



MSc Public Health and Social Care in Practice

LCHS7002 Health Care System Organisation and Leadership

Case Study 3

Assignment Title: Learning from Patient Safety Failures: Analysis of Medication Miscommunication and Delayed Recognition of Deterioration in Len's Case

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1. Introduction

1.1 Background

Medication-related harm is an important issue of patient harm and avoidable morbidity and mortality in healthcare systems. With errors happening with prescribing, dispensing and labelling medicines, and administering them, posing a serious threat to the well-being of thousands of patients every year, there is a need for improved safety governance and safety leadership. Penalties were not imposed on individuals as the Health Services Safety Investigations Body (HSSIB) focused on finding systemic weaknesses because it felt that the incident of Len being administered an unintended dose of morphine was not about toppling anyone's individual failures (Health Services Safety Investigations Body, 2022).

1.2 Leadership in Health Care

Healthcare leadership isn't just about leadership it's about enabling a safe, effective and patient-centred environment. The NHS sees leadership as a way of driving continuous improvement through compassionate behaviours and working collaboratively. According to Northouse (2022), leadership is a process of influencing a group to reach a common goal, and the World Health Organisation (WHO) considers leadership to be a tool that helps build strong health systems and attain optimal health. These views combined indicate that good leadership practice is characterised by influence, working together and continuous system improvement for the purpose of generating high-quality, safe patient care (Weaver et al., 2021).

1.3 Centralisation vs Decentralisation

There are two main kinds of leadership in healthcare organisations, the centralised and the decentralised. Centralisation brings decision-making power and decision-making to the higher tier of the organisation in an effort to standardise clinical governance, create consistency and ensure regulations are adhered to.

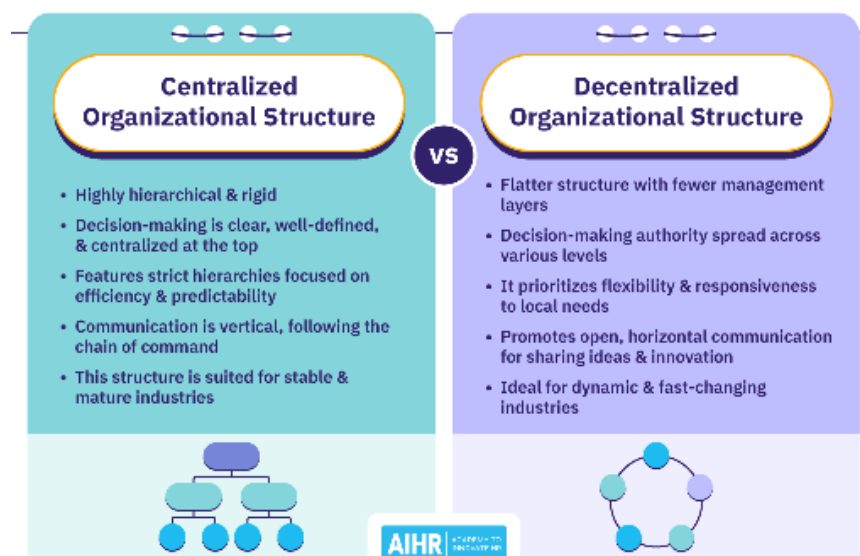


Figure 1: Centralisation vs Decentralisation in Healthcare

(Source: AIHR, 2024)

Greer et al. (2021) stated, unlike centralisation, decentralisation ensures that everyone at the front line of services has the power to respond quickly to patients and has the autonomy and freedom to innovate in their clinical practice. Both approaches can impact communication, accountability and decision making in health care organisations. Later, their merit and weaknesses with regard to the HSSIB investigation will be critically examined.

