Attaining Peak Performance
Based on the ‘Operating in High Risk Environments’ WebEx seminars with Dr Dafydd Williams

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1000 Lives Plus - Improving care, delivering quality

1000 Lives Plus is the national improvement programme, supporting organisations and individuals, to deliver the highest quality and safest healthcare for the people of Wales.

Every health board and trust in Wales, together with universities, voluntary organisations and charities, other public sector services, and commercial organisations are involved in 1000 Lives Plus.

The programme is focussed on building capacity and sustaining and spreading improvements. It supports frontline staff across Wales through evidence-based ‘programme areas’ and provides clinical leadership through its Faculty. It is committed to engaging patients and students in improvement work and promotes an internationally-recognised quality improvement methodology.

1000 Lives Plus is underpinned by measurement to illustrate improvement, and facilitates collaborative working to test new methods and protocols. The central team supports senior managers and frontline staff to deliver the quality of care that every person needs, everywhere and every time.

For further information, visit www.1000livesplus.wales.nhs.uk
Executive summary

Healthcare staff work in high-risk, complex, unpredictable, operational environments – places where we have to make a time-critical decisions with significant consequences that cannot be reversed, and the outcome can only be modified by subsequent decisions.

Based on his experience as a space shuttle mission specialist, emergency room physician, and chief executive of a regional health centre in his native Canada, Dr Dafydd ‘Dave’ Williams is uniquely qualified to analyse the parallels between the ‘high-risk environments’ of healthcare and space-travel.

Dr Williams was the keynote speaker in three online WebEx seminars, organised by the 1000 Lives Plus national programme in the summer of 2011.

Key points explored in this white paper include:

- Healthcare organisations need to seek ‘high reliability’ - “avoiding catastrophes in an environment where normal accidents can be expected due to risk factors and complexity.”
- Designing as many errors as possible out of the system is very important.
- Imagination is a vital tool to identify and eliminate all possible latent errors which can build up into a ‘chain’ of failure events that result in significant harm.
- Unfortunately risky behaviour can become culturally ‘acceptable’ in the organisation and increases the capacity for error.
- Managing risk effectively requires data, which must be thoroughly understood.
- Because healthcare is delivered in a resource-constrained environment, empowering frontline staff to creatively seek solutions to challenges and pressures is critical.
- Successful - safe - healthcare is founded on good team dynamics.
- Good leadership is vital and can be defined as ‘the capacity to influence others’ - this is not confined to people in titular leadership roles.
- Leaders can empower open communication and must strive towards creating a ‘just culture’.
- Successful ‘followership’ - defined in this white paper as ‘upward influence’ - is often overlooked. Like failed leadership, failed followership can introduce errors and potential harm into a system.
- In addition to teaching technical skills, healthcare training must also teach team skills - the ability to lead and follow as appropriate to the situation.
- Healthcare staff work in a “remarkable profession”, which should offer a sense of purpose and meaning in life every day.
Introduction - ‘Operating in High Risk Environments’

‘Operating in High Risk Environments’ was a WebEx seminar series arranged by 1000 Lives Plus, in partnership with the Health Foundation and Advancing Quality Alliance (AQuA).

The seminars were presented by Dr Dafydd ‘Dave’ Williams - an astronaut and aquanaut, emergency room physician and inspiring Chief Executive of Southlake Regional Health Center where he leads a team of more than 2,800 employees, 500 physicians and 800 volunteers1.

Dr Williams is the first Canadian to have lived and worked both in space and in the deep ocean. Although he was born in Canada, Dr Williams’ father emigrated to Canada from Bargoed, Wales, and his connection with Wales gave an added dimension to his WebEx presentations.

Dr Williams was part of the NASA senior management team and holds an Exceptional Service Award from NASA and the NASA Outstanding Leadership Medal. He served on two shuttle missions, in 1998 and 2007, undertaking 26 experiments and embarking on three spacewalks. He has also worked in the deep ocean as an aquanaut, while with NASA.

He holds degrees from Montreal and Cardiff and in 2011 was appointed President and Chief Executive of Southlake Regional Health Center in Ontario - an organisation with the ambitious vision statement “to provide shockingly excellent service”.

The seminars took place in the summer of 2011 and were attended by NHS staff across Wales, England, Scotland and Northern Ireland, as well as attendees from Europe and the US.

The first seminar, ‘Towards Safer Systems’, addressed the challenges of ensuring that the healthcare systems that NHS staff work in will enable the best patient outcomes to be achieved.

The second and third seminars focussed on team dynamics and personal performance. ‘Understanding Leadership, Followership and Team Performance’ redefined leadership as an opportunity that can present itself to all healthcare staff at some point, and key characteristics of good team working. ‘Performing at your Personal Best’ introduced ideas and concepts that can help any individual operate at the highest level of performance.

This white paper collects the key aspects of all three presentations, together with insights from the question and answer sessions in each WebEx and additional background reference material. In keeping with the approachable and collegiate nature of the WebEx presentations, Dr Williams is referred to by his first name, Dave, in this white paper.

