

# Residential Aged Care Communiqué

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**VICTORIAN INSTITUTE  
OF FORENSIC MEDICINE****NEXT EDITION  
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# Editorial

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Welcome to a new year which we hope is better than the last. In this our first edition for 2021 we focus on systems-based solutions to one of the most common and dangerous aspects of aged care, medication management.

We have two geriatric medicine specialists each presenting a case where a resident death was investigated by the court because of potential medication errors. Dr Huong Nguyen presents the case of a resident who had seizures following missed doses of their regular anticonvulsant medication. Dr Supriya Rama Krishnan presents a case where a resident was administered the wrong medication, inadvertently receiving the medication prescribed for another resident. The cases highlight the importance of having robust medication management systems as the residents' frailty and multiple comorbidities increases their susceptibility to poor outcomes such as hospitalisation and death. Another important lesson arising from these cases is that it is often the interplay of several factors that contribute to the death of a resident from a medication error, and small changes may have profound effects.

Our expert commentary is provided by two senior project officers at Safer Care Victoria, Dr Raphaela Schnittker, a Human Factors Specialist and Ms Jen Morris. Their insightful approach helps us to understand how errors can occur, to avoid jumping to simplistic conclusions with an all-too-common response, that if only the staff members were more careful these medication errors would have been avoided. Our experts explain the nature of hindsight and outcome bias, and offer an approach on how to apply systems thinking to medication safety. Urging staff to '*be more careful*' is not enough. Instead, strong systems-based responses are required that change the conditions in which humans work.

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## FEEDBACK

The editorial team is keen to receive feedback about this communication especially in relation to changes in practice. Please contact us at:  
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# Case 1 The fax of the matter

Case Number 2018 5175 Vic

Case Précis Author

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## i. Clinical Summary

Ms AD was a 60 year old resident of a Residential Aged Care Facility (RACF) with Down syndrome associated with late-onset myoclonic epilepsy and Alzheimer's dementia. Her past medical history was also significant for bilateral pulmonary emboli and recent hospital admissions for unwitnessed falls and aspiration pneumonia. Ms AD was prescribed the anticonvulsant phenytoin (also known by the tradename *Dilantin*) 150 mg as a liquid suspension twice daily for management of her epilepsy. The last medical review by her neurologist was in August who deemed Ms AD to be seizure-free with stable behaviours on this regimen.

Ms AD's RACF utilises the 'BESTdose' electronic medication system to place orders with their affiliated pharmacy. Staff placed an order for a new bottle of phenytoin on the 1<sup>st</sup> of October. Over the period from the 1<sup>st</sup> to the 5<sup>th</sup> of October, multiple messages passed between the pharmacy and the facility via this electronic platform to convey that the phenytoin liquid suspension could not be sourced. On the afternoon of the 3<sup>rd</sup> of October, a fax from the facility was sent to

Ms AD's General Practitioner (Dr J.R) to enquire about a substitute formulation.

Dr J.R received this correspondence on the 4<sup>th</sup> of October and attended the facility on the 5<sup>th</sup> of October. Dr J.R prescribed chewable phenytoin tablets in place of the liquid suspension and informed the pharmacy.

in her respiratory and conscious state. Ms AD was admitted to the ward and treated for seizures with anticonvulsant medication, and intravenous antibiotics for aspiration pneumonia. On the 8<sup>th</sup> of October, Ms AD's condition deteriorated with increased respiratory distress and difficulty clearing secretions that precipitated another decrease in her conscious state.

**"Ms AD was administered her last dose of phenytoin suspension at 0800h on the 4<sup>th</sup> of October and had missed two regular doses of phenytoin over the previous day."**

Unbeknownst to Dr J.R, Ms AD was administered her last dose of phenytoin suspension at 0800h on the 4<sup>th</sup> of October and had missed two regular doses of phenytoin over the previous day. Ms AD was administered chewable phenytoin tablets on the evening of the 5<sup>th</sup> of October.

At approximately 0730h on the 6<sup>th</sup> of October Ms AD was discovered with vomitus in her mouth and on the bed sheets and an ambulance was summoned. On assessment she was hypoxic and tachycardic with increased work of breathing and upper airway noises.



