Systemic failures in nursing home care

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Executive summary: Poor care and poor outcomes are a ubiquitous problem in nursing home care. We developed – based on findings in the literature, personal experiences in nursing home care and interviews with core stakeholders – a 3-D system map to represent the structure and the dynamic links within the system. It showed that the system is highly fragmented, dysfunctional and without any evidence of system leadership and transparency of system governance and accountability. The system requires a fundamental redesign – the approach to redesign is illustrated and can serve as a blueprint.

Tags: preventable morbidity and mortality, health case, aged care, causal loop diagram, regulatory and governance failure, financing failure, workforce shortage and skills, vulnerable population, system redesign, Australia

Section 1: Background and introduction

Individuals in nursing homes are a highly vulnerable group of usually frail and/or cognitively impaired elderly members of society. They are at a very high risk of adverse events such as falls and infections and outcomes (for example malnutrition, fractures, skin ulcerations or delirium) and hence require interdisciplinary care from highly skilled and motivated health and social care professionals.

The 'residential aged care' sector – the government's preferred term, although residents and their families largely prefer the term 'nursing home' – has a long and well-documented history of failings [1-8]. Aged care in most western countries is a government responsibility, it is for government to make the necessary systemic changes to achieve a well-functioning care system for frail elderly people who can no longer care for themselves.

Multiple investigations and inquiries have repeatedly shown the same – systemic – reasons for the sector's failings – insufficient funding, privatisation, inadequate governance with a process rather than outcomes focus, lack of responsiveness to often rapidly changing resident needs due to understaffing, inappropriate staff mix and inappropriately low staff skills. However, these insights have not resulted in any meaningful systemic changes to the 'aged care system'. More disturbingly, as the three cited reports and inquiries [2, 7, 8] have highlighted, the changes to specific parts of the system have in many cases worsened the failings in nursing home care. The (inept) actions of government have ultimately contributed to the unnecessary and unacceptable suffering of older people in nursing homes who were already one of the most vulnerable groups of people in our communities.

To understand these failings, one needs to understand how systems operate. The system of aged care should be seen as a continuum from those services designed to support older people living independently at home through to supported living in voluntary retirement villages, and other forms of serviced accommodation, onto nursing home settings that offer higher levels of care and support to the more dependent – the 'aging in place' strategy (**Figure 1**). Our report specifically focuses on the nursing home setting and its systemic failings.

A whole-of-system perspective

The nursing home system can be described as a socially constructed and hierarchically layered organisational system. It is a complex adaptive system (CAS) given its highly dynamic networked interactions. The function of any organisational system arises from four key attributes – the organisation has articulated its 'purpose', has set itself a limited number of 'specific goals to achieve', and has agreed upon a set of 'core values'. These are the foundation from which the fourth attribute of an organisation arises, its collectively defined – typically – three to five 'simple (or operating) *rules*', the rules that determine the internal and external interactions among its members (the culture of the organisation). Hence, the nursing home system might best be described as a *Complex Adaptive Organisation* (**Figure 2**).

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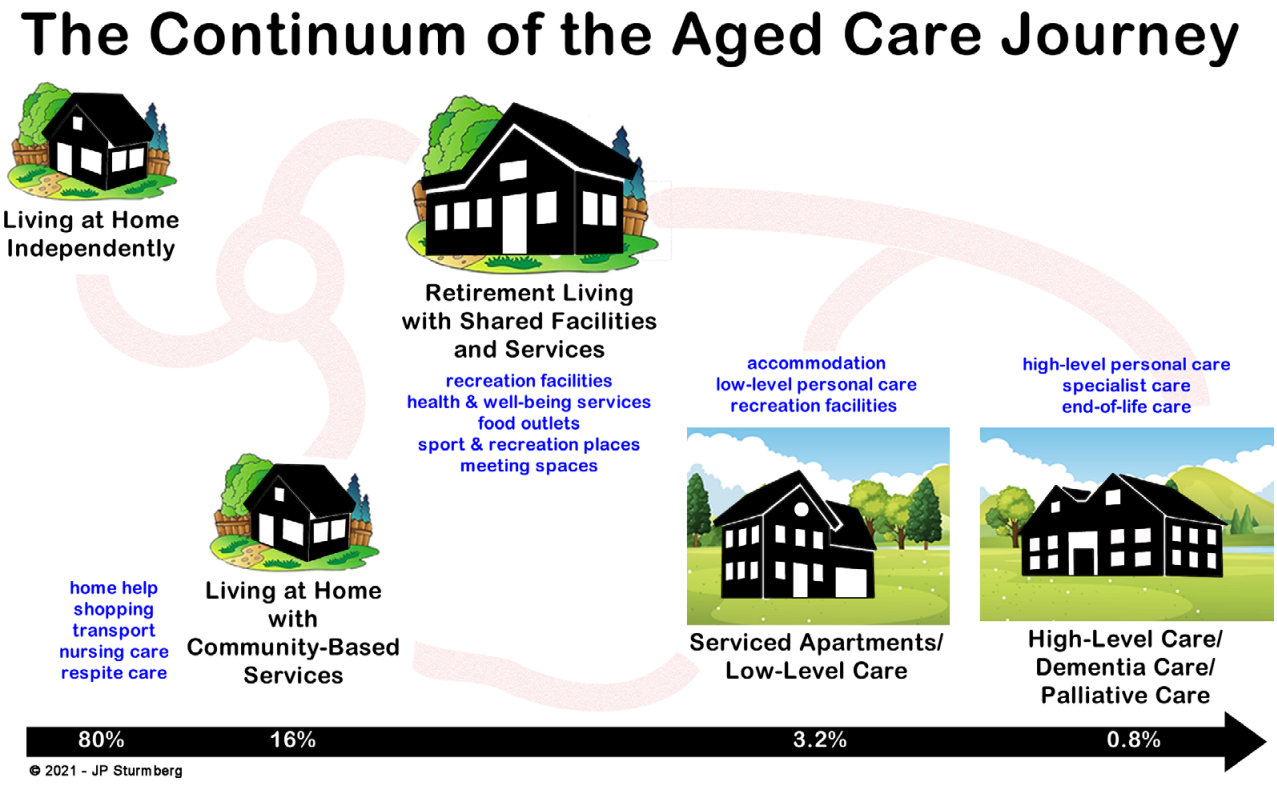

Figure 1 – The aged care journey – "aging in place". Note: only about 0.8% of the total community will ever require nursing home care across their lifetime

