

Science Communication

Guidelines for science communication

Rui Mata, HS 2025

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Course structure

Session information

Sessions take place Thursdays, 8.15–9.45, Biozentrum, Hörsaal U1.131.

#	Date	Topic	Instructor(s)	Slides	Exercise
1	18.09.2025	What is science communication?	Mata		
2	25.09.2025	Models and elements of science communication	Mata		
3	09.10.2025	Scientific uncertainty and trust in science	Mata		
4	16.10.2025	Guidelines for science communication	Mata		
5	23.10.2025	Science communication gone wrong	Mata		
6	30.10.2025	Why do we visualize?	Hil/Lachenmeier		A
7	06.11.2025	Structured content	Hil/Lachenmeier		
8	13.11.2025	Content dimensions and categorization	Hil/Lachenmeier		B
9	20.11.2025	Networks and relationships	Hil/Lachenmeier		C
10	27.11.2025	The identity of a dot	Hil/Lachenmeier		D
11	04.12.2025	Visual language and cultural context	Hil/Lachenmeier		E
12	11.12.2025	Areas and hierarchies	Hil/Lachenmeier		
13	18.12.2025	<u>Exam</u>			

Goals for today

- Become familiar with best practices for developing science communication initiatives
- Become familiar with guidelines and recommendations for science communication
- Discuss science communication during crises

HOW DOES ONE GO ABOUT DEVELOPING A SCIENCE COMMUNICATION EFFORT?



Getting started (Bertemes et al.)

1.Scoping Look at what people are saying and the underlying assumptions.	<i>How is your research topic being talked about in the public domain? How well is information being used? What are the misconceptions? What context is missing? What are the key underlying assumptions?</i>
2.Involving people Work out the significance for different groups and how to involve them.	<i>Which individuals and groups are most interested, concerned or involved in the issue? Who isn't but should be? Who is driving the public conversation? Who should be part of the project team? Who should you invite to user testing? Who can help you share your findings?</i>
3.Planning Propose content and formats that are relevant for the people accessing them.	<i>What is the best format to communicate your research: website, graphics, video, events, publications? What is the key content and context you need to include? What language and style should you use?</i>
4.User testing Develop your material together.	<i>How can you run user testing? Who should be involved? Which parts of your output should you user test? What questions can you ask?</i> Use the feedback from user testing to re-plan your science communication activity.
5.Dissemination Continue to engage people and use feedback.	<i>Who should know about your research findings? Who will talk about and publicise them? How can you share them with the media, with professionals, with the public?</i>

Getting started (AAAS)

Inputs	Participants & Activities	Short-term Outcomes	Medium-term Outcomes	Long-term Outcomes	Vision
<ul style="list-style-type: none"> Research Evaluation Practitioners Leadership programs Support to scientists Communication & engagement training Institutional support for scientists and publics Funding (including Broader Impacts and other funding requirements) Strategy of communication 	<p>Participants</p> <ul style="list-style-type: none"> Scientists Publics Practitioners <p>Activities</p> <ul style="list-style-type: none"> Public Dialogue Approaches Policy Deliberation Approaches Knowledge co-production approaches University-led, cooperative engagement approaches Everyday engagements Note: see typology for more details and examples 	Scientists humanized/ publics individualized	Build trust between publics and scientists	Build trust between publics and scientists	Sound, evidence-informed public decision-making on science-related issues
		Positive affect	Longer-term positive affect about science	Long term positive affect	Dialogue on critical science- society issues embedded in public discourse
		Increased sense of public engagement identity	Shared appreciation of public engagement Do more & better engagement (more able and comfortable) Build relationships to continue public engagement with science	Engagement is part of work and life (proposals, plans) in strategic and reflective ways Institutional change	Influence individual and collective action and behavior Influence policy Influence research agendas
		Intention to act or engage again Increase skills/ability to engage civically Increased self-efficacy	Act on something from engagement Be ready to advocate/amplify Increased preparation to engage between science and society	Share scientific or social content and understanding with networks	Research that is responsive to societal needs and interests Resilient STEM workforce
		Increased interest and motivation around topic	Increased willingness to consider science-society intersections	Improve goals or focus of research Hear/understand others' views about science	Science embedded in daily life
		Increased understanding of the process of science and social institutions	Increased ability to discuss science-society intersections	Frame science to be relevant to publics Framing knowledge outcomes for use by scientists and decision- makers	

American Association for the Advancement of Science

<https://www.aaas.org/resources/communication-toolkit/communication-fundamentals>

Guidelines and Recommendations

PREPARING TO DO MEDIA WORK

- Find your press officer – they can give you help and advice on doing media work. Keep their name, and phone numbers to hand in case a journalist calls you. You should also make sure that your press officer has your **mobile number**. Borrow one if needed!
- If you expect to be doing a lot of media work in the future ask your press officer whether they can get you some **media training**.
- The SMC offers you the chance to attend our 'Introduction to the News Media' event, and give support and advice when your area of science hits the headlines.
- Practice speaking about your work in **jargon free** language to non-scientists (try writing about your work in 150 words). Do not use acronyms or measurements that the public may not understand.
- If you have an important paper coming out, ask if the journal is going to issue a **press release**. If it is, make yourself available for interviews before and after the publication date.
- Before speaking to a journalist, decide on **3 key messages** that you want to put across in the interview. If you are asked a question that does not relate to your 3 points, try to get back to the subjects you want to cover using phrases such as 'what we must remember is...', 'the really important point is...', 'interestingly...'
- Is your research at all **controversial**? If so, plan ahead and be prepared to answer tricky questions. Ask the SMC for help if you need it.