Ms AD was transferred to the closest regional hospital where she had a generalised tonic-clonic seizure in the emergency department with deterioration

On consultation with her family, palliative care was initiated two days later. Ms AD died in the early hours of the 14<sup>th</sup> of October.

## ii. Pathology

Post-mortem examination of Ms AD determined that the cause of death was attributed to "(a) respiratory arrest in the setting of aspiration pneumonia (b) seizures associated with Alzheimer's disease and Down syndrome."

## iii. Investigation

Ms AD's death was reported to the coroner due to her family's concerns about her care and management, specifically regarding the missed doses of phenytoin in the days leading up to her death.

The coroner referred this case to the Coroners Prevention Unit (CPU) for a comprehensive review.

The CPU, staffed by health professionals independent of the institutions under investigation, reviewed clinical records and statements obtained from Dr J.R and the General Manager of the RACF, in conjunction with the autopsy findings.

A statement from Dr J.R detailed her interpretation of the fax as a request for a substitute for Ms AD's regular phenytoin suspension medication due to a supply issue.

The fax was not marked as urgent or with a medication chart attached for a new prescription.

order for both the regular tablets as well as a loading dose on the 4<sup>th</sup> of October. When she attended the Aged Care facility on the 4<sup>th</sup> of October, Dr J.R did not review the electronic medication administration record as this system was not easily accessible without the assistance of nursing staff.

The General Manager of the RACF, Ms K.S, provided a statement that following Ms AD's death, the issue of medication non-availability at the pharmacy was reviewed at a quarterly Medication Advisory Committee meeting.

aspiration pneumonia which led to her death.

2. Nursing staff at the Aged Care facility did not appreciate the importance of phenytoin as an essential medication that should not be abruptly discontinued due to the risk of increased seizure activity. This was evident in their failure to escalate communications with Dr J.R in a more proactive or urgent manner.
3. The delays in Ms AD receiving her regular anticonvulsant medication appear to be due to miscommunication between the Aged Care facility and Dr J.R. It was unclear whether communication between the pharmacy supplying the phenytoin and the facility contributed to the medication delay.
4. Staff at the Aged Care facility were not equipped to handle scenarios wherein essential medications are unavailable.

**“Dr J.R did not review the electronic medication administration record as this system was not easily accessible without the assistance of nursing staff.”**

Dr J.R confirmed that she was unaware that Ms AD had missed two doses of phenytoin when she read the fax correspondence. This was contrary to her previous experience where nursing staff from a RACF would alert doctors promptly when a regular prescribed medication had been missed.

Dr J.R stated that there were arrangements for communication of urgent and non-urgent matters between her clinic and the four Aged Care facilities that she attends. When a matter requires her urgent attention, a fax marked as urgent is usually sent to the clinic followed by a phone call to reception. The issue would then be brought to her attention or that of the duty General Practitioner if she was unavailable. In retrospect, Dr J.R advised that had she been privy to this information, she would have provided a phone

The committee recommended that the pharmacy should notify directly via email the RACF General Manager, team leaders, and other staff in the event that a medication was unable to be supplied, rather than using the 'BESTdose' electronic messaging system. According to Ms K.S, the Aged Care facility had followed their Aged Care Medication Management policy and procedure in relation to this incident.

The coroner's review identified that:

1. While it is unclear whether Ms AD sustained a seizure prior to being found, she did sustain a seizure in the emergency department on the same day. This suggests that the sudden cessation of her regular phenytoin did increase her risk of seizure activity, which in turn, increased her risk of



It was recognised that these were areas of poor staff instruction with no formal written directive. The facility's Aged Care Medication Management policy and procedure did not address the two key issues relevant to this incident, namely, the non-supply of prescribed medication from the pharmacy; and communications with the prescribing doctor in relation to missed doses of essential medication.

#### iv. Recommendations

The recommendations of the coroner in relation to Ms AD's case were for an update of the facility's Aged Care Medication Management policy and procedure to include instructions to staff on a) the urgent management of non-supply/non-availability of medications from the pharmacy and b) communication with the prescribing doctor about missed doses of essential medications.

It was also suggested that the RACF review the need for internal pharmacology education of essential medications for all staff responsible for the supervision and administration of medication to residents.

#### v. Author's Comments

This case highlights the intrinsic weaknesses – holes in Reason's Swiss cheese model - in our existing systems of health and aged care that allow for cumulative errors to lead to patient harm<sup>1</sup>.