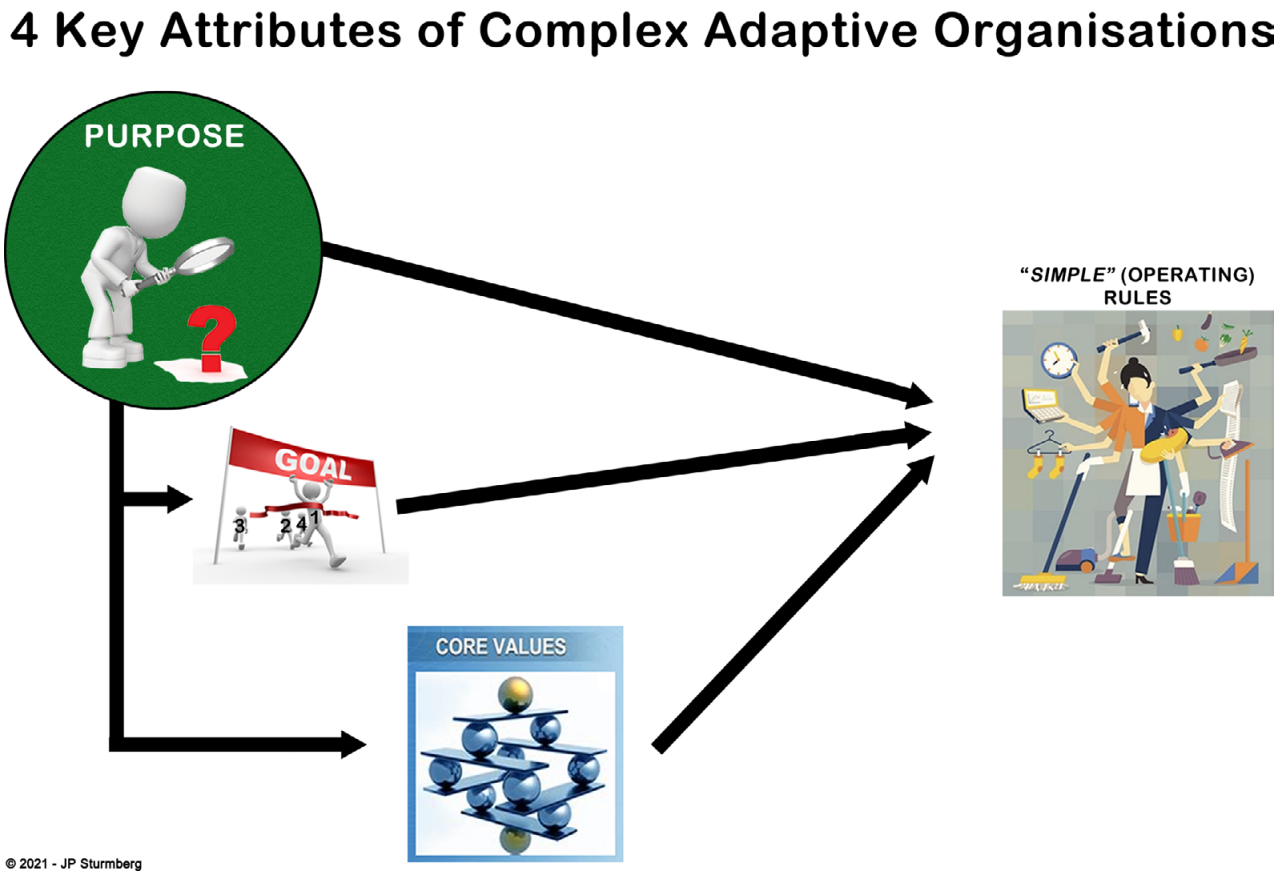

Figure 2 – The Key Attributes of a Complex Adaptive Organisation

The effective, or seamlessly integrated, functioning of a complex adaptive organisation depends on all its members at all levels of the organisation's system, working collectively towards the realisation of its purpose. The purpose provides the necessary focus that allows its members to adapt to the inevitably emerging challenges within the organisation in its operating environment. It is the primary task of an organisation's leadership to maintain everyone's focus on the defining common purpose [10], and to ensure that all its members have, and utilise, the required resources to achieve its specific goals.

In addition, the capability of a complex adaptive organisation to meet its purpose is governed by top-down causation [11]. In other words, the nursing home system's 'function' is based on 'top-down causation' that 'enforces' the bottom-up work that needs to be done. Top-down causation relies on higher levels passing on information that (a) conveys what work should be done and (b) limits the possible ways it can be done. Information that too tightly constrains fails to provide the necessary information for any work to be done (for example to meet the specific needs of the local context) while information that too loosely constrains does not clearly enough convey what work needs to be done and so potentially leads to a divergence from 'purpose' [9].

Translating this into the nursing home system allows us to construct a multi-level interpretation of the system as a complex adaptive organisation (**Figure 3**).

Section 2: Analysis and insights

The government level (government, as defined by the *Aged Care Act* 1997) seeks to keep the system's focus on its key purpose (meeting the care needs and aspirations of the frail elderly and maintaining their dignity) and the provision and enforcement of instructions of behaviours the agents of the system have to adhere to.

In addition, the top layer also has to provide the required resources to the lower levels so they can do the work that needs to be done and ensure – through a regulatory agency – the accountability and governance of the system.

The proprietor level provides the physical infrastructure of a nursing home as well as employing the necessary staff to deliver the required care. It is the related facility management level that is responsible for implementing care and monitoring the quality of the work done – in particular, it is the role of management to constantly adapt resource allocation (physical and staff) to the constantly and often rapidly changing care needs of individuals.

The care team level delivers the needed care, but also aims – within the limits possible – to stabilise and/or minimise disease burden and prevent health risks arising from a person's frailty. Staff members also have responsibility for identifying and mediating their own knowledge and skills gaps.

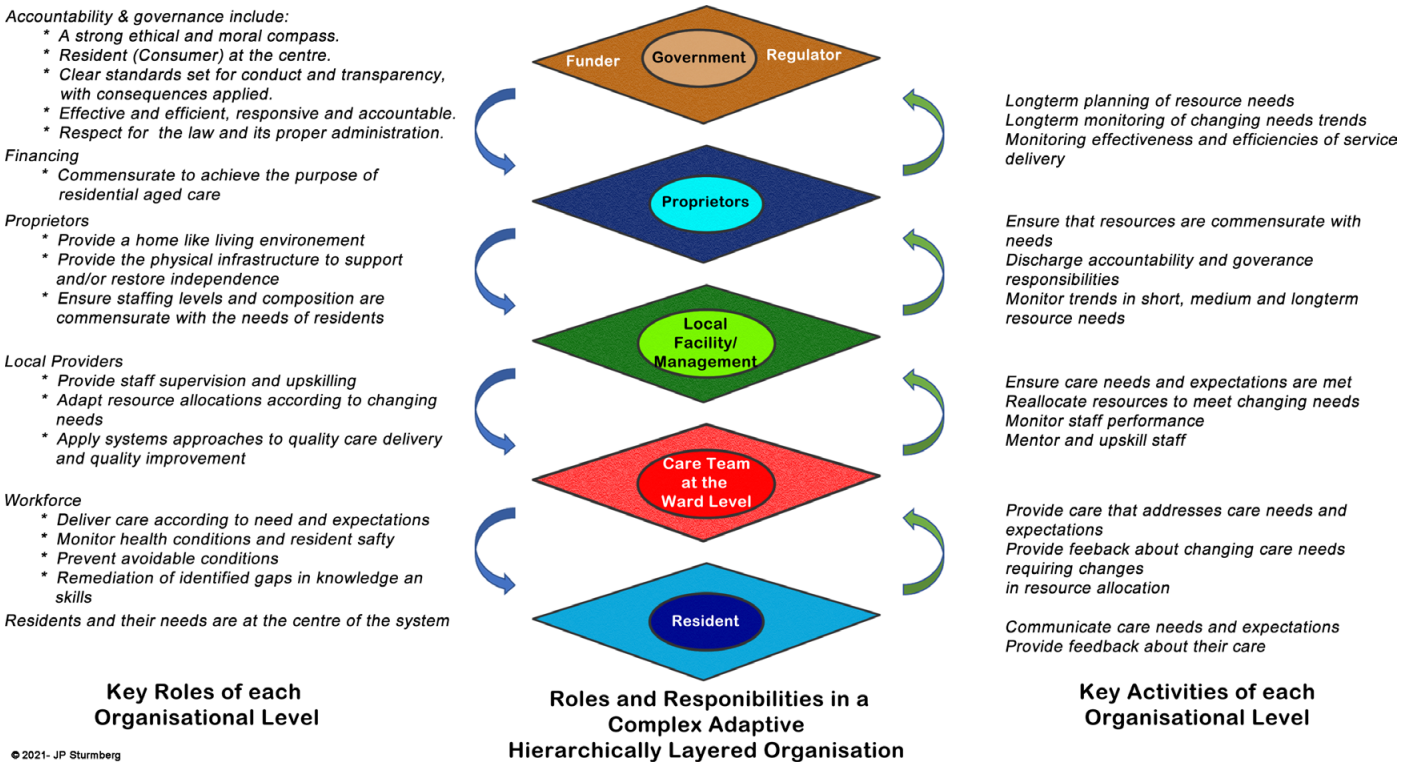

Figure 3 – Roles and responsibilities within the nursing home system as a complex adaptive organisation

At the resident level, every resident (and their family members) will provide input about the care needs that need to be met by care staff.