1. Attaining peak system performance

Dave began this presentation by acknowledging that anyone working on the frontline in healthcare is working in complex, unpredictable environments. Healthcare is also generally delivered in a resource-constrained environment in which everyone feels the system pressures. It is therefore vital to empower frontline staff to creatively seek and enact solutions to the challenges and pressures they face.

NASA defines an ‘operational environment’ as:

“a place where we have to make time-critical decisions with significant consequences that cannot be reversed, and the outcome can only be modified by subsequent decisions.”

In healthcare there are many similar situations - from initial diagnosis, working in the emergency room, to surgery and dispensing drugs on the ward.

Dave outlined how the operational environments of healthcare impact on the way staff work: “We need to make sure that our systems are performing at their optimal best, otherwise the performance of our teams and of ourselves as individuals will be hampered and the care outcomes of our patients will be affected.”

Dave illustrated this with an example that has become embedded in NASA’s identity. “In January 1967, early in the space programme, there was a tragedy on the launch pad of Apollo. Three astronauts - the crew who had been selected for the first manned Apollo mission - were killed in a cabin fire of their command module.”

“Another astronaut, Frank Borman was selected to serve on the Accident Review Board that sought to identify the root causes of the tragedy. In April 1967, Borman testified before a US Senate committee investigating the Apollo 1 fire. He described the unforeseen consequences of testing a spacecraft pressurised with 100 per cent oxygen as ‘a failure of imagination’.”

Dave expanded upon this phrase to apply it to a healthcare scenario. “Often, when things go wrong in healthcare, it is the result of a similar failure to think through all the possibilities to identify what could go wrong. We need to recognise the importance of imagination.”

“Space travel is not risk-free, but NASA and other space programmes are examples of organisations where data-driven decisions are made to mitigate risk. In human spaceflight we don’t take chances, we manage risks.”

The key to managing risk

“To manage risk, we need data, and we need to interrogate it. We can only make the best possible decision if we have the best possible data. However, most healthcare institutions will say they are focused on safety and quality, yet management and clinical staff are often unable to quote patient safety data. Constant vigilance and awareness of safety and quality metrics is important to achieve targets.”

“Having the data means that if there is a mistake or error we can try to trap that error early on through creating redundancies (safety checks) in the system. When responding to ambiguity, the best position to go for is ‘the most conservative response’ - what will be the safest option possible that still allows us to continue with our work?”
After the Three Mile Island nuclear incident, organisational theorist Charles Perrow coined the Normal Accident Theory, stating: “Complexity inherent to tightly coupled technology systems makes accidents inevitable.” This theory particularly holds true in operational environments like space travel or healthcare, both of which are highly reliant on technology to achieve results.

**Finding high reliability**
There are several definitions of what constitutes a ‘high reliability organisation’. The user-edited online resource Wikipedia utilises a common definition, which Dave used as his example. A high reliability organisation is “an organization that has succeeded in avoiding catastrophes in an environment where normal accidents can be expected due to risk factors and complexity.”

The Health Foundation’s definition is similar:
“High reliability organisations are organisations that work in situations that have the potential for large-scale risk and harm, but which manage to balance effectiveness, efficiency and safety. They also minimise errors through teamwork, awareness of potential risk and constant improvement.”

‘High reliability’ should be the aim in healthcare as much as in any other high-risk industry such as aviation, exploration, or heavy industry.

Characteristics of high reliability organisations include:
- Preoccupation with failure - Vigilance
- Reluctance to simplify interpretations - Root Cause
- Sensitivity to operations - Awareness
- Commitment to resilience - Engagement
- Deference to expertise - Trust

“High reliability organisations accept high levels of risk and mitigate against it. In NASA we are very aware of failure. We perform a root cause analysis on the smallest error so that it doesn’t scale up into catastrophe. Every team is challenged to provide a high quality outcome.”

“High reliability organisations are preoccupied with failure and analyse the smallest error so that it doesn’t scale up and become catastrophic.”

“When terrible events have happened - such as the explosion of the space shuttle Challenger in 1986 - the combination of hardware failures with deviation from protocols can have catastrophic results.”

“We see this in healthcare too. People may deviate from standard protocols and over time the risky behaviour becomes the normal way of doing things - but if something goes wrong, tragedy can occur.”

**Understanding errors**
Errors, especially clinical errors, have catastrophic effects on patients but also on the clinical staff involved in the situations. There are several different types of error:

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Attaining Peak Performance

- Active errors that occur at the level of the operator (a personal error).
- Latent errors that are underlying system flaws that increase risk of error.

Examples of latent errors abound in healthcare. They include poor equipment design, incorrect installation, faulty maintenance, bad management decisions, poorly structured organisations and lines of reporting, poor communications and training, inadequate checking procedures, items or paperwork getting lost, and the absence of a safety culture. These could all be classed as system errors.