Barriers to communication between practitioners and teams are intrinsic in healthcare systems<sup>2</sup>. Miscommunication or non-effective communication are major factors in adverse events in healthcare settings<sup>3</sup>. New technologies and e-health platforms provide avenues to integrate complex processes and information. However, our increasing reliance on electronic messaging technologies should not detract from personal responsibility to ensure message accountability.

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#### vii. Keywords

Communication barriers, medication errors, epilepsy, aspiration pneumonia, RACF, technologies

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# Case 2 An interrupted drug round

Case Number 2017/5085 Vic

Case Précis Author

**Dr Supriya Rama Krishnan**  
MBBS FRACP Consultant  
Geriatrician

## i. Clinical Summary

Mr P was a 61 year old male resident of a RACF with a past history of neurosurgery for a ruptured arteriovenous malformation. As a consequence of this injury he developed cognitive impairment, dysphagia, personality change, epilepsy and recurrent pneumonia.

One afternoon in early September, Mr P was reportedly tired and lethargic. He had a low-grade fever, was short of breath, hypoxic (reduced oxygen level) and had low blood pressure.

Mr P was administered Tapentadol slow release 100 mg by a personal care worker (PCW).

Clinically, he considered Mr P had pneumonia and prescribed antibiotics with 15-minute observations. He noted, "patient was in respiratory distress before the medication was given in error".

That same day the RN requested another medical review. A second locum doctor, Dr BR to attend, who re-assessed Mr P and diagnosed a lower respiratory tract infection and recommended that staff continue to conduct regular observations of Mr P at the RACF. An hour later, Mr P became unconscious and an ambulance was called.

Mr P arrived at hospital with altered conscious state and type 2 respiratory failure (due to hypoventilation). His Glasgow Coma Score was 4/15. The venous blood gas obtained on arrival demonstrated a carbon dioxide (CO<sub>2</sub>) level of 178mmHg (reference range 35-45mmHg).

He was subsequently moved to the medical ward and two weeks later, he was transferred to a subacute hospital. However, his health continued to deteriorate and a decision was made to provide palliative care. He died in the presence of his family almost four weeks after the medication error.

## ii. Pathology

A forensic pathologist performed an external examination of Mr P's body and reviewed a post mortem computed tomography (CT) scan. The findings showed a previous craniotomy, and right lobe consolidation in the lungs. He was cachectic with a body mass index of 14 (reference range 18.5 to 25). The cause of death was attributed to pneumonia.

## iii. Investigation

A death certificate was issued at the time however, Mr P's death was reported to the coroner approximately one week after his death due to family concerns. His death was investigated as it was considered unexpected, unnatural or to have resulted, directly or indirectly, from an accident or injury, based on the Coroners Act 2008 (Vic).

The coronial investigation included a review of statements made by family, care providers, and treating clinicians, as well as various clinical and care records made available to the Coroners Prevention Unit (CPU).

**"The venous blood gas obtained on arrival demonstrated a carbon dioxide (CO<sub>2</sub>) level of 178mmHg (reference range 35-45mmHg)."**

Shortly after administration of this medicine, the PCW realised that Mr P had received another resident's medication, so the PCW immediately informed the registered nurse (RN) on duty. A medical review was organised and a locum doctor, Dr SN examined Mr P and documented the medication administration error.

Mr P received doses of naloxone and was admitted to the intensive care unit, where he spent eight days undergoing treatment for aspiration pneumonia requiring non-invasive ventilation, atrial fibrillation, and hypotension requiring intravenous fluid and noradrenaline.

The investigation revealed that Mr P was frail and required some assistance with activities of daily living. Notations in the clinical record indicated he was frequently refusing food and his weight had been declining for several months prior to the medication incident. The RACF had consulted with medical and allied health staff in an effort to address the loss of weight. Interestingly, Mr P had received and declined the use of naso-enteric feeding.

About one week after the medication error and about three weeks prior to Mr P's death, the RACF manager had had a meeting with his daughter. At this meeting the family were informed that Mr P had been given the wrong medication by a personal care worker (PCW).



The family queried whether Mr P may have lived longer if the medication error had not occurred. The forensic pathologist opined that given the medication was incorrectly administered a month prior to Mr P's death; it was unclear if it contributed to his death, especially given Mr P had multiple comorbidities.

