warning operations is to work in a "brain break" every hour or so, or when your job duties allow.

Remember, It is crucial to develop Healthy habits to fall back on when you find yourself in a high stress environment.

Brain Breaks

Benefits of a Brain Break

- Decreases stress
- Improves cognitive function and memory
- Reduces eye strain
- Decrease chronic body aches and illnesses
- Improves mood
- Optimizes performance

Steps to take a Brain Break ➡
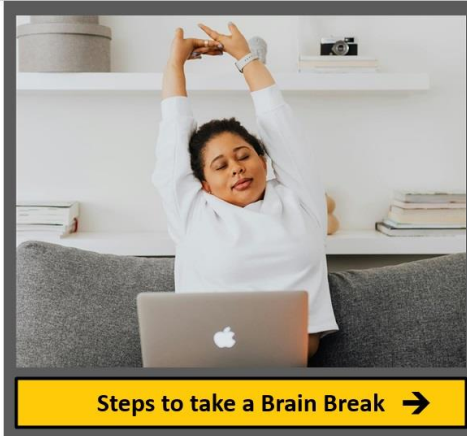
Notes:

Let's talk about brain breaks! There are many benefits to taking frequent breaks to manage your stress, and these methods have proved to enhance your overall cognitive function, decision making, memory, and problem solving skills. You can improve eye strain, decrease chronic body aches and illnesses, and even improve your mood. Ultimately, and more importantly, addressing the causes of stress in your warning operations will improve your productivity. Reducing stress allows you to perform at your peak, and do your job better. Something as simple as taking the time to perform an effective brain break every hour can improve your overall occupational wellness. In just a minute, you can complete a brain break with just a few steps to improve both physical health and cognitive ability, and you will be back to work and productive in no time at all. Click the arrow to learn the steps to take a brain break.
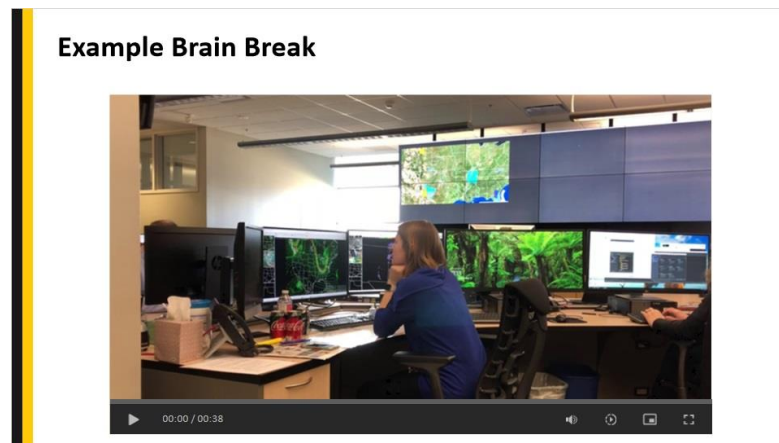
Brain Breaks

Example Brain Break

Example Brain Break

00:00 / 00:38

Notes:

Here is an example video of a brain break. It highlights that this sequence can be accomplished in just a minute or two, and that a brain break does not have to be a complex series of steps in order for it to be effective. Please click play to start the video.

Review

Notes:

Warning operations are serious and can be very stressful, but that does not mean you need to stop being a human being. You have to take care of yourself and your occupational wellness before you can take care of others. It is crucial to develop healthy habits to fall back on not only during the high stress events, but also during your day to day operations. And remember, taking a break is a beneficial and necessary part of your warning operations. We recognize that this is a culture shift for the forecasters, in addition to a new skill set, and in order for these tools to be effective, it is up to you to create healthy habits and incorporate these skills into your everyday routines.

Questions?

Notes:

That concludes this module. Thanks for listening! If you have any questions, please talk to your training facilitator or email the WOC Human Factors list.