The observed functioning of the nursing home system, as a complex adaptive organisation, emerges from the bottom-up based on a complex interplay of feedback that represents the ever-changing requirements to achieve the outcomes defined by the organisation's purpose (**Figure 3**). Hence, residents will provide input about their care needs which must be met by care staff. Care staff in turn need to communicate the changing needs of each person to ensure the adaptive provision of physical and workforce resources. It is for the nursing home's management to provide required resources, but also to ensure these are applied in the most effective, efficient and equitable way without compromising care outcomes. In addition, management needs to ensure that staff members are mentored and upskilled where needed so as not to endanger the quality of care, or worse, threaten people's safety.

Proprietors are ultimately responsible for ensuring the quality, effectiveness, efficiency and safety of their facilities. They must both ensure accountability and governance requirements are met and advocate that funders provide the required financial resource to achieve the system's purpose. Their feedback allows overall forward planning of policy and financing frames at the government level to maintain the overall 'nursing home system' focused on achieving the system's purpose – to provide individuals with care that meets their needs and maintains their dignity.

Only seamlessly integrated, purpose-focused organisations can consistently deliver the desired outcomes as they understand them, paraphrasing Drucker [12], how to "do the right things right".

But the system doesn't follow a whole-of-system approach

> *"The urge to save humanity is almost always a false front for the urge to rule."*
>
> – H. L. Mencken

All systems – including rather dysfunctional ones – are surprisingly stable. The current aged and nursing home systems are 'peddling along' based on the disparate 'simple rules' that drive the activities of stakeholders at each system layer. It cannot be stressed enough – all systems always deliver what they are designed for. The current aged and nursing home 'arrangements' are not designed to function as a seamlessly integrated whole. Indeed, there are probably three different systems operating in the aged care domain, each having a different agenda. Or put more bluntly – the current aged and nursing home arrangements are of a design that fail its constituency as it has no universally accepted and 'enforced' focus (purpose). Failing to maintain the system's legislated focus prevents the emergence of system-wide 'simple (or operating)' rules (see Box):

The importance of 'simple (or operating) rules'

To fully understand the dynamics of an organisation as-a-whole one must appreciate the importance of 'simple rules' on the behaviours and ultimately outcomes of an organisation. Simple rules are collectively agreed upon guidelines that inform how all members of the organisation interact within its internal and external environments. An organisation's simple rules should be explicit, and generally number between three and five. Whether by conscious agreement, or by unspoken assent, members of a CAS engage with each other according to such a short list of simple rules. Those simple rules shape the conditions that characterise the dominant patterns (or culture) of an organisational system.

Applying the concepts of 'simple rules' to the current aged care arrangements reveals three different sets – one for the government level, another for the proprietor level and a third for the nursing home (care delivery) level.

The 'simple rules' for the government level:

- Address all identified issues to the maximum extent permitted;
- Responsibility is accepted for actions, where there is a clear direction or a delegation of authority;
- All areas of government are resource-constrained, hence doing more with less is required.

The 'simple rules' for the proprietor level:

- Apply business principles in decision-making;
- Stay within the regulator's rules;
- Avoid overt resident complaints.

The 'simple rules' for the nursing home level:

- Respect residents unfettered autonomy regardless of consequences;
- Always strictly follow the regulator's rules, independent of context;
- Look after yourself[1] – minimise your personal suffering;
- Be creative with using the available limited resources in the care of residents.

The current system design puts residents at risk

The residential aged care system is the responsibility of the Australian Government. Its legislation constitutes the overall framework of the system (*Aged Care Act* [13]) and specifically:

- Defines its purpose and thereby its expected outcomes;
- Provides its financing, and;
- Provides oversight (governance and accountability).

While all aged care is the responsibility of the Federal Government, it does not directly own or operate any residential aged care facilities. The provision of aged care is outsourced to a mix of corporate, not-for-profit organisations, and state and Local Government entities. The aim of aged care services are subjectively defined in terms of wellbeing and independence, i.e. focusing on quality of life [14].

While the stated purpose of the system is unambiguously defined (by legislation), there is no universal shared understanding of the system's purpose among all its agents. This creates inconsistencies and ambiguities that allow different stakeholders to pay more attention to their own interests.

The cascading consequence of ambiguity of purpose

Complex adaptive hierarchically layered organisational systems are governed by top-down information transfer. The Australian Government views those requiring nursing home care as consumers [15] despite the *Aged Care Act* clearly emphasising that the system is for people with needs or recipients of care [13]. This perception neglects the reality that 'people don't choose' to become nursing home residents, nursing home care becomes the last resort to 'keep going'. The 'consumer terminology' subtly prioritises a commercial over a caring culture for the sector. The commercial influence as the basis for system-wide information transfer, while more overt in the for-profit than not-for profit sector, has cascading effects that limits the ability of nursing home staff to deliver the care that the *Aged Care Act* stipulates.

The Australian Government decided not to be 'directly involved in aged and nursing home care' and outsourced the funding and regulation of the aged and nursing home sector to 'so-called independent' government instrumentalities.

Financing

The aged care system can be seen in economic terms only as a series of 'imperfect markets', where little consumer choice prevails and markets are distorted by a concentration at the profitable provider end, with frequent government intervention. The current Australian Government legislation and policy settings are designed to fund the operation of nursing home care based on a disease-specific instrumental indicators of need (ACFI-model [16]), rather than 'overall – physical, emotional, social and cognitive – care needs.' [17].

Oversight – the regulatory frame

Regulation refers to state intervention in economic and social activity, aimed at directing or encouraging behaviour valued by the community, so as to facilitate the pursuit of collectivist goals that might not otherwise be realised and which constitutes a form of 'public law' in the sense that it is generally for the state (or its agents) to enforce the obligations that cannot be overreached by private agreement between the parties concerned [18].

The Aged Care Quality and Safety Commission is charged with the oversight of the aged and nursing home system. However, the regulator is potentially conflicted by its interdependent powers [19]:

- Giving potential operators the right to provide aged care services;
- Enforcing a particular view on how to deliver services; and
- Being the adjudicator of imposing sanction or withdrawing their right to operate.

Besides this the regulator, rather than providing oversight, has adopted an ambiguous compliance framework [19] that infers a prescriptive process-focused micromanagement philosophy. Such an approach stifles any form of flexibility necessary to respond to the often rapid and unpredictable changing care needs of frail nursing home residents. The consequences of this approach are a climate of fear – for proprietors and management, the constant concern about avoiding sanctions and for care staff a 'double fear' of losing one's job for failing to meet documentation requirements and failing to properly care for residents (**Figure 4**).

Proprietors

Proprietors, constrained by limited government funding, are limited in their ability to meet their obligations of providing flexible and adaptive care to meet their residents' needs and to maintain their dignity. Proprietor status – for-profit or not-for-profit – has an impact on staffing arrangements and quality of care outcomes. Financial viability concerns have resulted in 'economy of scale' thinking, with nursing homes becoming bigger [20-22] and more hospital like [22]. Institutionalised nursing home settings are contrary to the objective of providing a home-like environment for a smaller number of (between eight and 12) residents and, contrary to common economic belief, are not more cost-effective. On the contrary, small cluster model experiments have demonstrated their ability to deliver a higher quality of care and higher resident and family satisfaction at a lower cost [23-26].