The medication error had multiple contributing factors. The PCW had commenced the round to administer medication with pre-prepared medications to give to another resident however, on arrival to that resident's room he was not present. The PCW proceeded on to Mr P's room, however, this task was interrupted by providing assistance to another resident with toileting.

The PCW was also managing the aftermath of another resident's fall, and providing palliative care. The PCW reported that when she attended Mr P's room, she had a lapse in concentration leading to her dispensing the other resident's medication to Mr P.

The CPU considered that when the medication error was identified, the response was immediate, appropriate, and timely with open disclosure occurring to inform the family.

The Australian Nursing and Midwifery Federation states that PCWs are not qualified to give medicines but may help people who are able to take their own medicine from a pre-packaged medicine container. The CPU was aware that the practice of PCWs assisting residents with medications was common to many RACFs.

Following the coronial investigation, the RACF implemented a policy that all staff had to have their medication administration competencies re-assessed with a new and improved medication course. The RACF also moved to employing enrolled nurses to administer medications. The RACF implemented the use of a 'MEDICATION ROUNDS DO NOT DISTURB' vest to minimise disruption of staff during the rounds. The coroner acknowledged the changes made by the RACF to improve resident safety.

#### iv. Coroner's Findings

The coroner found that the PCW's lack of experience and knowledge, and the interruptions experienced during the medication round contributed to the error of giving the incorrect medication to Mr P.

**"The CPU considered that when the medication error was identified, the response was immediate, appropriate, and timely with open disclosure occurring to inform the family."**

In addition, system failures in staffing levels, skill mix, and workload contributed to the medication error.

There was no evidence to suggest the medication error caused or contributed to Mr P's death. The death occurred in the setting of significant functional decline over several months however, the medication error was considered an issue of significant public interest. As such this finding was distributed to the Royal Commission into Aged Care Quality and Safety.

#### v. Keywords

Pneumonia, medication error, open disclosure, RACF, personal care worker, medication round



# Human Factors and Medication Safety

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## Introduction

Here we are presented with two medication-related adverse events. One in which medication was administered to the wrong resident, and one in which doses were missed due to delayed supply.

When reading these two cases in hindsight, it is easy to ‘jump to conclusions’ and, lay blame on individual staff. A common response might be ‘why wasn’t the staff member more careful in double checking the residents’ ID?’ or ‘how could they let the medication run out without following up with a phone call?’ Our judgement is naturally coloured by the fact that we now have a bird’s eye view of all of the facts, and the outcome of the actions of frontline staff. These common responses occur because we are susceptible to both hindsight bias (the human tendency to perceive past events as more predictable at the time of the event than they actually were) and outcome bias (the human tendency to judge the quality of human actions differently when

we know the outcome of those actions).

Both biases can be problematic, as they prevent us from considering people’s actions in the context of the information they had at the time. Therefore, they are a barrier to truly understanding why people acted the way they did, and therefore how future events could unfold, in a way that will help prevent similar events.

## Human Factors

The study of human factors examines the interactions between people (with their cognitive and physical capabilities and limitations) and the systems in which they work. It focuses in particular on the capabilities and limitations we cannot change, which make us human. For example, vulnerability to distraction, limitations in how many things we can hold in our mind at once, or the tendency to interpret information in light of past experience. Human factors professionals attempt to understand how human performance is affected by the broader system, such as the design of the work environment, task complexity, organisational priorities, and technology design. Most importantly, human factors are used to design systems in a way that accounts for our innate capabilities and limitations – and thereby make it easier for people to do the right thing, and harder to do the wrong thing.

