

Guidance to help design effective and usable work procedures for health and social care teams



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Introduction

The purpose of this document is to provide health and social care teams with much-needed advice and guidance on the human-centred design of work procedures such as written instructions, checklists or flow charts during this period of “crisis management” in response to COVID-19 and to support the design and re-design of care services and new ways of working.

Implementation of the guidance will contribute to safer and easier to use procedures, which better support how people work and reduce risks to themselves, patients, carers and others.

This document outlines ten key guidance points that designers of procedures should address at all stages of its development, implementation and review:

1. What is a Work Procedure?
2. Ensure a Procedure is needed
3. Involve the whole team
4. Identify the hazards
5. Capture work-as-done
6. Make it easy to follow
7. Test it out
8. Train people
9. Put it into practice
10. Keep it under review

An explanation of the discipline of Human Factors and Ergonomics (HFE) and the sub-discipline of human-centred design are also provided.

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NES and CIEHF has assembled expert panels consisting of clinicians and healthcare managers, scientists and engineers, academics and researchers, quality improvement, human factors professionals and ergonomists to support the development of guidance for the human-centred design of a wide range of work procedures.

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Human factors and ergonomics

HFE is a discipline that examines the design of individual work system components (e.g. people and technology) and the interactions with each other, taking into account human capabilities and characteristics, with the goals of achieving optimum human safety and performance.

HFE experts are formally trained to design and adapt/reconfigure work systems to maximise individual and team performance under high-risk, high-stakes environments, while minimising the introduction of new significant safety risks or unintended consequences into the work system. Specialists use various conceptual approaches and methods to identify barriers and enablers to consistent compliance with any guidelines and protocols.

HFE specialists can inform the development of appropriate solutions to support individual and team performance in epidemic and pandemic situations. Some solutions can be highly practical and developed quickly with minimal resources, such as within hours or days (e.g. developing usable signage, checklists and procedures to support distributed or team cognitive work) with input from one or two HFE specialists. Other solutions may take longer and require a larger group of experts. For example, the HFE-informed web-based training development for donning/doffing personal protective equipment (PPE) during the Ebola epidemic took 10 days and required an interdisciplinary team of 40 experts.