1.4 Leadership Theories

Several theories of leadership offer insight into the nature of patient safety incidents and organisational improvement. The key thrust of transformational leadership is on motivating employees to adopt common objectives and ongoing enhancement. Collaborative decision-making on multidisciplinary teams emerges from distributed leadership, and systems leadership recognises the interconnectedness of healthcare systems (Lindert et al., 2022). The focus with adaptive leadership is to flexibly respond to complex and dynamic challenges. They will be considered in further detail later to assess the impact of leadership practices on governance, communication, medication safety and organisational learning in the explored case.

1.5 Purpose of the Report

This report aims to reflect critically on the leadership, governance, systems thinking, communication and organisational learning from the investigation of the HSSIB. Unlike a focus on individual errors, the report "takes a systems thinking approach.

2. Identifying the Problem & System Context

2.1 Identifying the Problem and Setting the System Context- Applying Systems

Thinking and the Rich Picture

Len, a man aged 89 years who has had Charcot-Marie-Tooth (CMT) disease for some time, suffered from chest pain and shortness of breath after a fall and was prescribed morphine oral solution for their pain. Unfortunately, Len accidentally gave his patient a much larger dose than necessary because of an incorrect reading on the medicine label.

Case Overview – Len's Case

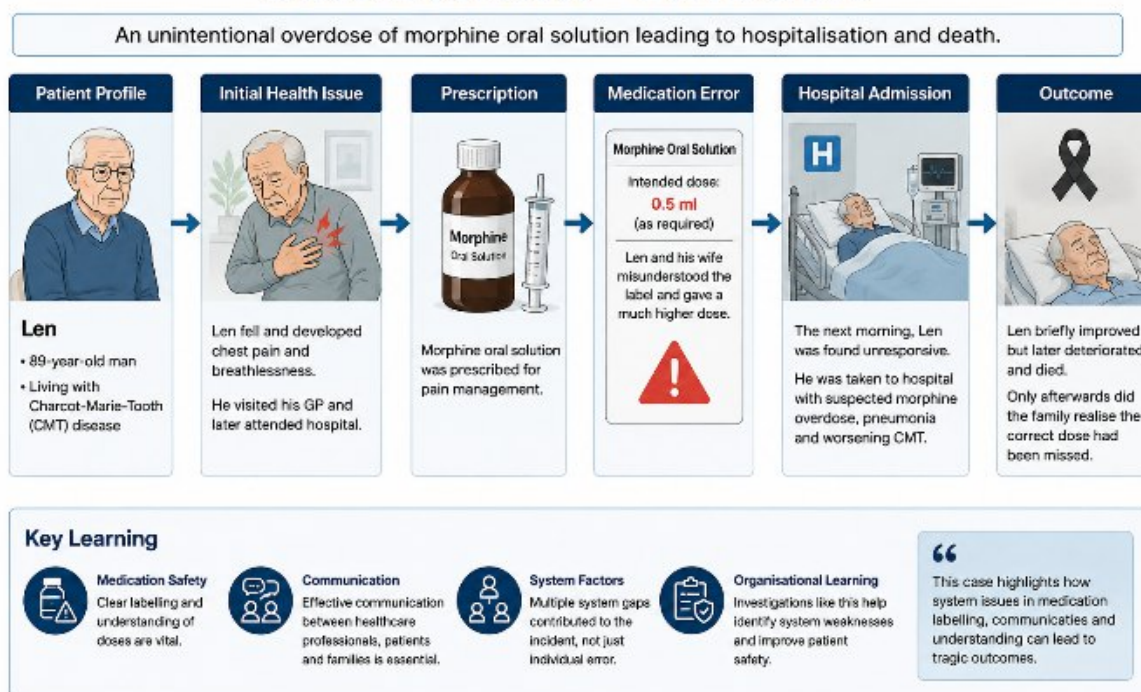


Figure 2: Overview of the Case study

(Source: Self-Created)

He went to hospital with a possible overdose of morphine, pneumonia and further aggravation of his underlying disease condition (Baker, 2023). The incident started to affect Len's health; despite some improvement in clinical signs, the investigation by HSSIB revealed systemic factors central to the incident, and eventually brought Len's life to an early end.