“When we seek to understand the errors that happen, it is important that it’s done in a manner that provides the greatest opportunity for learning and change. Learning from near miss scenarios is a great example of this.”

“In a high trust clinical environment, near misses or accidents that almost happened are great learning opportunities to improve processes. In a low trust environment focused on blame, near misses are not shared and discussed with the resultant loss of opportunity to learn.”

“We have to have trialling and assessment in a learning and change-aware environment. Simulations are important - we are practising the issue and procedure. For example, I have participated in a simulated SARS outbreak: What would we do? How would we react in a pandemic situation?”

“Sometimes the issue is that those in control are sheltered from frontline risks. The outcome of the investigation into the Challenger tragedy showed much could be learnt about risk and communication.”

The big question facing those responsible for creating a system that operates at peak performance levels is: ‘How do we build the actions of people into attempts to build high reliability organisations?’ In other words, how do we make sure that the ordinary, everyday things we do contribute towards creating a safer, high-quality system?

**Multiple failings - a chain to catastrophe**

The ‘Swiss Cheese’ model has been used to explore how errors can ‘line up’ to lead to catastrophic outcomes. But the model depends on lots of holes - or latent errors. If there are lots of errors in any given system, if a person makes one mistake it is more likely to lead to error, because it is likely to be further compounded by another latent error in the system, and these build up into a massive system failure.

‘Error-trapping’ decreases the effect of error. Designing as many errors as possible out of the system is very important. Examining any given system means imagining all possible latent errors - what if someone mis-diagnoses an illness, what if the letter to the patient does not arrive, what if a patient is given the wrong medication, what if there is a delay in getting test results back? These minor mistakes can build up and become ‘compound errors’ that result in significant harm.

“The normalisation of organisational deviance, where people reach a point where they are no longer aware that their behaviour is deviating from safety protocols can increase the probability of errors. Organisations can similarly become accustomed to deviance - ‘that’s just the way things are done around here.’”

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“In her book about the Challenger shuttle explosion, author Diane Vaughan says: ‘Social normalisation of deviance means that people within the organisation become so much accustomed to a deviant behaviour that they don’t consider it as deviant, despite the fact that they far exceed their own rules for elementary safety’.”

“Deviance from best practice or safest practice can have terrible consequences. The primary O-ring on the space shuttle Challenger regularly allowed ‘blow-through’ - a venting of exhaust emissions. It was not supposed to. But it was only the primary redundancy, so it was still safe. However, if the primary safety barrier is compromised, then a failure in the secondary safety barrier will lead to catastrophe - as happened with Challenger.”

“The other side of deviance is ‘positive deviance’ - this is looking for places and teams that are excelling. What are they doing differently that leads them to excel? Why is one team more effective or more efficient?”

Reacting to errors
Responding when accidents happen requires trust in frontline staff to find a solution. The Apollo 13 mission is fairly well-known - thanks to the Hollywood film of the same name. The leadership response in the Apollo 13 scenario - frontline staff being empowered to find a solution - is applicable to healthcare, but rarely seen in practice.

“Gene Kranz, the Apollo 13 Flight Director, assembled his ground staff and told them that ‘Failure is not an option’ and that they had to find a solution to bring the flight-crew safely home. He then turned the problem over to the expert engineers in his team, who developed a solution and succeeded in bringing the capsule safely back to Earth.”

“We need to trust the expertise of the frontline team in crisis situations. We can insist on standard structure or operation, but we need to empower frontline team members and not micro-manage. We need to respect the expertise of the frontline and ask them to bring solutions.”

Creating a culture of safety is about shared attitudes, values, goals and practices. “At Johnson Space Center safety is the first message. The culture is evident. Management leadership is critical to make it visible. The message has to be ‘this is how we do it here’. Culture has to be shared by everyone. If it is not visible day-by-day then it is not happening.”

“We should always ask ourselves: ‘Are we doing what we know we should be doing?’ Is there a gap between what we know we should do and what we actually do? Closing the ‘knowing-doing gap’ is a challenge for us all.”

The World Health Organization’s Safer Surgery Checklist, introduced in all operating theatres in Wales as part of the 1000 Lives Plus programme, is an example of closing the ‘knowing-doing’ gap. “It’s true that in healthcare professionals often value autonomy and a checklist can be seen as a threat to this. But checklists are not there to challenge autonomy and freedom, but to help people to remember important information.”

“Years ago, when checklists were first introduced in aviation the standard response from pilots was: ‘I’ve been flying for years …’ but the use of protocols and checklists is proven to improve outcomes. The checklist enables us to become even better and build on our

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competency. It helps us to focus our thinking as we approach a given situation.”

**Human factors and the human focus of healthcare**

“One way to make systems safer is to create redundancies in the system and recognise that human factors often contribute to error. For example, staff fatigue is a common factor in intravenous medication errors. A simple redundancy in the system would be asking a colleague to check the medication is correct before it is given to the patient.”