Workforce

Nursing home care involves three separate, but interrelated, domains:

- Personal care – provided by personal care assistants (PCA) and assistants in nursing (AIN);
- Clinical care – provided by registered nurses (RN – with general, geriatric and mental

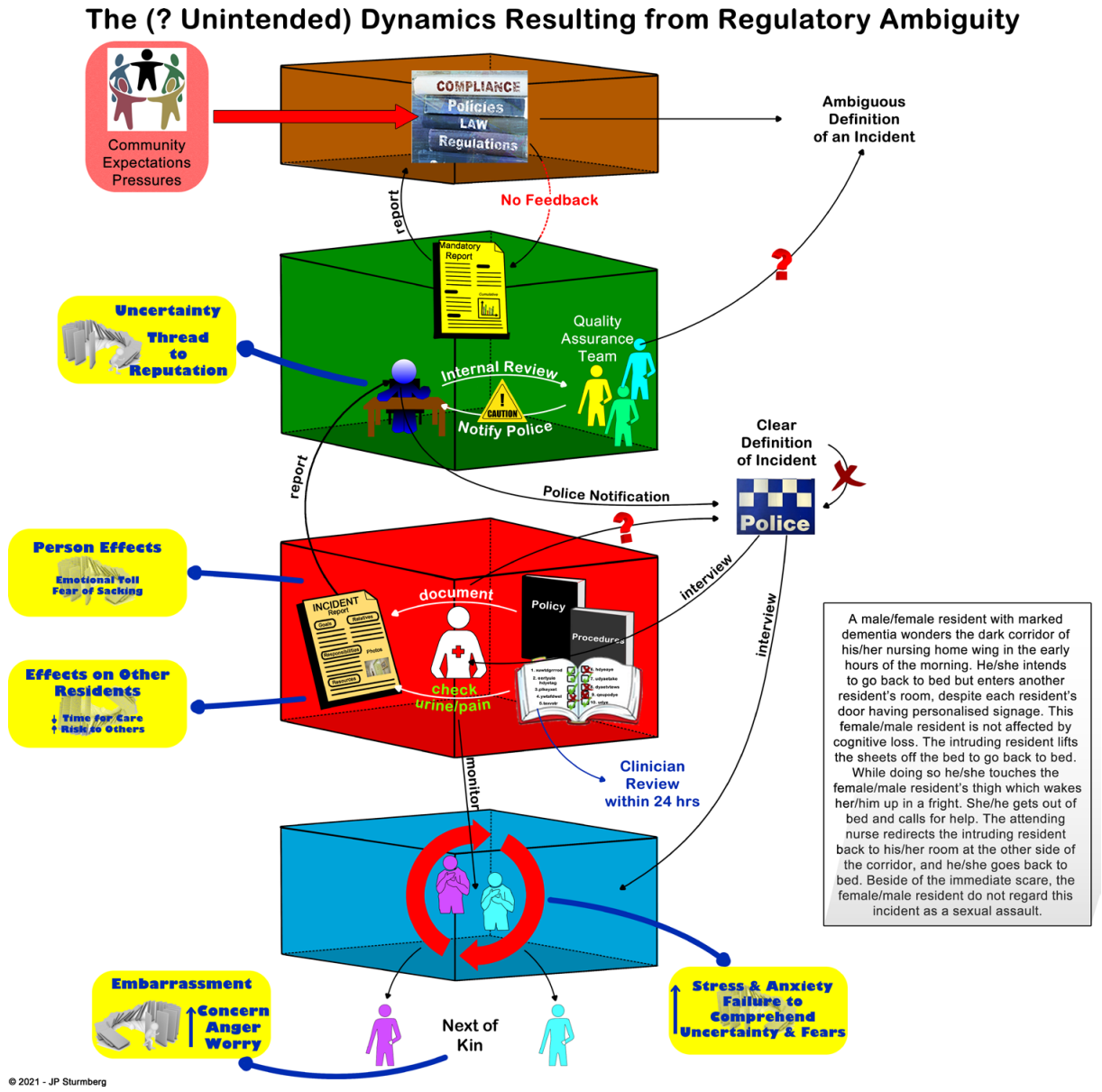

Figure 4 – The intent and the unintended consequences of ambiguous regulations

health experience) and enrolled nurses (EN), nurse practitioners (NP), physiotherapists, podiatrists, dieticians and physicians (primarily GPs and, on a consulting basis, geriatricians and psychiatrists); and

- Social care – provided by lifestyle therapists, diversional therapists and volunteers such as musicians, artists or animal handlers.

However, the *Australian Health Care Act* 1997 [13] only applies a minimalist approach to staffing mix and staffing levels – it requires that providers: maintain an adequate number of appropriately skilled staff to ensure that the care needs of care recipients are met.

These minimalist requirements and the fact that staffing is the highest line item in the budget of a nursing home results in nursing homes employing larger numbers of lowly qualified and lowly paid casual personal care staff in favour of highly qualified – usually permanent – nursing staff [27-31].

Working in geriatric care is widely seen as an undesirable and unrewarding career path. Workloads are high, the job is emotionally challenging and pay is low relative to other settings. This makes it difficult to attract suitably qualified staff with an intrinsic commitment to the care of frail people at the end of their life.

The workplace conditions have two interrelated consequences: firstly, the perception of 'low value' coupled with job-insecurity limits commitment to the workplace and, as a corollary, limits the all-important development of personal relationships with residents. Secondly, staff commitment

impacts the quality-of-care residents receive, which in turn increases their risk of otherwise avoidable complications, but also increases the risk of a nursing home being sanctioned.

Residents

People entering nursing home care are getting older and sicker [32] and have increasingly more complex care needs [16] which inevitably necessitates a disease-focused process-oriented approach to resident care. This also endangers a focus on residents' general concerns – the maintenance of personal well-being [33].

A particular concern regarding the safety of the system arises from the weak voice of the resident. They frequently experience the feeling that staff, management and proprietors resent their feedback, or that it gets lost, which prevents the early recognition of emerging risks and allows the embedding of undesirable behaviours and abuse. Resident feedback is crucial for achieving an effective, efficient, safe and seamlessly integrated aged and nursing home system.

And, finally, a widely neglected resident issue is the lack of end-of-life planning and a society-wide avoidance of engagement with death and dying.

Figure 5 summarises the key – overlooked – interdependencies within the current nursing home system.

Section 3: Discussion and transferable learnings

How do we get to where we want to be?

> *"We cannot get to where we dream of being tomorrow unless we change our thinking today."*
>
> – Albert Einstein

As 'all systems always deliver what they are designed for' we need to find a universally accepted focus (purpose) for the nursing home system that achieves the

