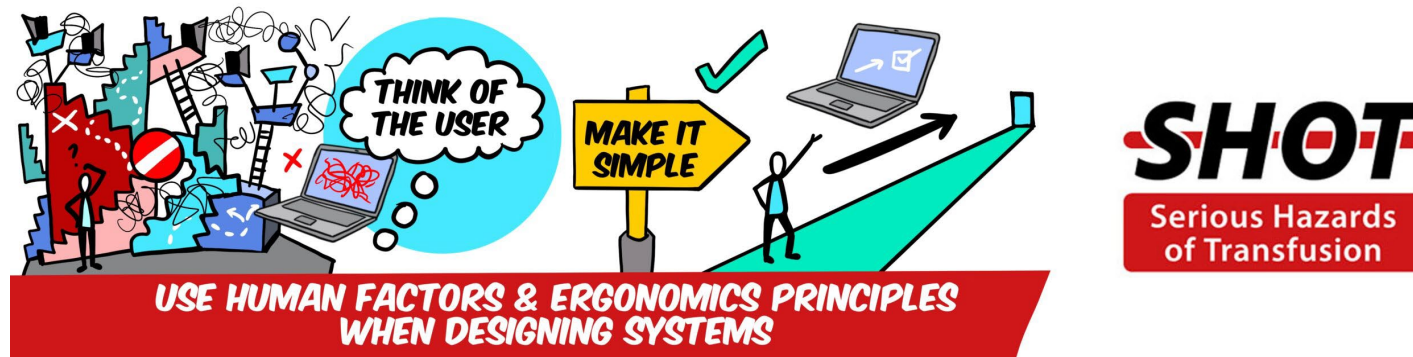


Addressing the dirty dozen for transfusion safety: human factors and ergonomics principles that support safe transfusions

'Human factors and Ergonomics (HFE)' is about ensuring a good 'fit' between people, the equipment they use, the task they carry out and the environment in which they work. Effective understanding and application of HFE principles will make work safer, healthier, and more productive with a better assessment of contributory factors that can lead to transfusion adverse events.



The key factors that need to be considered are listed below:



People who do the job: Safe transfusion practice is supported by adequate staffing levels matched to workload, appropriate training and skills, competency assessment, familiarity with escalation policies, and ready access to policies and guidelines. Awareness of the Dirty Dozen factors that can influence actions, and their mitigation, also contributes to safer practice



Environment in which they work: Good physical working environment and effective leadership supporting a just, restorative, learning culture and promoting staff raising concerns freely and openly



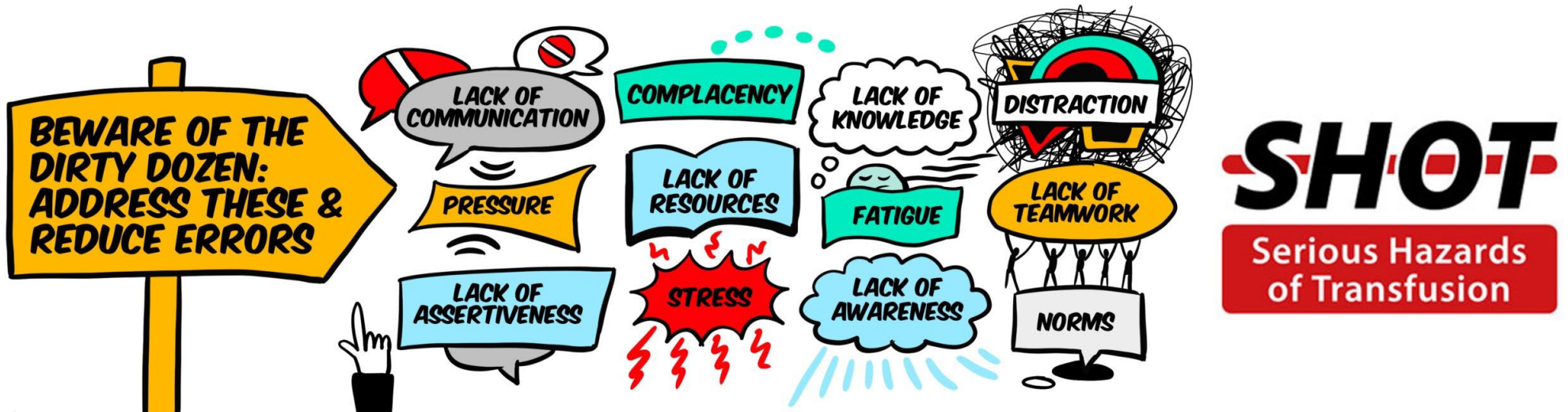
Actions they perform: Clarity regarding how to perform tasks and sequence of activity; adequate knowledge, effective, timely communication; acting on prompts and alerts; optimising learning from incidents