“Using redundancy means that you can ‘fail ops’ and ‘fail safe’ - after the first failure you are still operational. After the second failure you are still safe. The second failure may have rendered a spacecraft immobile, but there will have been no loss of life.”

“The central focus in healthcare must always be on the patient. One of the important determinants of quality is what the patient thinks. Do we account for what they want and expect? We need to develop a shared outcome to optimise what can be done for patients.”

“The patient is the primary stakeholder in healthcare and should be able to question any part of the treatment they are offered.”

2. **Attaining peak team performance**

In healthcare there is a growing awareness of how ‘human factors’ among staff affect care outcomes for patients. Dave addressed this from two angles - as teams and as individuals.

Almost all healthcare workers provide care as part of a team, which involves clinical staff from various disciplines, administrators, managers and other support staff. Finding the right ‘balance’ within a team can be a low priority in healthcare, but it is critical to achieving the best outcomes for patients. Within these teams there are leadership opportunities, but also occasions where team members need to exercise good ‘followership’.

Dave related the emphasis on teams in his NASA training to his work in a clinical operational environment. “Successful space travel is founded on good team dynamics. Successful - safe - healthcare follows exactly the same pattern. Good leadership is vital and can be defined as ‘the capacity to influence others’ - everyone in an organisation may potentially have the opportunity to step into a leadership role.”

“The crucial nature of sound leadership is being recognised more in healthcare. But often what is overlooked is good ‘followership’. This represents ‘upward influence’ in organisations, where all staff feel able to raise issues, hold each other to account, and suggest changes.”

“This requires trust on both sides. Without trust, leaders are often directive and authoritarian, and followers can be unco-operative and demoralised. Trust is critical for any organisation to achieve high reliability.”

“Healthcare teams may also want to reconsider traditional selection procedures. However technically skilful an individual is, they also need the ability to work in a team and relate to their colleagues, and to patients.”

“Closing the communication loop is important. Repeating back what people have said to
ensure you have heard it correctly reduces the risk of information not being communicated or being misinterpreted, and leading to errors.”

“Empowering people to speak up so they can express concern, then listening to that concern and acting upon it ‘closes the loop’.”

**Leadership**

Dave offered several insights into leadership - recognising it as an area that is frequently discussed, but not always adequately defined in healthcare. “There is much debate at the moment about how to define ‘leadership’. But the real question is not necessarily: ‘What is leadership?’ It may be: ‘Where is leadership?’”

“Leadership occurs at many different layers. A good definition is: ‘Leadership is the capacity to influence others’. This means that everyone in an organisation may have the opportunity to step into a leadership role. It is about personal attributes, not position.”

Dave identified several important elements of effective leadership:

- Self-awareness
- Self-regulation
- Motivation
- Empathy
- Social skill
- Communication skills

Dave outlined a number of leadership styles, noting that some are more suitable in certain situations than others. Different leadership styles can be classified as follows:

<table>
<thead>
<tr>
<th>STYLE</th>
<th>ACTION</th>
<th>DESIRED RESULT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directive</td>
<td>Giving clear instructions</td>
<td>Team follows orders</td>
</tr>
<tr>
<td>Pacesetting</td>
<td>Leading by example, (‘personal heroics’)</td>
<td>Team expected to match the leader’s ‘passion and commitment’</td>
</tr>
<tr>
<td>Participative/</td>
<td>Leader seeks group consensus</td>
<td>Team contributes / agrees on a strategy</td>
</tr>
<tr>
<td>Democratic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coaching/</td>
<td>Leader develops skills of team members</td>
<td>Team members reach level where they can pursue the right course with autonomy</td>
</tr>
<tr>
<td>mentoring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Affiliative</td>
<td>Leader prioritises harmony</td>
<td>Close-working in a team of highly-connected individuals; ‘a family feel’</td>
</tr>
<tr>
<td>Visionary</td>
<td>Inspiring movement toward a shared ambition or goal</td>
<td>Team motivated to achieve goal</td>
</tr>
<tr>
<td>Situational</td>
<td>Leader only takes lead in specific circumstances or environments - usually the leader’s field of expertise</td>
<td>Team autonomously choose best options, but follow leader’s instructions in specific circumstances</td>
</tr>
<tr>
<td>Shared</td>
<td>Expert opinion of team member drives actions</td>
<td>Team always chooses best option, and follows recognised internal expert’s instructions in specific circumstances</td>
</tr>
</tbody>
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Dave emphasised that there are issues with some of these leadership styles. For example, pace-setting leadership is often used by individuals characterised as ‘over-achievers’ or ‘perfectionists’.

“Often pace-setters ‘feel the need’ to do all aspects of the work themselves - to ensure it is ‘done right’. But taking tasks away from people, or never delegating, is disempowering and demoralising. It can lead to ‘results’ in terms of achieving goals, but it can also create a negative working environment and disengagement in the team.”