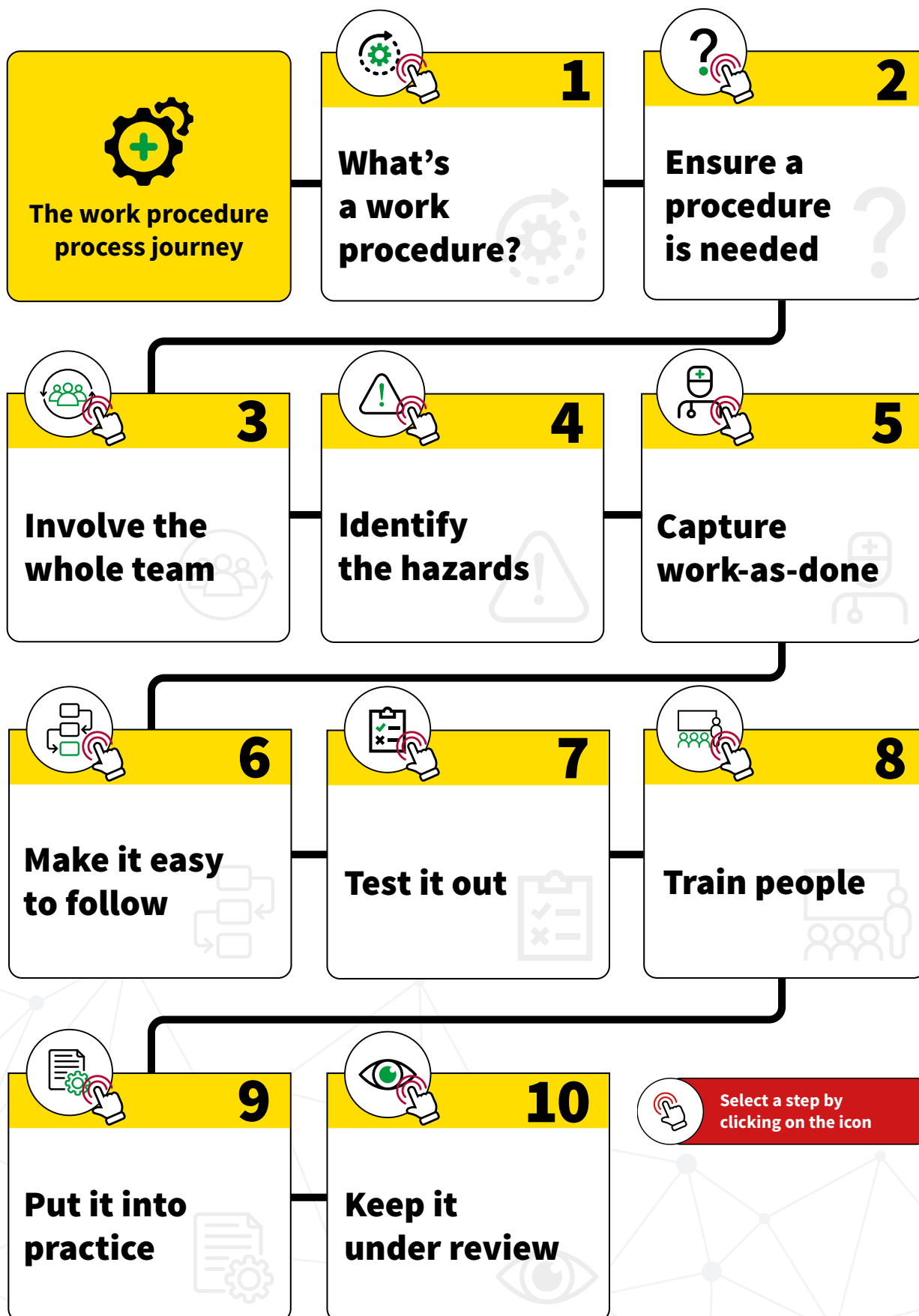
In the context of COVID-19, CIEHF specialists are using their collective knowledge to work with the health and social care workforce to produce rapidly developed guidance on designing work procedures that are safe and easy to use to support their work performance and reduce related risks.

Human-centred design

In this context, human-centred design is a process for ensuring that the needs, wants, preference, capabilities and limitations of the people who will use the guidance on work procedure design are the priority focus throughout every stage of its development, testing, implementation and review. Applying these principles ensures that the guidance is developed with and for the people who will use it so that the procedures they design are easier to use and help to reduce related stress or risks.

Ten key steps to design work better

Make your work procedures **safe** and **easy-to-use** for person-centred care



1. What's a work procedure?



- A logical step-by-step way of doing things at work, often in the form of written instructions, checklists, decision aids, diagrams, or flow charts.
- Sometimes they're known as standard operating procedures (SOPs) or maintenance procedures. They are distinct from 'clinical procedures' such as a biopsy test, epidural anaesthesia, CT scan or oxygen therapy.
- Procedures are useful for care teams to agree and standardise how things are done, reducing reliance on our memory, ensuring good practice is followed, and reducing risks (the chances of something going wrong) to as low as reasonably practical or possible for patients, ourselves, our organisations and others.
- Procedures are closely related to, but are slightly different from, policies that outline guiding principles, protocols that define procedures to be followed, or guidelines that contain evidence-based good practice statements. However, all of them would benefit from the same approach to design, introduction and use by teams and organisations.
- They are also distinct from training materials and technical manuals as they focus directly on the tasks to be followed without lengthy explanations on how to do it. They generally assume that the user has been trained or instructed and this is often recorded as a requirement before using the procedure.
- **Common and diverse examples of where procedures are useful include:**
 - Ordering and managing diagnostic tests
 - Team or individual handover situations
 - Donning, doffing and disposing of personal protective equipment (PPE)
 - Triageing patients in emergency departments
 - Taking blood from a patient
 - Hand washing
 - Using medical equipment
 - Telephone triage in general practice
 - Ordering and storage of vaccinations
 - Cleaning a clinical area
 - All types of clinical screening tools.