Resources necessary to complete the job: : Fit for purpose and reliable IT; all equipment functional; easy access to policies and procedures; access to senior colleagues for advice; access to human factors and ergonomics experts; access to relevant information about patients' transfusion requirements, any previous transfusion reactions, clinically significant red cell antibodies, transplant protocols if relevant and specific transfusion requirements

Human factors and ergonomics principles to ensure transfusion safety in clinical and laboratory areas: Addressing the human factors 'Dirty Dozen'

- The Dirty Dozen refers to twelve of the most common human error preconditions or conditions that can act as precursors, to accidents or incidents
- The Dirty Dozen is a concept developed by Gordon Dupont, in 1993, whilst he was working for Transport Canada
- The Dirty Dozen is not merely a comprehensive list of incident precursors but provides a useful introduction to open discussions into how errors are made in organisations and workplaces. The original list is used as the basis for the next section which explains the precursor conditions and potential mitigating measures
- It is important to note that whilst the Dirty Dozen list of HFE has increased awareness of how humans can contribute towards accidents and incidents, the aim of the concept was to focus attention and resources towards reducing errors. For each element on the Dirty Dozen list there are examples of typical countermeasures designed to reduce the possibility of avoidable errors from causing a problem
- Readers are encouraged to consider the various factors and review how that applies to the area where they are working. Please discuss within your teams, identify gaps and work together to improve systems



Links to useful resources: [The Human Factors "Dirty Dozen" | SKYbrary Aviation Safety](#); [DirtyDozenWeb3.pdf](#); [Human Factors and the Dirty Dozen](#)

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Number	Human factors	Mitigating measure
1: Lack of communication	Staff communicate ineffectively with one another, for example, not explaining what work has/has not been completed when changing shifts impacting transfusion safety. Effective communication with everyone involved in the patient care is vital to ensure patients' transfusion requirements are all met in a timely and appropriate manner.	Saying the most important things in the beginning and repeat them at the end, using checklists and worksheets to communicate work accomplishments, having structured handovers between shifts and avoiding assumptions regarding completion of tasks.
2: Complacency	Staff can become overconfident after becoming proficient in a certain task, which can mask the awareness of dangers thus resulting in staff becoming complacent.	Staff trained to always expect to find something wrong, check accuracy of work and never to sign off on something that they did not fully check; use checklists and optimise learning from mistakes that have occurred.
3: Lack of knowledge	Staff require up to date on knowledge of essential transfusion issues, current equipment including IT and to be able to identify and act on issues promptly.	Ensure that staff only complete tasks that they are trained and deemed competent to complete, seek help from senior colleagues if any issues, avoid guessing, ensure that the policies and procedures are up to date and fit for purpose and that all the equipment are checked and quality assessed regularly; ensure staff use current manuals and participate in training sessions.
4: Distraction	A distraction could be anything that takes one's mind off the task that is being done. Any distraction while working can cause us to think we are further ahead in the process than we are and could potentially result in errors.	If distracted, once the staff member returns to the task, it is imperative for them to go back through all the steps to ensure all steps are completed appropriately, staff should be mindful to never leave samples, or paperwork or equipment lying around and must secure them before leaving the area. Using a detailed checklist will help ensure all steps are completed as prescribed.
5: Lack of teamwork	Differences in working styles or personalities can sometimes hinder effective communication and collaboration, which in turn may negatively impact clinical or laboratory practice. It is important to recognise that poor teamwork can ultimately compromise patient safety.	Ensure that lines of communication are open between personnel. Discuss specific duties when jobs require more than one person to eliminate any questions, make sure everyone understands and agrees, trust team colleagues. Always look out for co-workers with safety in mind.
6: Fatigue	Physical or mental exhaustion threatening work performance. Working long hours or overnight can lead to fatigue. Fatigue can cause a decrease of attention and a decreased level of consciousness, which can contribute to errors.	Staff should be aware of the symptoms and look for them in themselves and co-workers. Complex tasks must be avoided if staff are aware they are exhausted and should discuss with senior staff regarding alternative options. Measures such as pausing or having others check your work if fatigued will help; eating healthy, exercising regularly and regular sleep patterns can help prevent fatigue.