Often leaders exhibit characteristics from a number of different leadership styles. There may be times when clear direction is needed, and other times when the shared expert opinion of a team member is sought and followed.

This means: “All leaders - and in terms of potential upward influence that means any and every person - will face a ‘leadership moment’ where they have to make a decision about ‘how’ they are going to lead.” This was illustrated by Dave using the diagram below.

Depending on the urgency and the group expertise available, leaders will need to make a judgement call on how to act.

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<table>
<thead>
<tr>
<th>Urgency</th>
<th>Group Expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>Coach</td>
</tr>
<tr>
<td></td>
<td>High</td>
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<td>High</td>
<td>Direct</td>
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<td></td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>Consensus</td>
</tr>
<tr>
<td></td>
<td>High</td>
</tr>
</tbody>
</table>
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“Depending on the circumstances, different leadership models will work more effectively. A leader with a team of ‘rookies’ facing an urgent crisis will need to be very direct and specific in their instructions.”

“If there is more expertise in the group, then they should delegate to get the best results. Non-urgent scenarios allow leaders to coach non-expert team-members, or build a consensus among staff to reach agreement on a course of action that all team members ‘buy into’.”

“The delegation response was the reaction of Gene Kranz, the Apollo 13 Flight Director,

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faced with an urgent problem and a potential disastrous loss of a space mission and the lives of three astronauts.”

“Gene had a team comprised of some of the best engineers in the world, and delegating to them meant a solution was found, despite the small amount of time and limitation of available materials.”

“Direct leadership is not necessarily the wrong style. It has advantages - it can be time-efficient, it offers learning opportunities to ‘green’ staff members. But it should always be a chosen leadership style, not the ‘default setting’.”

“Trust is critical in high reliability organisations and a lack of trust is often the main reason why leaders default to ‘directive leadership’.”

**Evaluating leadership**

Leaders need to evaluate their leadership style and effectiveness. There are extrinsic measures - including the accomplishment of objectives. However, failure to achieve objectives is not necessarily bad leadership, so using this measure alone is inadequate.

Dave listed other useful evaluation tools. “Candid feedback from teams is very useful. It can identify strengths and also areas to develop. Allied to this, introspective review and reflection can help leaders work out what they would do differently if they were in similar situations in future.”

“We can empower open communication so junior staff can speak up. If there is a poor response from junior staff, then leaders need to role model the right kind of behaviour.”

The ‘right kind of behaviour’ includes tackling the culture of the organisation. “Leaders need to strive towards creating a ‘just culture’.”

A ‘just culture’ has been defined by Sidney Dekker, Professor of Human Factors and Systems Safety, and Director of Research at Lund University, Sweden. According to Dekker, it exhibits the following characteristics:

- Encourages openness, compliance, fostering safer practices, critical self-evaluation.
- Willingly shares information without fear of reprisal.
- Seeks out multiple accounts and descriptions of events.
- Protects safety data from indiscriminate use.
- Protects those who report their honest errors from blame.
- Distinguishes between technical and normative errors based on context.
- Strives to avoid letting hindsight bias influence the determination of culpability, but rather tries to see why people’s actions made sense to them at the time.
- Recognises there is no fixed line between culpability and blameless error.

**A commitment to communicate**

Communication is a critical function within teams but is more difficult in large organisations. “In a change environment, leaders need to get out and talk to people face-to-face to set out the vision and encourage people to share it.”

“The preferable way to communicate, even in a large organisation, is face-to-face. This could be a walk around the clinical environment, for example, or visiting regional offices.” Visibility and accessibility are important aspects of leadership.

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Other methods can be used to great effect as well. “Social media offers a growing opportunity for leaders to connect with staff directly, and is a good way to communicate with shift teams, for example.”

Building trust (or rebuilding trust following an adverse event) can follow a model introduced by Dave as VOEmP\(^1\). This includes:

- **Ventilation** - allowing people to express their emotions, feelings, grievances and criticisms.
- **Ownership** - when people vent they must ‘own’ their views, especially if they say something hurtful towards others.
- **Empathy** - seeing the subject from another person’s point of view, and making sure they know that you see it ‘their way’ even if you do not agree.
- **Planning** - deciding on a way forward, with everybody contributing to the plan.

**Followership**

Dave pointed out that in healthcare settings ‘leadership’ has been traditionally regarded as “downward influence from above". In peak performing teams, “peer-to-peer” influence often optimises performance and there has been a growing appreciation of ‘followership’ as a form of leadership.

“Followership is closely related to leadership. As a follower there may be a time when you need to step out of ‘following’, become a leader, then revert back to being a follower later in the process.”

Followership has been defined as “upward influence”, meaning that any person, regardless of their status in the organisation can have a positive impact on outcomes through their behaviour and the contributions they make to the team. Leaders need to be secure and confident enough to allow followers to lead when the team face a problem that one member has the expertise to solve.