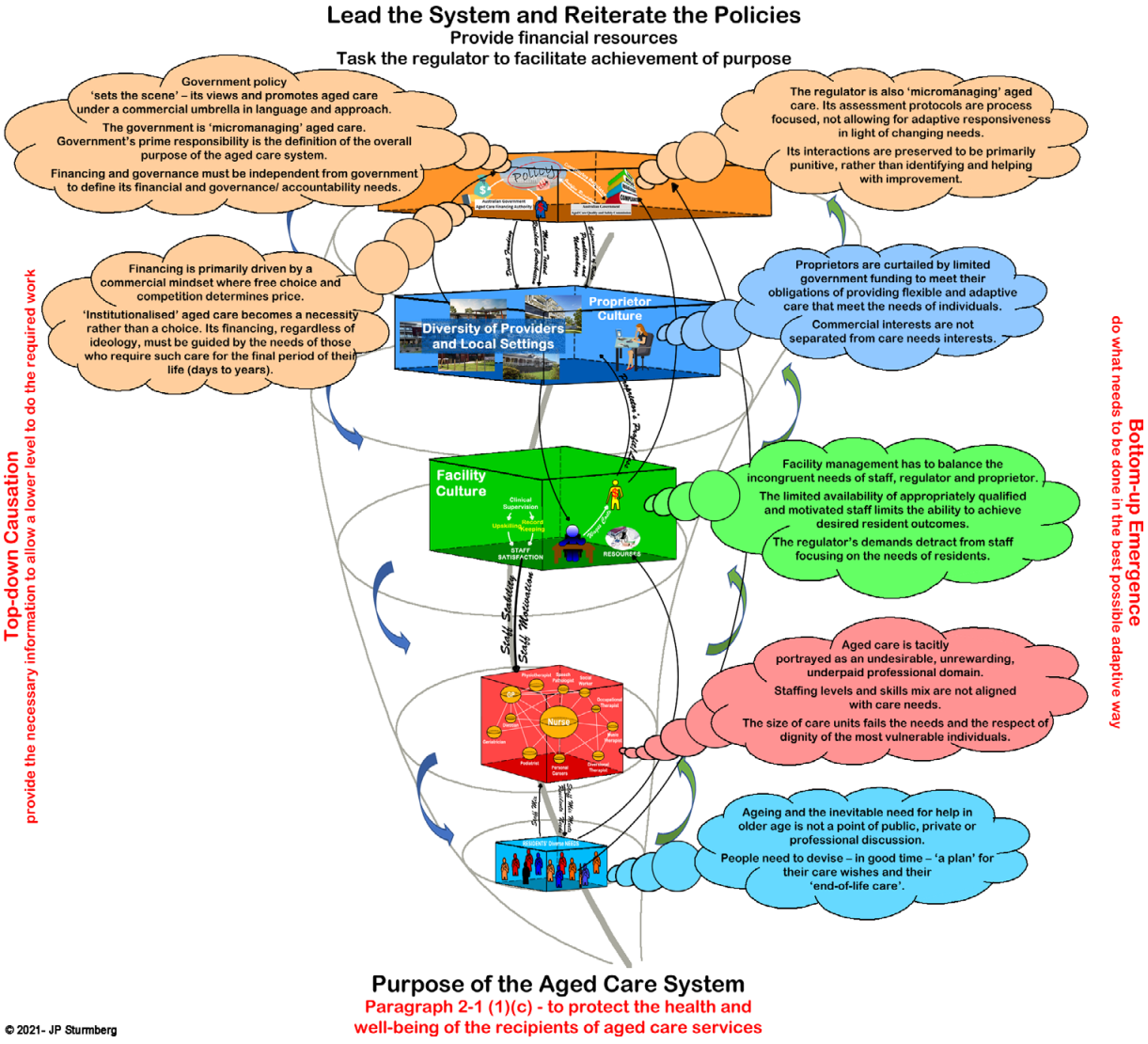

Figure 5 – Summary of the key – but overlooked – interdependencies towards a seamlessly integrated residential aged care system

outcomes we aspire to as citizens and potential nursing home residents. This is only achievable if we – collectively – think differently about nursing homes and the services they ought to provide in terms of meeting the needs and maintaining the dignity of the most vulnerable section of the elderly in our communities. In simple terms, it means unequivocally embracing the purpose of the system, which in turn entails the adoption of new 'simple rules' (see Box):

New 'Simple Rules' must refocus on what matters

The purpose of the aged care system

The needs and aspirations of each resident

Permission to adapt to rapidly changing resident needs

The resourceful application of limited financial resources

Accountability in the context of the system as a whole

It also entails acknowledging the need for culture change and, consequently, assembling a facilitating leadership team – one that helps 'those who have to do the work to find their locally feasible solutions' [10]. Organisational culture is the focus of individuals' learned behaviours [34]. Thus, testing their understanding of the 'simple rules' is a good first step and might even lead to improvements. Influential leadership guides the application of 'rules-based' behaviours in a mutually satisfying way to achieve the organisation's concerns [35]. It necessitates for some giving up – perceived – privileges, for others to become confident to speak up and being supported in raising issues of concern (**Figure 6**).

A systems-based approach

Four concepts need to be considered in the redesign towards a seamless integrated nursing home system.

- Clearly define the focus (purpose) of the system[2].
- Stakeholder interdependencies must align to achieve the system's purpose.
- The system must entail effective feedback to enable adaptation in a constantly changing environment.
- Ensure the top-down system constraints are 'just right' to allow everyone to do their job.

Applying these four concepts allows for the proper top-down consideration of who – at each level in the system hierarchy – has to create 'what kind of constraints' to achieve the conditions for the seamless integrated function of the nursing home system. At the same time, it allows each level to determine the bottom-up requirements to effectively, efficiently and equitably provide the services that meet residents' needs and maintain their dignity (**Figure 7**).

A new set of simple rules

'Simple rules' or 'how to rules' are the – tacit or outspoken – operating principles that determine the dynamics and the achievements of a system. They provide the necessary 'guidance' for decision-making to all agents, regardless of their place and role in the system.

Developing a new set of 'simple rules' is a deliberative process – it must take into account the system's values and its purpose. Aged and nursing home care is about providing frail people with the necessary support that meets their needs and maintains their dignity. Suggested 'simple rules' to achieve an effective, efficient, equitable and sustainable aged and nursing home system are:

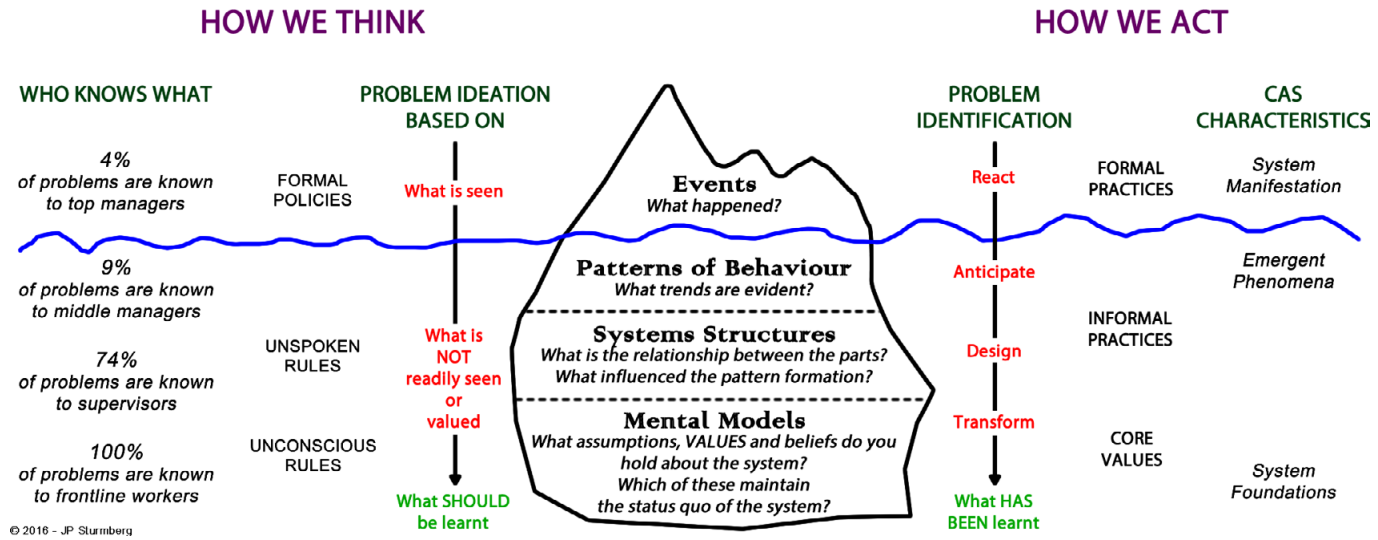

Figure 6 – The 'iceberg metaphor' of understanding an organisation and the impact on its function. Note: Top level managers don't know the majority of problems encountered by the members of the organisation. Their responses typically are reactive rather than explorative (reproduced from [9]).