2. Ensure a procedure is needed ?

As a team, think carefully through the following prompts and justify if you need a procedure for the work task(s) concerned.

- A procedure will be needed if, for example:
 - It is a safety critical, complex or important task that needs very clear instruction
 - The task is rarely performed
 - Team members are inexperienced in the task
 - You need to reduce the chances of something going wrong
 - You need to improve communication and team working
 - You need to comply with standards, good practice or legislation
 - You have a clear improvement goal in mind.
- The procedure will only be helpful if:
 - Team members agree they need one and will use it
 - It is clearly understood that the procedure alone will not solve the problem and that team 'buy-in' is vital to success.
- Consider if there is a problem that needs to be fixed before trying to fix it.
- Do you have any evidence that the task(s) concerned are not being performed accurately or safely?
- This evidence, e.g. case reports or patient stories, will help you gain acceptance of the need for developing and introducing the procedure.

3. Involve the whole team



- It is likely that one or two people will initiate and lead the design of a procedure. It is important that those who do this are also involved in the related work and will be using the developed procedure, as they will have a practical and realistic understanding of the tasks at hand.
- While it is also important to get the views of leaders, managers and supervisors, their perspectives on how the work is really done could be out-of-date or unrealistic.
- A full understanding is needed of who will be using the procedure and when it is needed, e.g. professional groups, levels of knowledge and experience, full, part-time or temporary staff, and different shift patterns.

It is important to know:

- The location and context in which they will use it
- If other tools and technology are being used alongside the procedure or if protective equipment is being worn
- If there is often high patient demand and expected resources are sometimes limited or not available
- If there are things going on that may restrict the use of the procedure.
- All relevant team members, including patients, clients, carers and families, where appropriate, should be involved in the design, implementation and review of the procedure at every stage. This is highly important for success.
- Involve clinical technologists/scientists when writing procedures for the use of medical equipment. Medical device manufacturers are required to produce Instructions for Use (IFUs). This should be referred to when developing procedures, noting any safety warnings.
- People work in different parts of the system and have different views and experiences of how related tasks are carried out. Capturing these is essential for designing procedures.
- We often don't think about involving those beyond our 'immediate and obvious' professional groups, e.g. doctors or nurses. Involve administrative, laboratory, maintenance or portering staff, receptionists, auxiliaries and managers, for example. They often have valuable insights that you may not have considered.
- Be aware that if you're in a line-management role people may not accurately disclose how they work to you, e.g. how often they really perform hand hygiene if they worry there may be repercussions.

4. Identify the hazards



- What are the worst things that can happen and how? Focus on what someone might do that could cause the worse outcome, such as a fatality or significant harm. The best way to do this is to talk through every step in the procedure and answer this question.
- To help develop your procedure more effectively, all members of the team need to think through and identify all the things that can possibly go wrong (hazards) in each of the following areas (these are known as performance shaping factors - the conditions that increase the likelihood that tasks will be carried out incorrectly).

People issues:

- The complexity of the patient's condition, their needs or related social factors
- The physical, emotional and mental limitations and capabilities of staff, levels of experience and training, challenges related to stress, fatigue and frustrations
- Levels of support and challenges related to team working, communication, collaboration, supervision and leadership
- Levels of training and expertise.

Job tasks:

- How complex, hazardous and demanding are these?

Tools and technology:

- The availability, accessibility, usability, safety, mobility and positioning of equipment.

Physical environment:

- The location, size, layout, noise, lighting, temperature and design issues related to the working environment.

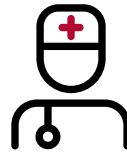
How work is led and organised:

- Influence of rotas, staffing levels, leadership styles, hierarchies, work priorities and conflicting goals, and local culture.

External influences such as national policies, targets or regulations:

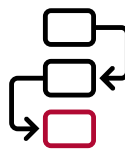
- Legal obligations, national targets, guideline evidence, health and safety legislation, government policy.
- What do you also know from reviews of case notes, patient stories, incident reports, complaints or claims?
- How do these different system issues potentially interact in a hazardous way to make this work task difficult for you, or pose a risk to people? How likely is this to happen?