Leaders become followers at that point and then reassert their leadership role once the followers who have stepped up to solve the problem have done so. Likewise good followers revert back into their roles within the team.

Addressing failings in the leader-follower relationship is an important part of progress. “While failures in leadership have been analysed in academic literature, failures in followership are rarely discussed. And yet, as with leadership, failed followership can introduce errors and potential harm into a system.”

“The issue of non-compliance when it comes to hand-washing is not due to failed leadership. We have educated, offered resources, promoted understanding, and yet hand hygiene is an area where compliance is difficult to achieve.”

“At some point, we must ask if the issue about hand hygiene is about failed followership. Failing to comply is down to individual choice to continue to live in the ‘knowing-doing’ gap.”

“Similarly, failing to close the loop on communication can be a failure in followership. It can be a failure to verify what a leader is asking you to do. It can also be failing to ensure that leaders have grasped what you are telling them.”

“Followership is more than doing what you are told by your manager or your job description. Genuine followership is an active process. It is a personal commitment to courageously contribute in a collaborative team environment.”

“It takes courage to ask questions - particularly if managers have failed to invest in creating a ‘just culture’. But if a follower decides not to ask, then that is a lost opportunity to contribute.”

“Good followership is also about being a good team member. It is about bringing positive energy to the team and being a ‘low maintenance’ personality.”

**Successful teams**

Team performance is critically related to the individual performance of leaders and followers. It is reliant on good communication. Unfortunately, healthcare is often separated into ‘silos’ rather than functioning as teams. Different clinical disciplines operate in very different ways and do not necessarily ‘mesh’ well. There may even be dismissive disrespect between disciplines.

Successful healthcare teams are usually inter-professional, where there is a healthy respect and gratitude for the different skills team members possess. This allows any member of the team to exercise leadership and to influence the other members of the team, when necessary.

Successful teams usually have a sense of worthwhile purpose, which gives them a clear direction towards meeting demanding performance standards. This will help them achieve key tasks and overcome challenges - and the world’s best teams face regular challenges and relish the opportunity to meet them.

Building a team is an art form. “Successful teams will include members selected for skill. There must be key skills that are ‘selected in’ as well as those that are ‘selected out’’. For example, selecting a new clinician would mean those without the relevant technical qualification would be ‘selected out’. But we also need to move on from this and start selecting people on other factors, including behavioural factors like the ability to work in a team.”

In addition to teaching technical skills, healthcare training must also teach team skills - the ability to lead and follow as appropriate to the situation. Team skills include fostering a culture where errors are seen as learning opportunities, and people are encouraged to speak up and voice ideas, or highlight errors.

“Within the team there will be clearly articulated rules of behaviour and defined values, including behavioural skills such as listening and responding constructively, and attitudes like giving other team members the ‘benefit of the doubt’, being willing to offer support (and make good on offers of support), exhibiting trust and trustworthiness, and commitment to the team’s success.”

“Trust within a team starts with professional competency. Team members who think their colleagues are unreliable and will not complete a task to high enough standards will find it hard to delegate, ask for help, and trust the data they are given.”

Successful teams will spend time together - often including social occasions - and engage in positive feedback, recognition and rewards for a job well done. “Small things can make a

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huge impact on the way teams function - taking opportunities to genuinely thank fellow team members each other is one way to engender a positive team ethic and bring about peak team performance.”

### 3. Attaining peak personal performance

All healthcare staff need to take responsibility for their own actions and the level of care they offer - and the vast majority want to perform at their own personal ‘best’. This level of commitment is not always easy to articulate or maintain, but it will lead to better outcomes for patients.

Dave contrasted the attitudes of NASA and healthcare towards committing to performing at the best possible level, with a story from towards the end of his NASA career.

“In the last six months of 2007 there were a number of minor incidents in the NASA aircraft operations that led to a ‘safety stand-down’. All flights were stopped and all pilots were called to the hangar. It was the equivalent of all senior hospital staff stopping work and being called together.”

“The senior flight officer informed the assembled pilots that a number of minor errors occurred and then asked all the pilots to ‘commit to peak performance’, and to bring solutions, not to contribute to the problem.”

“In a competency-based model, such as aviation or healthcare, we all need to commit to perform at our best. In healthcare this is a commitment to deliver the best care we can, to every patient, every time.”

“Frontline health workers are aware they need to commit to peak performance in a technical sense, and are involved in lifelong learning to improve their proficiency and gain new skills. However, generally most clinicians never discuss behavioural competency, unless it is linked to communicating with patients.”

“Systems need to recognise that good care is a combination of technical skills and non-technical skills and competencies. The best-performing individuals and teams rely on their ‘EQ’ (emotional intelligence) as much as their IQ.”

“Behavioural skills influence work environments. Technical skills are critical, but those skills alone do not make a great healthcare professional. World-class clinicians are outstanding both technically and in their behaviour.”