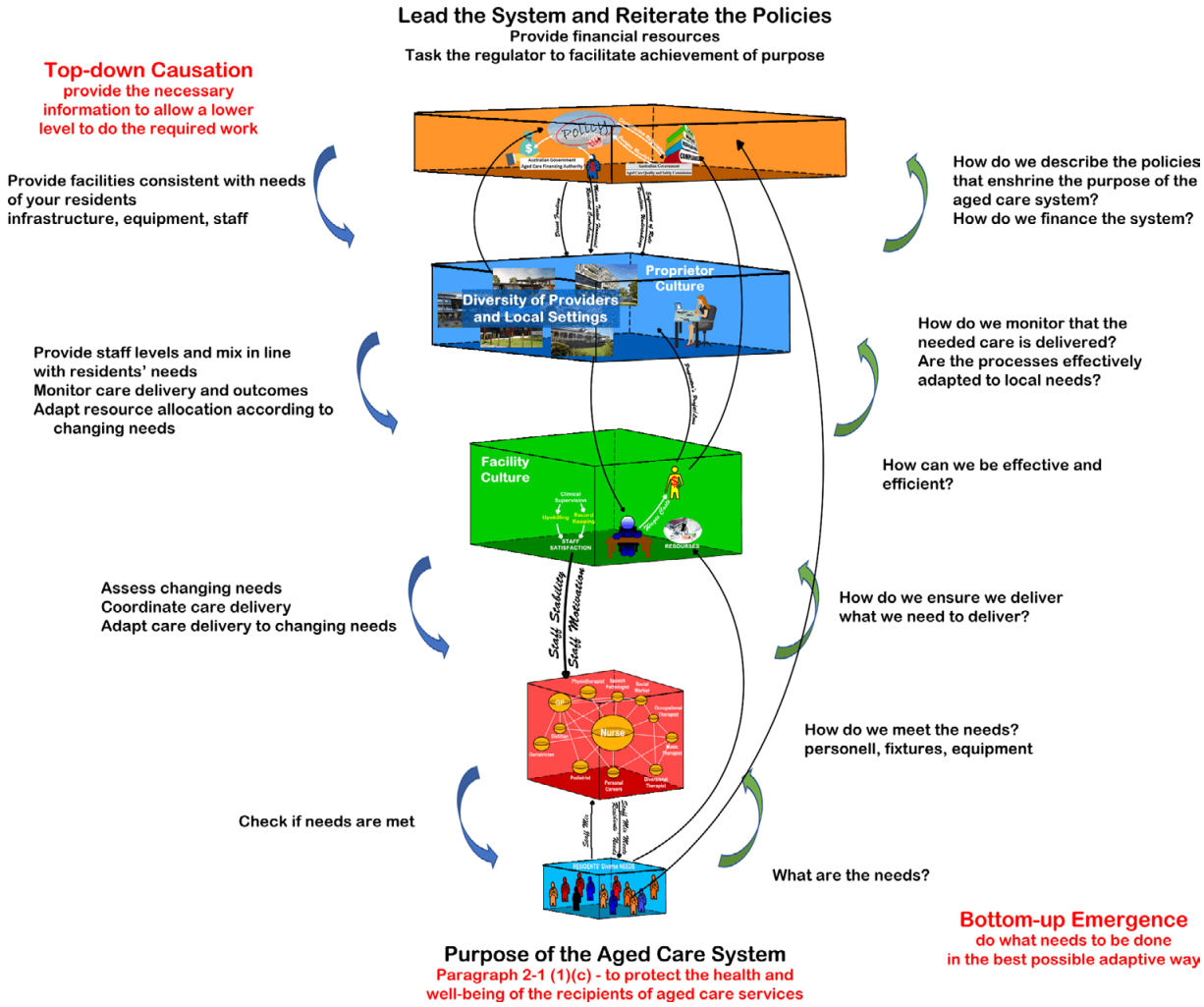

Figure 7 – Creating a seamlessly integrated complex adaptive aged and nursing home system

Suggested 'simple rules' for a redesigned system

First and foremost, focus on the purpose of the system – to provide care that achieves residents' desired quality of life and maintains their dignity

Adapt your behaviours and actions to emerging challenges – within your level of expertise and responsibilities

Share your concerns

Engage in the problem-solving processes

What does this mean in practice?

The most effective and efficient way to get to where we want to be is through a collaborative redesign process [36, 37]. Redesigning is as much a philosophical approach re-examining the purpose and the value of the system, as it is a pragmatic technical exercise in brainstorming and testing new approaches.

A blueprint for the redesign of the aged and nursing home system might entail the following – interconnected and interdependent – steps and considerations (**Figure 7**). This blueprint takes account of the key systemic features of complex adaptive organisations:

- The need to know the purpose of the organisation;
- An appreciation of the hierarchically layered network structure of an organisation; and
- The top-down impact of constraints on limiting the emergent bottom-up abilities to do the work that needs to be done.

The success of an organisation relies on understanding and harnessing the feedback loops that exist within and across the networked layers of the organisation. Organisational leadership is dispersed across the organisation and leaders distinguish between the – *top-down* – focus on determining WHAT needs to be done. Leadership trusts their staffs' aptitudes and sense of responsibility and explicitly grants – *bottom-up* – permission to conceive (and adapt) HOW that work will be done [10].

Special considerations

Getting to a seamlessly integrated complex adaptive aged and nursing home system is principally a matter of unifying all stakeholders

behind a common purpose, goals, values and 'simple rules' agreement. Nevertheless, a number of issues need to be considered in greater detail.

How to assure one stays on track – the need for an 'outcomes' framework

The first issue to address in the redesign of the aged and nursing home system is a change in its oversight framework. What the legislation proclaims, and what nursing home residents aspire to from their care, is quality of life and the maintenance of their dignity. Oversight needs to focus on what matters, it must be outcomes, not solely process/output, focused. It is the outcome to be achieved that determines the services required, which in turn determines the resources needed and the skills mix of staff to deliver the required care. Delivering the required care must be effective, equitable and efficient (addressing primarily policy concerns) which closes the perpetual loop that ensures ongoing high-quality care (**Figure 8**).

How to finance an outsourced 'common good' like aged care – for-profit or not-for-profit service provision

Society throughout history has contemplated the nature and the purpose of 'common good' provisions. Adam Smith argued that in order to realise common interests, society should shoulder common responsibilities to ensure that the welfare of the most vulnerable is maintained [38] and John Rawls pointed out that the common good is the core of a healthy political system – common goods are provided equitably to everyone's advantage [39].

The promotion of neo-liberal doctrines, starting in the 1970s, have blurred the otherwise longstanding notion that healthcare, and by implication healthcare towards the end of life, is provided for the benefit of society at large. The idea that healthcare can be broken down into distinctive bits that have a 'distinctive value and thus can be sold at a price' has led to an 'industrious understanding' of healthcare as the 'delivery of a series of defined products'. This view negates the fact that the effects of healthcare as-a-whole arise from the interdependent impacts of 'global care' and the 'instrumental care' of specific conditions.

These shifting appreciations allowed the emergence of for-profit and not-for-profit providers in health and aged care. However, the status of a provider organisation necessitates different objectives. While both want to be efficient in the way they provide care, corporations – by law – have a primary duty to shareholders to