7: Lack of resources	Lack of adequate resources can lead to avoidable errors and threaten safety.	Escalate concerns in a timely manner, senior management should have a robust plan in place to address lack of adequate resources and contingency plans to support continuity of a safe service. Staff should ensure all equipment undergo regular maintenance and have a reliable stock management process in place.
8: Pressures	Staff performance in safely finishing critical tasks can be affected by time pressures.	Staff should communicate to colleagues promptly if they think they will need more time to complete a task rather than rushing through it. They should ask for extra help if time is an issue and communicate concerns early, ask for help as appropriate and prioritise safety. Avoidable time pressure, delayed communication, and reluctance to seek assistance can contribute to rushed task completion and reduced safety.
9: Lack of assertiveness	Failure to raise concerns and lack of assertiveness in alerting others when something does not seem right can result in avoidable incidents. Staff must not let something that they know is wrong continue by ignoring that it is there.	Staff must maintain high quality standards in all activities; they should provide clear feedback when a risk or danger is perceived and should allow colleagues to give their opinions and access constructive feedback for actions taken. Express feelings, opinions, beliefs, and needs in a positive, productive manner express concerns but offer positive solutions and resolve one issue before addressing another.
10: Stress	Stress is the subconscious response to the demands placed on a person. A physical, chemical, or emotional factor that causes physical or mental tension.	Staff should consider taking time off or a short break if feeling stressed. They should and escalate issues in a timely manner to senior colleagues and ask for help as appropriate. Healthy eating, exercise, and adequate rest can reduce stress levels. Manage stress before it affects your work - take a rational approach to problem solving, take a short break when needed and discuss the problem with someone who can help.
11: Lack of awareness	Being unaware about potential hazards or becoming blind to how our actions can affect other individuals.	Vigilance in monitoring the people and environment around you and general awareness of safety. Ensuring regular short breaks to refresh focus, using checklists or task tracking tools to maintain attention or introducing variations to the activities (alternating tasks needed, if appropriate and feasible) can help maintain awareness and prevent mindless repetition. See the whole picture - make sure there are no conflicts with an existing repair or modifications and ensure you fully understand the procedures needed to complete a task.
12: Norms	Norms is short for “normal,” or the way things are normally done. They are unwritten rules that are followed or tolerated by most of the organisation. Negative norms can detract from the established safety standards and result in avoidable errors.	Staff must ensure that they follow organisational and departmental policies and processes. Everyone should be aware that established local deviations, while may seem normal, does not make it correct. The easiest way of accomplishing something may neither be the standard nor safe. Help maintain a positive environment with a good attitude and work habits - Existing norms don't make procedures right. Follow good safety procedures. Identify and eliminate negative norms.