**Prepare to perform at your peak**

“Preparation is a fundamental part of excellent performance. Mental imagery - playing through what will happen in a given situation can help you succeed, in a spacewalk, or in an operating theatre. Running through the procedure in detail will help you imagine a successful event, and the steps you need to take to get there.”

“Self-awareness is another important aspect of peak performance. A few moments of introspection is always useful: ‘How good am I today?’ This can help you identify where your emotions, experiences, general mood, or stress levels could impact on your performance.”
“A humorous example of this is a senior colleague whose behaviour would deteriorate throughout the day from amenable and approachable to irritable and increasingly difficult to work with.

“The problem with this particular physician was they forgot to eat during their long hospital shift. The advice the nurses who had worked with him for some time gave out was ‘just feed him’. Staff ended up carrying around power bars (high energy cereal bars) in case they needed this doctor’s input or opinion.”

“Unfortunately, in that example, the technically skilled clinician lacked self-awareness to a chronic degree. They simply did not see that they were becoming hypo-glycaemic and this was impairing their performance within the team.”

“There are many ‘active errors’ that can occur in an operational environment. Two of them are known by the acronyms SLOP and SLOJ – the Sudden Loss of Performance and the Sudden Loss of Judgement.”

“The vast majority of times these are linked to non-technical human factors based in low self-awareness and a lack of self-care. Performing a routine clinical procedure incorrectly, or making an arbitrary decision that results in harm, are usually linked to fatigue, time-pressure, stress, frustration, or other physiological or emotional debilitation.”

“Learning to manage fatigue is important. In situations where lack of sleep is inevitable, building in redundancies to catch error caused by fatigue is one way to ‘manage’ it. This could be getting back up on a critical task, for example asking a colleague to check your work to ensure it has been done correctly.”

Pausing after error

“If an error occurs, it is important to break the chain of error. On one spaceflight a fellow crew-member dropped a mission bag that had not been tethered the way it should have been. However, they were able to use the ‘five second rule’ - to pause for five seconds - and continue with a subsequently flawless spacewalk for the following eight hours.”

“In healthcare, taking a five-second break to centre yourself after seeing a patient with complex needs can help you get back to peak level of performance for the next patient. If there has been a problem, then it is important to ‘slow down to speed up’, otherwise mistakes creep in.”

“We have to beware of ‘sunk cost bias’, which is the idea that we are ‘so close’ we have to continue. For example, there is a rule that climbers must be off the summit of Mount Everest by two o’clock in order to avoid life-threatening situations of extreme weather and nightfall.”

“When a team broke this rule because they had not quite reached the summit at two o’clock but were incredibly close, they pushed on and ran into serious trouble. Sometimes we have to take the hit of a ‘near miss’ rather than increase the level of risk pursuing a goal that is unattainable within safe parameters.”

Appropriate behaviour

Dave outlined his belief that one of the ways to excel as a member of a team is to operate with a ‘low maintenance personality’. This is a working and behavioural style with the following characteristics:

- Putting group goals ahead of personal goals.
- Arriving on time.
• Attempting to be an effective leader or follower (depending on what they need to be in a given situation).
• Gregarious / friendly / outgoing / welcoming.
• Optimistic - looking for the positive lessons to be drawn.
• Recognising the needs of others and showing empathy.
• Easily integrating into different cultures and being humble enough to work in a way they are not used to.
• Managing their own stress, frustration or anger and not taking it out on others.
• Being an effective listener and communicator.
• Showing integrity, and being inherently trusting and trustworthy.
• Creating positive energy - which can be as simple as smiling.

“Anecdotally, the main predictor of subsequent success in a space team is whether a person arrives to training on time. Developing appropriate expeditionary behaviours is as critical as technical proficiency.”

“Timeliness indicates a willingness to put group goals ahead of personal goals, and commitment to the activity. Habitual lateness indicates a potentially ‘difficult’ team member.”

“Positive energy makes the workplace enjoyable. People want to go to work when the environment is positive. However, positive energy does not just happen - it needs to be created through a deliberate positional stance. It results from every team member choosing to act in a positive way.”

“In space, part of my job is to be in a good mood. If everyone is sullen, then that sets a negative working tone. Our energy management is very important, as is being a positive influence on the group.”

“However, we all need to ask ourselves: ‘How do I react when things are going badly?’ Frustration, difficult circumstances and stress can lead any one of us to become a ‘high maintenance personality’. When we become ‘high maintenance’ we cannot operate at a peak level of performance, because we are no longer capable of working effectively in a team.”

“Confidence is important - but both over-confidence and under-confidence can be dangerous. There is a fine line between over-confidence and arrogance, which can lead to people ‘going rogue’ and deliberately not complying with safety procedures and protocols.”

“Self-care is something that is emphasised in the space programme, but is generally not mentioned in healthcare. It is critical to maintain oneself, perhaps through music, reading, enjoyable past-times.”

“Healthcare is tough, sometimes people and situations are frustrating, but we need to be able to put that aside. To function at the peak of our ability we need to take time for ourselves. Self-care can be built into the operational environment, through challenging people performing at a below-optimum level.”