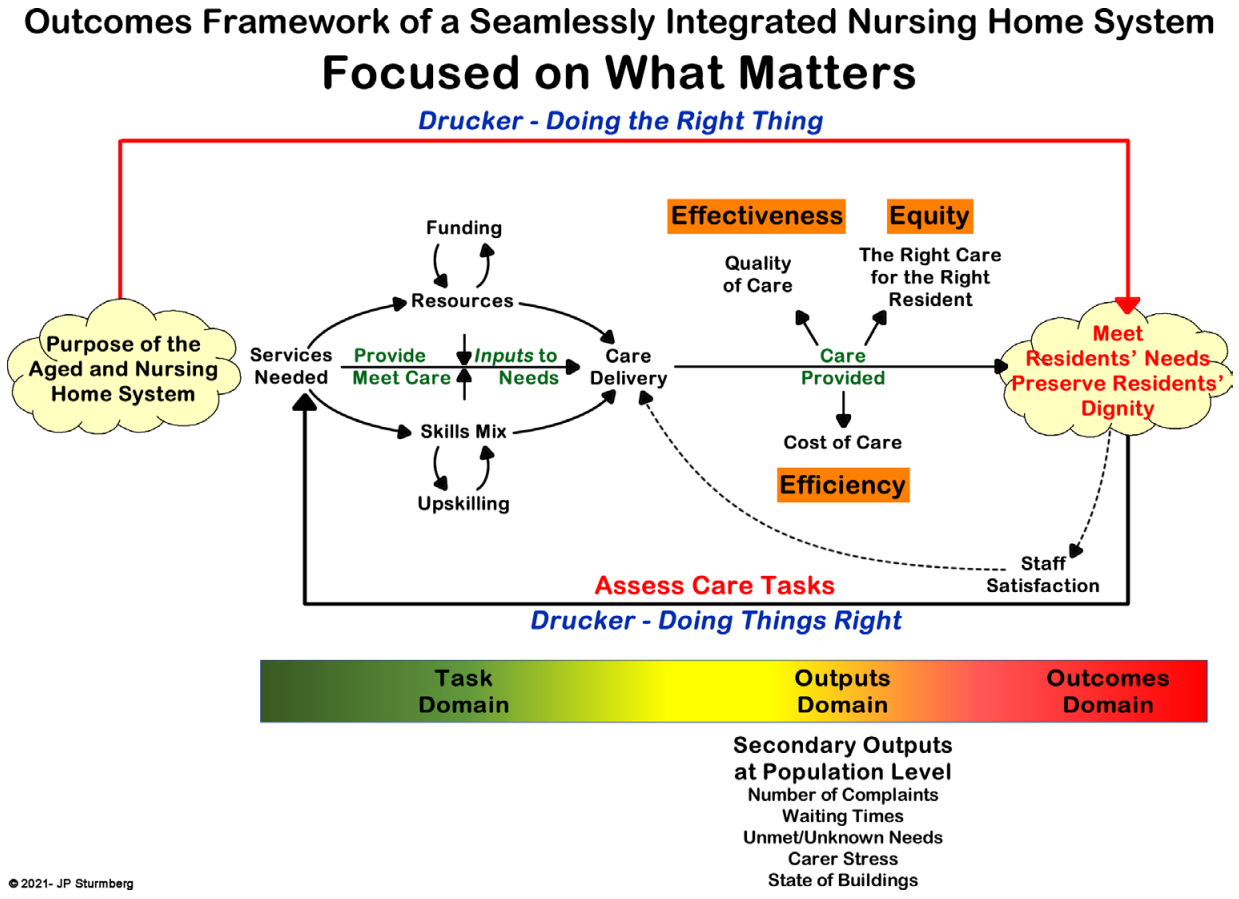

Figure 8 – Dynamic outcomes framework for an outcomes-focused adaptive aged and nursing home system

work towards profit maximisation, whereas not-for-profit entities are free to focus on the most effective way to apply their resources to deliver care outcomes for stakeholders.

How to resolve the governance and accountability tensions – the need to refocus on 'what matters'

The focus of governance and accountability frameworks needs to resolve the tensions arising from its build-in current ambiguities – a new framework must clearly state what matters, how to assess what matters and by what means it can be achieved. Only then can the prevailing culture of fear and the inherent confusion among staff be resolved, allowing them to most effectively, efficiently and equitably spend their limited time managing the often rapidly changing needs of residents under their care (**Figure 9**).

References

1. Jones W, Avant R, Davis N, Saultz J, Lyons P. Task Force Report 3. Report of the Task Force on Continuous Personal, Professional, and Practice Development in Family Medicine. Ann Fam Med. 2004;2(Suppl 1):S65-S74.
2. Braithwaite J, Makkai T, Braithwaite V. Regulating Age Care. Ritualism and the New

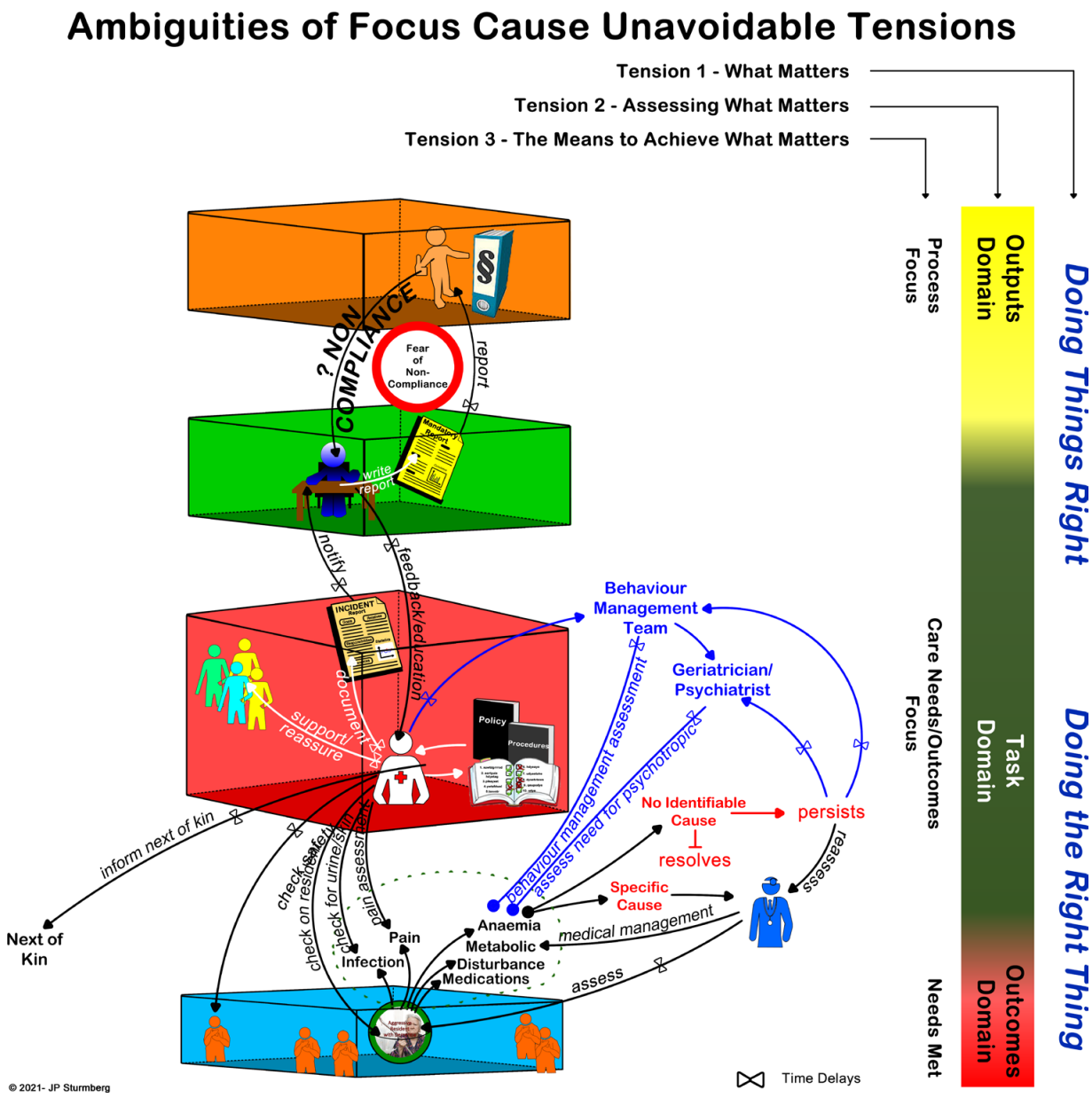

Figure 9 – Responding to a 'critical resident incidence'. This system and influence diagram clearly illustrates the central role of the nurse in managing a critical resident incident and its multiple, and multi-layered consequences, as much as the impacts and roles of external agents. Care staff in the first instance is outcomes driven, where the desired outcomes define the necessary tasks to be attended to. The failure to recognise that outcomes should determine output and process measures creates tensions resulting in uncertainties and fears – both of which hinder system improvement

Pyramid. Cheltenham, UK: Edward Elgar Publishing Ltd; 2007.