"THE WEST AFRICAN EBOLA VIRUS OUTBREAK UNDERSTANDABLY GENERATED A FRENZY OF JOURNALIST AND PUBLIC INTEREST. THE OPPORTUNITY TO SPREAD ALARMIST MISINFORMATION WAS IMMENSE. BUT BY CONSTANTLY ENGAGING WITH THE MEDIA, OCCASIONALLY AT SLIGHTLY UNSOCIABLE HOURS OF THE DAY AND NIGHT, WE WERE ABLE TO ENSURE THAT REPORTING WAS WELL-INFORMED AND BALANCED.

Prof Jonathan Ball, Professor of Molecular Virology,
University of Nottingham

Firstly, find out why the journalist is phoning, what is the reason for writing this story now (their peg)? You should also check where the journalist is calling from, are they a newspaper, radio or TV journalist? And which programme or publication?

NEWSPAPER

- Find out what the journalist's **deadline** is – it could be in 10 minutes and they need you to respond immediately.
- You are entitled to **phone the journalist back in a few minutes**, giving you you time to collect your thoughts – but make sure you phone them back in the time frame promised.
- You don't have to have the best publication record in the world to comment in the media. For the consumers of national news if you work in the area you are an expert.
- If the enquiry really isn't in your area, **recommend someone else** who might be suitable. Even if you don't have their contact details the journalists can find them through their press office or the SMC.
- Always take the **journalist's contact details**, so you can get back in touch if you think of something important later on.
- If you need **more information**, and there is time before the journalist's deadline, you can ask to see the press release or paper related to the story.
- Because of time constraints and issues surrounding editorial independence print journalists very rarely **check their copy** back with scientists, so don't expect to see the finished article before it is published.
- Remember that the **tabloids** have very large circulations (just under 2 million people in the UK buy *The Sun* every day compared to around 400,000 people who buy *The Times*) so by speaking to them you will be getting your message to a larger audience than by speaking to the broadsheets. In addition, the tabloid journalists produce some of the best and most accurate coverage of science issues in the media.

GENERAL POINTS ABOUT BROADCAST INTERVIEWS

- Will the interview be **live or pre-recorded**? Although live interviews may sound daunting they have the advantage of not being 'cut' before the broadcast.
- If you have to go to a studio the TV/radio station will often **send a car** for you or pay for you to get a taxi.
- Get the **contact details of the journalist** who is organising the interview.
- If you are doing an interview on a controversial topic, ask if you will be **head to head** with someone who has an opposing view point. If you are, and have time before the interview, try to find out about their views on the subject.
- If you are struggling with too many requests for interviews from journalists, ask your **press officer** for help. They should be able to take calls for you and help manage your interview schedule.
- When you are doing an interview try not to repeat back the questions to the interviewer. If possible, you should make your answers stand-alone, succinct statements.

"NO JOURNALIST WANTS TO BE SPOON-FED BUT THANKS TO TIGHT DEADLINES, A BROAD REMIT, AND THE NEED FOR OUR WORK TO RESONATE WITH AUDIENCES, WE DO NEED SOME HELP. AND SCIENTISTS CAN DO THAT BY FOLLOWING THREE BASIC PRINCIPLES.

- 1) EXPLAIN THEIR WORK WITH THE GREATEST POSSIBLE CLARITY**
- 2) KEEP LANGUAGE SIMPLE BECAUSE MOST PEOPLE WON'T UNDERSTAND DENSE TERMINOLOGY, OR CARE ABOUT IT**
- 3) JOURNALISTS ALWAYS HAVE MANY STORIES ON THE GO AT ONCE SO, WHEN THEY CALL, A SWIFT RESPONSE AND READY AVAILABILITY ARE ESSENTIAL."**

David Shukman, Science Editor, BBC News

Guidelines and Recommendations

Key Points	Description
Factual accuracy	Science communication should be conducted without exaggerations and without concealing risks
Clarity	Science communication should be conducted without distorting facts, even when complex research content is simplified
Societal Storytelling	Science communication should filter the diversity of information according to societal needs
Relevance	Science communication should be used as a didactic method to clarify factual content
Transparency	Science communication should name sources, cooperation partners, or any potential dependencies
Peer-Review	Communicating preprints should only occur when they are of significant public interest
Uncertainties	Science communication should always make the limits of statements and methods visible
Respect	Science communication should allow for open dialogue and respect for the positions of all parties involved