“That could be through leaders instituting ‘strategic napping’ on long shifts, or enabling staff to plan their downtime to do the things they find restorative and refreshing.”
Finding purpose
“Having a sense of purpose and meaning in our lives is essential for our ongoing mental and emotional well-being. It helps to have this sense of purpose reinforced by those around us, but ultimately it is something internal that we have to find and value.”

“We have to find our own definition of meaningfulness - and what we do in healthcare is remarkable. There can be no greater purpose than contributing to saving lives and bringing healing to those in distress.”

“The journalist Ted Rosenthal wrote a remarkable book chronicling his losing battle with cancer. He believed that being made to realise how he was here for a finite amount of time made him understand that every moment is an opportunity to live a lifetime.”

“We can live a lifetime in an encounter with a patient. We are here for a finite time-period, but we work in a remarkable profession, which should give us meaning and worth in our own eyes, and help us see the worth of all those around us who engaged in this great calling: to care for others.”

Conclusion
Healthcare staff work in complex, unpredictable, high-risk environments, which could often be defined as places where we have to make a time-critical decisions with significant consequences that cannot be reversed, and the outcome can only be modified by subsequent decisions.

In addition to being exceedingly complex, healthcare is delivered in a resource-constrained environment in which everyone feels the system pressures. Empowering frontline staff to creatively seek solutions to these challenges and pressures is critical.

The definition of a ‘high reliability organisation’ is: ‘An organisation that has succeeded in avoiding catastrophes in an environment where normal accidents can be expected due to risk factors and complexity.’ This should be the aim in healthcare as much as in any other high-risk industry such as aviation, exploration, or heavy industry.

Managing risk effectively requires data, which must be thoroughly understood. Healthcare staff can only make the best possible decision if they have the best possible data. However, many healthcare institutions will say they are focused on safety and quality and yet are unable to supply patient safety data.

Designing as many errors as possible out of the system is very important. Examining any given system means imagining all possible latent errors which can build up and become a chain of failure events that result in significant harm.

A ‘failure event chain’ can be due to the ‘normalisation of deviance’ from established best practice and safety protocols. Risky behaviour therefore becomes culturally normative in the organisation and increases the capacity for error.

Successful - safe - healthcare is founded on good team dynamics. Good leadership is vital and can be defined as ‘the capacity to influence others’ - this is not confined to people in titular leadership roles. Everyone in an organisation potentially has the opportunity to step into a leadership role.

Leaders can empower open communication so junior staff can speak up and they need to strive towards creating a ‘just culture’. Leaders must avoid leading in a ‘default’ style and choose the appropriate leadership model in different circumstances.

While leadership is recognised as crucial in healthcare, good ‘followership’ is often overlooked. Followership is ‘upward influence’ in organisations, where all staff raise issues, hold each other to account, and suggest changes. Like failed leadership, failed followership can introduce errors and potential harm into a system.

The key to creating a successful team is selection, with an emphasis on selecting people for more than technical skills. Other factors are as important, including behavioural factors like the ability to work in a team. In addition to teaching technical skills, healthcare training must also teach team skills - the ability to lead and follow as appropriate to the situation.

Everyone engaged in healthcare must commit to peak performance. This means developing non-technical skills including self-awareness, managing fatigue, modifying behaviour under pressure, timeliness, emotional intelligence, and open communication.

Above all, successful teams are enhanced by members who function within the team as ‘low maintenance personalities’ - however stress and external pressure can turn any member of the team into a high maintenance personality.

Having a sense of purpose and meaning in life is essential for a person’s ongoing mental and emotional well-being. Healthcare staff work in a “remarkable profession”, which should offer meaning and worth every day.

Audio recordings and slide presentations from all three WebEx presentations are available online at www.1000livesplus.wales.nhs.uk/nasa-webex

Further reading and information

In addition to the works referenced in this white paper, the following titles will provide additional valuable reading.

On systemising safety:

On leadership and followership:


1000 Lives Plus - www.1000livesplus.wales.nhs.uk
The Health Foundation - www.health.org.uk
Advancing Quality Alliance (AQuA) - www.advancingqualityalliance.nhs.uk
About the author

Dr Alan Willson is joint director of the 1000 Lives Plus programme, a director of the National Leadership and Innovation Agency in Wales, Honorary Senior Lecturer in Swansea University, an Associate of the Welsh Institute for Health and Social Care at the University of Glamorgan and Visiting Professor at the School of Pharmacy in London. He was recently made a fellow of the Royal Pharmaceutical Society.

He has directed several national collaboratives including critical care, medicines, mental health services and most recently in stroke services. His research interests are medicines management and the spread of improvement. He has published on the evidence base for improving effectiveness of medicines in primary care.

Alan qualified as a pharmacist working in senior pharmacy and then general management in London before coming to Wales. He completed a PhD looking at causes of the high rates of Welsh prescribing.