3. Kenndy J. John Kennedy's Care Home Inquiry: Joseph Rountree Foundation, Joseph Rountree Housing Trust; 2014.
4. Global elderly care in crisis. The Lancet. 2014;383(9921):927. https://dx.doi.org/10.1016/S0140-6736(14)60463-3
5. Armstrong P. Balancing the Tension in Long-Term Residential Care. Ageing International. 2018;43(1):74-90. https://dx.doi.org/10.1007/s12126-017-9284-8
6. Strandell R. Care workers under pressure – A comparison of the work situation in Swedish home care 2005 and 2015. Health & Social Care in the Community. 2020;28(1):137-47. https://dx.doi.org/10.1111/hsc.12848
7. Royal Commission into Aged Care Quality and Safety. Final Report: Care, Dignity and Respect. Canberra: Commonwealth of Australia. ISBN: 978-1-921091-65-0; 2021. https://agedcare.royalcommission.gov.au/publications/final-report
8. Long-Term Care COVID-19 Commission. Ontario's Long-Term Care COVID-19 Commission: Final Report. Toronto, Canada: Ontario's Long-Term Care COVID-19 Commission. ISBN – 978-1-7776961-0-8; 2021. http://ltccommission-commissionsld.ca/report/index.html
9. Sturmberg JP. Health System Redesign. How to Make Health Care Person-Centered, Equitable, and Sustainable. Cham, Switzerland: Springer; 2018.
10. Heifetz R. Leadership Without Easy Answers. Cambridge, Ma: Harvard University Press; 1994.
11. Ellis GFR. Top-down causation and emergence: some comments on mechanisms. Interface Focus. 2012;2(1):126-40. https://dx.doi.org/10.1098/rsfs.2011.0062
12. Drucker PF. The Essential Drucker: The Best of Sixty Years of Peter Drucker's Essential Writings on Management Oxford: Taylor & Francis; 2001.
13. Aged Care Act 1997, Canberra, Australia. (1997). https://www.legislation.gov.au/Details/C2017C00241
14. Productivity Commission. Report on Government Services 2021. 14 Aged care services. Canberra: Productivity Commission; 2021. https://www.pc.gov.au/research/ongoing/report-on-government-services/2021/community-services/aged-care-services/rogs-2021-partf-section14-aged-care-services.pdf
15. Aged Care Quality and Safety Commission. Corporate Plan 2020-21. 2020. https://www.agedcarequality.gov.au/sites/default/files/media/regulatory_strategy_jan_1_2020_v2.1.pdf
16. Department of Health. Aged Care Funding Instrument (ACFI). Canberra: Commonwealth of Australia; 2016. https://www.health.gov.au/sites/default/files/documents/2020/01/aged-care-funding-instrument-acfi-user-guide-acfi-user-guide-2017.pdf
17. Sturmberg JP. Health: A Personal Complex-Adaptive State. In: Sturmberg JP, Martin CM, editors. Handbook of Systems and Complexity in Health. New York: Springer; 2013. p. 231-42.
18. Yeung K. Quantifying Regulatory Penalties: Australian Competition Law Penalties in Perspective. Melbourne University Law Review. 1999;23(2):440, http://www6.austlii.edu.au/cgi-bin/viewdoc/au/journals/MULR/1999/18.html.
19. Aged Care Quality and Safety Commission. Compliance and Enforcement Policy. Canberra: Aged Care Quality and Safety Commission; 2021. https://www.agedcarequality.gov.au/sites/default/files/media/compliance-and-enforcement-policy-1-july-2021.pdf
20. AIHW. Services and places in aged care. Factsheet 2016–17. Canberra: Australian Institute of Health and Welfare; 2018. https://www.gen-agedcaredata.gov.au/www_aihwgen/media/2017-Factsheets/Services-and-Places-Factsheet-2016%E2%80%9317_2.pdf?ext=.pdf
21. AIHW. Providers, services and places in aged care. Canberra: Australian Institute of Health and Welfare; 2021.
22. Hampson R. Australia's residential aged care facilities are getting bigger and less home-like The Conversation [Internet]. 2018. Available from: https://theconversation.com/australias-residential-aged-care-facilities-are-getting-bigger-and-less-home-like-103521.
23. Dyer SM, Liu E, Gnanamanickam ES, Milte R, Easton T, Harrison SL, et al. Clustered domestic residential aged care in Australia: fewer hospitalisations and better quality of life. Med J Aust. 2018;208(10):433-8. https://dx.doi.org/https://doi.org/10.5694/mja17.00861
24. Fleming R, Goodenough B, Low L-F, Chenoweth L, Brodaty H. The relationship between the quality of the built environment and the quality of life of people with dementia in residential care. Dementia. 2016;15(4):663-80. https://dx.doi.org/10.1177/1471301214532460
25. Sharkey SS, Hudak S, Horn SD, James B, Howes J. Frontline caregiver daily practices: a comparison study of traditional nursing homes and the Green House project sites. J Am Geriatr Soc. 2011;59(1):126-31. https://dx.doi.org/10.1111/j.1532-5415.2010.03209.x

26. Afendulis CC, Caudry DJ, O'Malley AJ, Kemper P, Grabowski DC. Green House Adoption and Nursing Home Quality. Health Serv Res. 2016;51 Suppl 1(Suppl 1):454-74. https://dx.doi.org/10.1111/1475-6773.12436

27. Mavromaras K, Knight G, Isherwood L, Crettenden A, Flavel J, Karmel T, et al. 2016 National Aged Care Workforce Census and Survey – The Aged Care Workforce, 2016. Canberra: Department of Health; 2017. Contract No.: 11848. https://agedcare.royalcommission.gov.au/system/files/2020-06/CTH.1000.1038.0872.pdf

28. Department of Health. 2020 Aged Care Workforce Census Report. Canberra: Department of Health; 2021. https://www.health.gov.au/resources/publications/2020-aged-care-workforce-census

29. Fair Work Ombudsman. Pay guide – Nurses award 2010 [MA000034]. Canberra: Australian Government; 2021. www.fairwork.gov.au/ArticleDocuments/872/nurses-awardma000034-pay-guide.pdf.aspx

30. Fair Work Ombudsman. Pay Guide – Health Professionals and Support Services Award [MA000027]. Canberra: Australian Government; 2021.

31. Fair Work Ombudsman. Pay Guide – Aged Care Award [MA000018]. Canberra: Australian Government; 2021.

32. Rockwood K, Song X, MacKnight C, Bergman H, Hogan DB, McDowell I, et al. A global clinical measure of fitness and frailty in elderly people. CMAJ. 2005;173(5):489-95. https://dx.doi.org/10.1503/cmaj.050051

33. Cummins RA. Subjective Wellbeing, Homeostatically Protected Mood and Depression: A Synthesis. Journal of Happiness Studies. 2010;11(1):1-17. https://dx.doi.org/10.1007/s10902-009-9167-0

34. Schein EH. Organisational Culture and Leadership. Second ed. San Francisco, CA: Jossey-Bass; 1992.

35. Wolf WB. Reflections on the history of management thought. Journal of Management History. 1996;2(2):4-10. https://dx.doi.org/10.1108/13552529610106806

36. Archer B. Systematic method for designers. London, UK: The Design Council; 1965.

37. Buchanan R. Wicked Problems in Design Thinking. Design Issues. 1992;8(2):5-21. https://dx.doi.org/10.2307/1511637

38. Smith A. An Inquiry into the Nature and Causes of the Wealth of Nations. São Paulo: MetaLibri – digital edition; 2007.

39. Rawls J. A Theory of Justice. Cambridge, MA: Harvard University Press; 2005.

Endnotes

1. Resulting from: (1) Employer sponsored visa holders (a substantial proportion of nursing staff) are bonded to do their time in residential aged care; any misadventures can lead to deportation (enforces a mental mindset of: do your prison time and move on); (2) the 'more direct' power dynamics between employers and employees in nursing home settings compared to hospital settings
2. This is already defined by the *Aged Care Act* 1997
3. That which is seen as best for a whole community and not simply for any individual or small group within that community. This may be seen in purely utilitarian ways, but it may be founded upon natural law theory. The ideas behind law and democracy assume that the common good is something that can be achieved, or at least should be pursued. (The Free Dictionary – https://financial-dictionary.thefreedictionary.com/Common+Good+(organization)
4. Common good, that which benefits society as a whole, in contrast to the private good of individuals and sections of society. (Britannica – https://www.britannica.com/topic/common-good)

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