5. Capture ‘work-as-done’



- If procedures are to be useful then they need to accurately reflect ‘work-as-done’, the everyday realities experienced by those on the local frontline, rather than ‘work-as-imagined’, by those at a distance from the frontline who don’t currently do or understand the job.
- ‘Work-as-done’ will look different depending on the diverse and variable work conditions the care team faces such as when they are very busy, short-staffed, missing equipment or dealing with difficult, uncertain or complex clinical scenarios.
- The procedure needs to be designed to take these contexts into account.
- Observe and speak to people as they perform tasks related to the procedure:
 - Learn how these are undertaken under varying work conditions and by different team members, e.g. when very busy, during the night, in different locations - including settings outside clinical environments such as in patients’ homes - or when performed by less experienced staff and those unfamiliar with the work environment such as locum or bank staff
 - Ask different colleagues to talk out loud as they think through and perform related tasks.
- Are there different ways to carry out the procedure depending on the variable work conditions that your team faces?
 - Should the procedure allow for this variability and provide some flexibility, or should it be standardised regardless of the conditions faced?
- How do people cope with the competing work priorities they face?
 - For example, when trying to be as thorough as possible and as efficient as possible when patient demand is greater than the capacity available to help complete the task as intended.

6. Make it easy to follow



- How the procedure is visually designed and set out, whether it is a flow diagram, decision aid, written instructions or a checklist, is essential to people engaging with and using it without difficulty or frustration. The minimum contents might include:
 - Purpose of the procedure
 - Relevant precautions and hazards
 - Special tools / equipment required
 - Initial conditions to be satisfied before starting
 - Procedural steps to follow the task safely
- **The goal is to make the procedure concise, workable, relevant, realistic and clear. To do this:**
 - Use plain language and agreed terms that everyone can understand
 - Keep it as short and as simple as possible, less than 15 words per sentence
 - Use lists, numbering in sequence or bullet points
 - Use everyday words, e.g. 'use' instead of 'utilise'
 - Do not assume that people will understand what is meant
 - Use one action per step and ensure these are in order so as not to confuse
 - Avoid large chunks of texts. If they're necessary, break them up with diagrams or flowcharts
 - Write using an active voice ("place label on the specimen container") and not in a passive voice ("the specimen container should be labelled")
 - Use gender-neutral language, 'their' rather than 'him' or 'her'
 - Avoid acronyms as they may differ between teams
 - Consider the need and rationale for each step in the procedure. Too many steps makes it difficult to use and some may not provide benefit to the user or patient, or the user does not appreciate the rationale for it making the entire procedure ineffective
 - Avoid referring to other procedures. The procedure should stand alone.
- **Increase readability and emphasise key parts of the procedure by:**
 - Using consistent font types and sizes that are easy to read and follow, e.g. Arial size 11 or larger (Times New Roman is a serif font i.e. with tails and should be avoided. San serif fonts like Arial are recommended)
 - Using bold lettering but sparingly
 - Avoiding underlining except when a web link
 - Avoiding the widespread use of BLOCK CAPITALS and italics
 - Avoiding exclamation marks
 - Using headings and sub-headings to organise the flow of text
 - Using background text contrast conventions to give prominence, e.g. **Black on Yellow** rather than **Green on Red**
 - Ensure there are no spelling, grammatical or formatting issues by sharing it with other people to review, preferably from outside your team. You are less likely to identify them in something you have produced yourself
 - Remember that if everything is emphasised then nothing is emphasised.

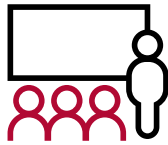
- **If you use a flowchart or diagram, keep it simple and logical by:**
 - Using symbols ✔ and arrows ➔ to show the intended flow and actions to be taken so that it is easy to follow
 - Being consistent with symbols and arrows used
 - Ensuring that text and boxes are correctly aligned.
- **Consider the format of the document.**
 - Will the document be viewed mainly as a paper document, a PDF on a computer screen or as an interactive document viewed on a phone or tablet?
 - The way users will interact with the document will help to shape the way it is designed.
For example:
 - A document that is accessed through a phone or tablet could incorporate an interactive element so that users are not reliant on viewing the whole document on a small screen
 - A paper procedure which is printed out and taken to the location of the task may work well as a flowchart or checklist.