## Aged care is a complex system

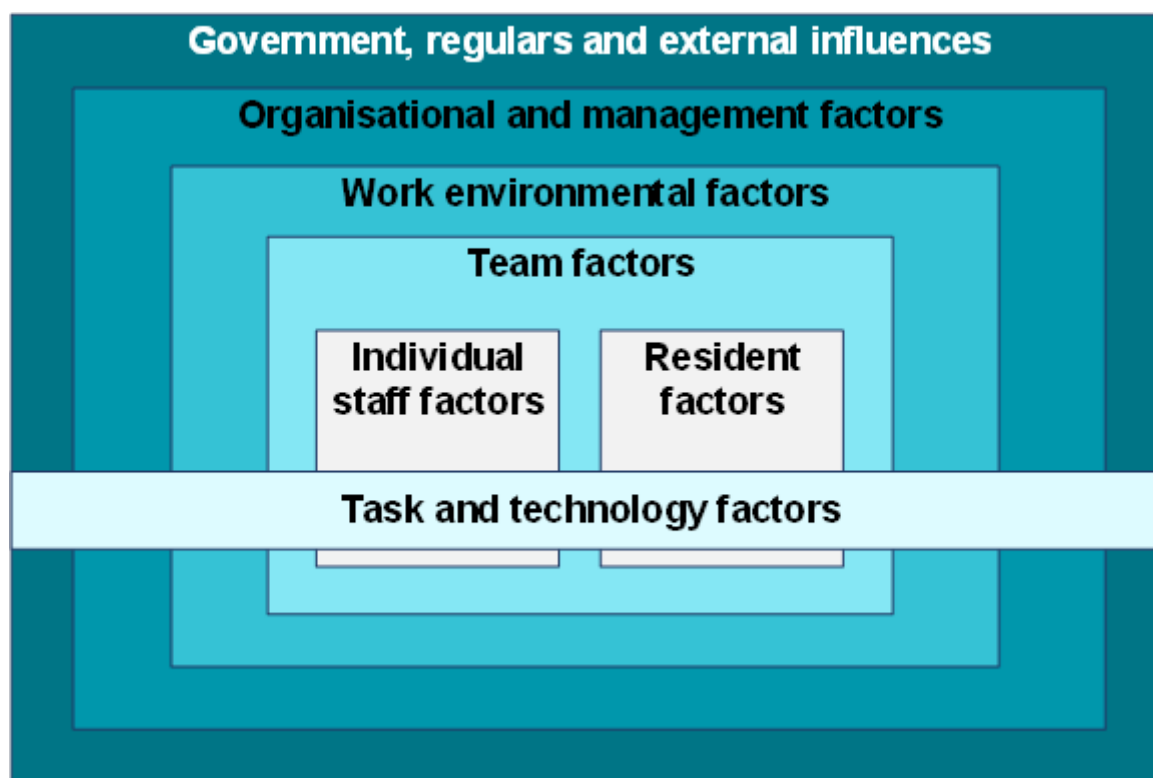
Similar to other systems that care for people, aged care is complex and consists of multiple layers, similar to an onion (see Figure 1). At the core of the system is the interaction between the resident and staff – the care that occurs at the frontline. The onion model shows that the interaction between residents and staff, being at the core of aged care, is affected by systems factors that go far beyond these direct interactions (e.g. task and technology design, team work, policies and procedures set by organisational management, and regulatory influences). Consequently, these systems factors need to be considered when attempting to understand how resident care can go wrong.

## Applying systems thinking to medication safety – case studies

By applying a human factors lens, we will show that both cases, while different in their specific details:

- occurred due to systems issues that contributed to the actions of frontline staff
- require solutions that address the design of the broader system, rather than addressing the behaviour or performance of the individual.





**Figure 1**

*Note. The SCV onion model was derived from the London Protocol contributory factors framework (Taylor-Adams & Vincent, 2001)*

## Reflections Case 1

In this case, prescribed doses of a resident's essential medication were missed due to ineffective communication between the aged care facility, GP and pharmacy.

Looking at this case with a systems perspective, the communication technologies and processes in place between the three providers were fragmented and convoluted, relying on multiple unintegrated systems such as the 'BESTdose' medication system, phone, fax and face-to-face methods of communication. Fragmented communication systems can increase the risk of ineffective communication, as there is no central access to information.

Facsimile technology is not amenable to adding '*forcing functions*' (a function that allows a task only to be finalised after

a number of specific actions have been completed), such as a function requiring frontline staff to indicate the urgency of a medication request before submitting. This makes the process vulnerable to humans potentially omitting important or key steps when being disrupted or under time pressure.



Humans have a natural tendency to fill gaps in available information by drawing on past experience. For example, in the GP's experience, urgent medication issues would be communicated by a fax marked 'urgent', accompanied by a medication chart and follow-up phone call, and brought to their attention when they attended the aged care facility.

As none of these cues were present, the GP did not categorise this issue as urgent.