Len's age is 89, and he has Charcot-Marie-Tooth (CMT) disease; he fell at home and became breathless and complained of chest pain. After GP and hospital review, he was prescribed 10mg/5ml Morphine Sulphate Oral Solution and a dose of 0.625–1.25 mg was determined to be a reduced geriatric dose (Quintanilla et al., 2023). What's most important is that the dosing directions were only printed on the exterior box and not on the bottle. Len and his wife had thrown away the box or didn't read the bottle's concentration as the dose, which led him to take 2-4 times the dose. The next morning, he was found unresponsive and was rushed into the hospital with suspected morphine overdose, pneumonia and a worsening CMT. His condition briefly improved, but he started to deteriorate, after which he passed away, with only the family then realising that they had never been provided with the correct dosage (HSSIB, 2022).

This isn't just a clinical error, it's the sign of a patient-safety problem that's not confined to just a single country or region, but is systemic and global. The World Health Organisation estimates that medication-related harm (MRH) represents about 50% of preventable harm in health care and costs \$42 billion USD each year globally; an estimated one in twenty patients globally experience preventable MRH, and about one quarter of MRH is considered

severe or life-threatening (WHO, 2024). Nationally, the scale of the problem for opioids is confirmed: Opiates and opioids were responsible for 46.8% of all drug-poisoning deaths in England and Wales in 2023, reflecting a 12.8% increase over 2022, with the drug specifically being identified as heroin/morphine involved in 1,453 deaths, equating to 25.0 deaths per million people (ONS, 2024). In fact, these numbers are themselves an underestimate by up to 34% as they do not capture the true scale of deaths efficiently enough due to a systematic failure in reporting to policymakers, according to independent academic analysis using coronial toxicology data (King's College London, 2025). It is no longer recognised that such issues represent unpredictable circumstances that happen just once by a particular clinician or carer, but rather predictable and recurring issues related to the design and performance of the entire system – poor labelling, poor handovers and lack of 'forcing functions' to stop error from occurring (IHI cited in Clarkson et al., 2018).