7. Test it out



- Ask the people who will use it to review the draft and provide feedback on improving it.
- Get feedback from people with a range of experiences including those who've never done the work before, those who were not involved in the design of the procedure and someone from outside your team.
- Do this repeatedly until everyone is happy with it.
- Test the procedure in 'real-life', while observing and discussing its use:
 - What issues did people find? Make the necessary improvements
 - Does the procedure reduce the chances of the hazards that you identified from happening?
 - Remember, you want the procedure to accurately reflect 'work-as-done'
 - Use plan-do-study-act (PDSA) cycles to help with the review and improvement process.
- Test the procedure in simulated conditions, e.g. a learning centre or a test simulation in real work settings. Check that users behave as expected. If not, change the procedure.

8. Train people



- People need to be trained in the use of the procedure. Identify how formal training needs to be and the most effective way such as face-to-face training, online packages and/or discussion during a team briefing.
- Identify who can best deliver the training.
 - If the procedure is for a piece of equipment, training may be delivered by the manufacturer or someone within the organisation with knowledge of the equipment such as a clinical educator or medical engineering specialist.
- An appropriate person-in-charge, e.g. manager for the area, should ensure that all relevant staff have received training, including scheduling refresher training.
- Collect feedback from the training sessions to use for future improvements of the procedure.
- Keep all the documentation of the training.

9. Put it into practice



- You need to ensure the procedure is used. This requires as much effort, if not more, than producing it.
- Simply emailing staff to inform them, or putting up a poster, will have limited or no impact on them remembering to use the procedure at the right time.
- If you have involved the team throughout the design process, then these issues will be less challenging.

Consider:

- Where it is stored so that it is easy to find (electronic and hard copy)
- How to communicate the location of the procedure
- The best format (electronic and hard copy)
- The name of the procedure. Is it logical?
- Whether providing open access to wider staff groups is useful.
- Make sure there are measures in place to educate new staff, e.g. as part of induction processes, so that they have appropriate awareness and knowledge around the relevant procedures.
- All versions should be dated and have an identifiable name and issue number.
- Previous versions of the procedure should be archived and all previous copies, physical and electronic, should be actively removed from work areas to eliminate confusion and the risk of using out-of-date documentation.
- Use formal document control systems, e.g. Sharepoint, where available.
- Hard copies of the procedure should be in good condition, not dirty, torn or with pages missing. If they are for use in a clinical area, they will need to be laminated to facilitate cleaning.
- If the procedure is working well, consider sharing it so that others can learn and benefit from it.
 - While no area is going to operate in an identical way there may be elements of your work that other departments within your organisation or even further afield can benefit from. Celebrate your success!

10. Keep it under review



- If a procedure is not being followed, positively explore and understand any violations.
 - Learning through incident reporting and team-based reviews can explore how or why procedures may not be fit for purpose.
- Schedule regular reviews of procedures, e.g. weekly, monthly, yearly. This will ensure the procedure matches changing ‘work-as-done’.
- Monitor gaps between procedures and the way ‘work-as-done’ occurs. This will change with new equipment, changes in staffing levels, an incident, new guidelines and changes in the environment. A growing gap often indicates that the procedure needs updating.
- If the procedure is not being followed, positively explore and understand why. For example:
 - A procedural ‘violation’ is rarely motivated by a desire to cause harm
 - It’s more likely that staff may have forgotten or are unaware of a procedure, find it overly rigid, feel it is no longer appropriate or difficult to use, can’t find it, or there are perceived to be easier or better ways to perform a task
 - Understanding why a procedure is not being followed will inform how to update it.
- Ensure staff have opportunities to give feedback on the procedure. This will help to understand changes in ‘work-as-done’, possible difficulties accessing or using the procedure, applicability to all staff (permanent, temporary, part time, inexperienced, etc).
- For infrequently used procedures, consider regular simulation exercises to ensure continued practice.
- Don’t be afraid to withdraw or redraft a procedure if it’s not having the desired effect on work practices and patient care.

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