COMMUNICATING IN A CRISIS?

do's and don'ts



Communicating in a crisis



Communicating risk in public health emergencies

A WHO guideline for emergency risk communication (ERC) policy and practice

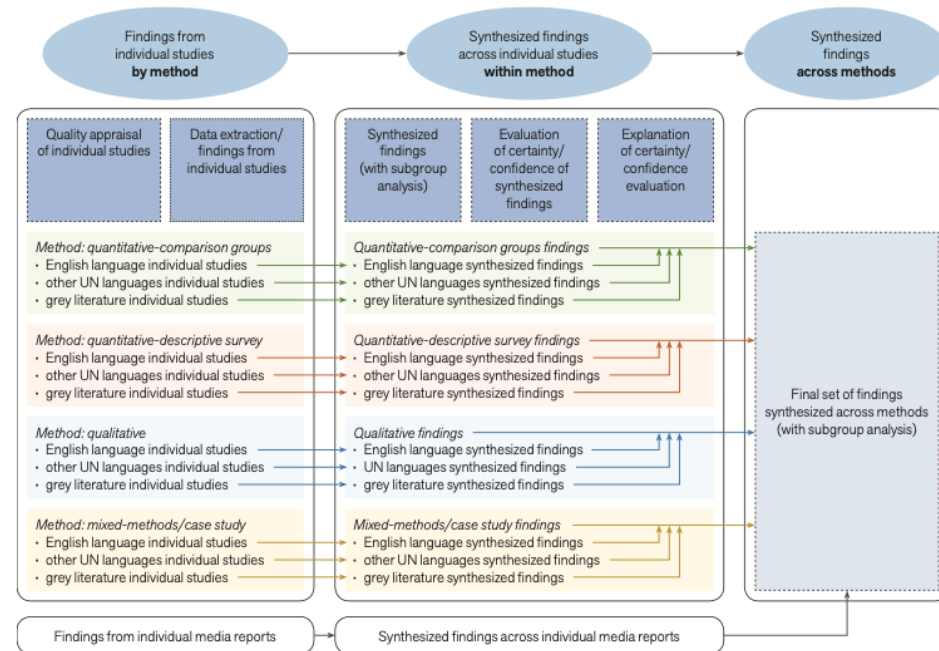
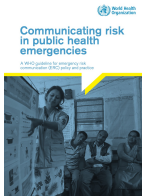


Figure 1. Summary of methods reviewers used to develop the evidence synthesis



Communicating in a crisis



A. Building trust and engaging with affected populations

A.1.: Trust Recommendation

To build trust, risk communication interventions should be linked to functioning and accessible services, be transparent, timely, easy-to-understand, acknowledge uncertainty, address affected populations, link to self-efficacy, and be disseminated using multiple platforms, methods and channels.

Strong recommendation
Moderate quality evidence

A.2.: Communicating uncertainty Recommendation

Communication by authorities to the public should include explicit information about uncertainties associated with risks, events and interventions, and indicate what is known and not known at a given time.

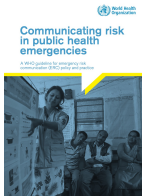
Strong recommendation
Moderate quality evidence

A.3.: Community engagement Recommendation

Identify people that the community trusts and build relationships with them. Involve them in decision-making to ensure interventions are collaborative, contextually appropriate and that communication is community-owned.

Strong recommendation
Moderate quality evidence

Communicating in a crisis



C4: Messaging Recommendations

C4.1. Risk should not be explained in technical terms, as this is not helpful for promoting risk mitigation behaviours.

Strong recommendation
Moderate quality evidence

C4.2. Consistent messages should come from different information sources and emerge early in the outbreak.

Strong recommendation
Moderate quality evidence

C4.3. Messages should promote specific actions people can realistically take to protect their health.

Strong recommendation
Moderate quality evidence

Communicating in a crisis

Check-list for trustworthy communication in a crisis:

The communicator (e.g., scientist, public health specialist, policy maker) should say

- ☐ 1. What they know (knowledge)
- ☐ 2. What they don't know (uncertainty)
- ☐ 3. What they are doing to find out (plans)
- ☐ 4. What can be done in the mean time to be on the safe side (self-efficacy)
- ☐ 5. That advice will change (flexibility)

Summary

- **Developing science communication initiatives:** Involves defining clear short- and long-term goals for communication, identifying target audience, and selecting the most appropriate channels (e.g., social media, press releases) to ensure the message is received and understood.
- **Guidelines and recommendations:** Effective science communication should be factual, transparent, respectful, and include discussion of uncertainty. Several guidelines and recommendations exist which is helpful but sometimes hard to navigate.
- **Communication during crises:** Successful crisis communication requires clarity and honesty. One should communicate what is known, what is not known, and what is currently being done to improve knowledge. In addition, it should be made clear what actions can be taken in the interim (e.g., self-protection) and that information is likely to be updated in the future.