The 'BESTdose' medication ordering system was a recently introduced system. People require time to learn and adapt to new ways of working. There is an increased risk for error in the early stages of transitioning to a new system. Depending on the complexity and usability, a system may be less or more 'learnable'. Regardless, organisations need to support frontline staff to transition to new systems, especially if errors can have significant consequences for resident safety.

We can see how this range of systems factors likely contributed to the communication breakdown, and associated delay in medication supply.

## Reflections on Case 2

In this case, the personal care worker made a mistake by administering medication to the wrong resident. We know that errors like these (performing a ‘correct’ task, but in an ‘incorrect’ context) can occur when we are interrupted or distracted while performing the task. It is well known that interruptions increase

While these systems complexities are an inherent part of aged care environments, there were limited systems-based safeguards in place to support healthcare workers in managing these complexities effectively. Together with human vulnerability to distraction and cognitive overload, these systems factors would make any person in this worker’s position vulnerable to this type of error.

Weak responses are those which focus on individual performance and behaviour (e.g. more training, instructing staff to re-read a policy, or removing a person from performing a task). These responses are likely to be ineffective because human fallibility can never be eliminated, and these responses leave unaddressed vulnerabilities in the system. Punishing workers for reporting adverse events by removing them from duty can also have unintended consequences. It discourages future reporting due to fear of punitive action, and thus increases the risk of system problems not being brought to the attention of others.

**“Punishing workers for reporting adverse events by removing them from duty can also have unintended consequences.”**

the potential for errors, as they introduce additional cognitive demands. This can lead to failures in memory and information processing, thereby increasing the risk of errors. The potential for error as a result of distractions is especially high if workload is already at capacity, which can be exacerbated by staffing issues, acuity of patients, visitors and other demands.

Looking at the broader systems factors, we see that this worker was affected by multiple external factors beyond their control. For example, the staff member was interrupted and ‘pulled away’ during the medication round to attend to other tasks. They also experienced an unexpected diversion from their work plan, because the resident for whom the medication was intended was not in their room. The worker was also simultaneously juggling other demanding tasks, including managing the aftermath of another resident’s fall, and providing palliative care for yet another.

Therefore, solutions to prevent a similar event from reoccurring need to focus on the systems, rather than the individual.

### Implementing systems-based solutions

Insights from the systems-thinking approach allow us to not only better understand why adverse events happen, but also to develop systems-improvement strategies for preventing them in the future.

An intuitive response in both cases may be to urge people to ‘be more careful’, and reinforce this with more policies, warnings and training. However, these responses are unlikely to be effective if implemented in isolation. This is because they focus on addressing individual performance, at the expense of addressing wider systems issues that continue to undermine that performance. The degree to which various solutions will achieve effective system-wide improvement falls along a spectrum from weak to strong.



Moderate and strong responses target the design of the system, rather than focusing on changing individual behaviour. Examples include changing physical surroundings, simplifying convoluted processes by removing unnecessary steps, and conducting usability testing of newly-developed medical devices. Examples of moderate solutions include eliminating ‘look-or-sound-alike’ medications, improving rostering, and implementing standardised communication tools.

While strong solutions are the most desirable, they are not always available or applicable in practice. Where they are not possible, aiming to implement solutions that are towards the strong end of the spectrum, focusing on the system rather than the individual, is the next best thing.

Examples of strong systems-based responses:

- Introduce a web-enabled electronic logistics support system that automatically re-orders ongoing medications earlier, before supply is close to running out. The automation and longer time-buffer builds an automatic 'safety net' (resilience) into the system.
- Introduce a web-enabled electronic communication system between aged care facilities, medical practitioners and pharmacies, in place of faxes. Test the system with frontline workers and incorporate relevant forced functions, such as compelling users to indicate urgency when submitting a prescribing request.
- Integrate IT systems so GPs, pharmacists and aged care facilities can share and access mutually important information.
- Introduce improved technology to match residents to their medications, for example barcoding systems.

The above responses have one common characteristic: they re-design the systems in which people work, to support them to perform well, rather than requiring people to continuously compensate for flawed systems. When developing responses to affect change, remember – we can't change the human condition, but we can change the conditions in which humans work.

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# List of Resources

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sapharm.2018.06.007

[Link to report](#)

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