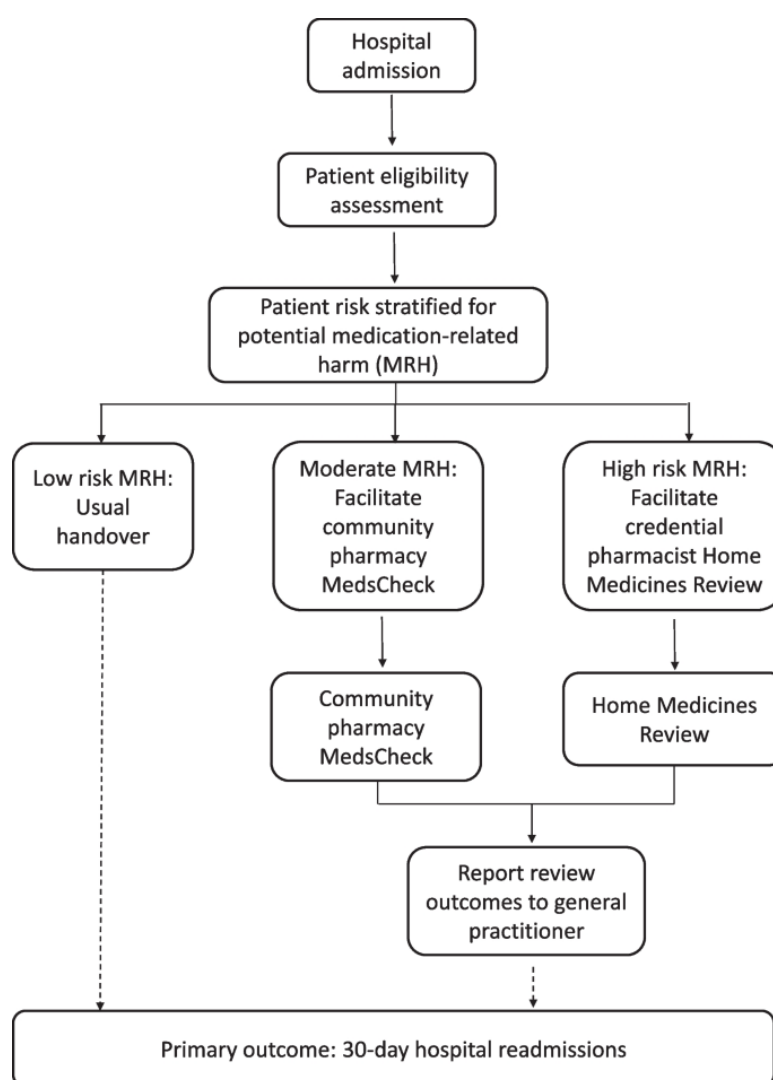


Figure 3: Optimising Medicine Information

(Source: Hattingh et al., 2024)

Len's case is an example of a combination of issues across a number of the WHO health system "building blocks": leadership/governance (no organisational oversight of the

standards for labelling high-risk medicines), health workforce (a Yellow Card adverse drug reaction (ADR) report was never made possibly due to the staff 'under great pressure'), and health information systems (fragmented communication between GP, pharmacy and hospital) (HSSIB, 2022; WHO, 2007). The governance failure mostly took place at the local/organisational level (the design of the label on the pharmacist side and the counselling process in the GP practice); was exacerbated by a national level deficiency (no national definition of minimum standards for dose instructions on the medicine container itself); and provides an example of how national policy gaps can have their effect downstream.

Level	Statistic	Source
Global	Medication errors are estimated to cost \$42 billion USD per year; responsible for ~50% of preventable harm in health care.	WHO (2024)
Global	Preventable medication-related harms affecting 1 in 20 patients, with ~25% being severe/life-threatening.	WHO Global Patient Safety Action Plan 2021–2030 (GPSSAP).
National (England & Wales)	2,551 opioid-involved drug-poisoning deaths registered in 2023 (46.8% of all drug deaths), up 12.8% on 2022	ONS (2024)
National (England & Wales)	1,453 deaths specifically involving heroin/morphine in 2023 (25.0 per million population)	ONS (2024)
National (independent audit)	Official ONS opioid-death data are underestimates of between 7% and 34% because of gaps in coronial reporting.	King's College London/NPSUM (2025)
Organisational	Approx. 1 error occurs every 23 hours on average in hospitals (1/20 hospital admissions)	WFSA (2022), citing WHO

Table 1: Statistics on Medication-related harm - Global, National and Organisational levels

(Source: Self-Created)

A sophisticated picture emerges from the case of Len: an under-resourced GP consultation, incomplete counselling about a high-risk drug, a label design fault, no independent 'double check' from GP to be able to report it, an isolated elderly couple managing a complex drug regime alone and a fatal outcome that only becomes known to the system after the fact, through a family complaint not proactively (Fraser-Hurt et al., 2022). This is an example of how the institutional memory of the system was not updated due to the fact that the Yellow Card was not filed and the same labelling risk stayed alive for future patients. This makes Len's death a case study in the everyday nature of preventable and continuing morbidity and mortality from medicines on a global level, and a local tragedy.

2.2 Centralisation or Decentralisation within the Case Study

NHS is a hybrid system, with planning of services being decentralised through GP practices,

community pharmacies, and, since the Health and Care Act 2022, 42 Integrated Care Systems (ICSs) which are regionally constrained, but with funding and regulation being centralised (NHS structure, lecture notes Week 1–2). Len's care pathway lay at the end of this spectrum that was decentralised, primary-care based, with a single GP making an autonomous prescribing decision and a community pharmacy dispensing the medicine, with limited centralised control of labelling practice (Abimbola et al., 2019).

Elements of centralisation and their failure in this case: Centralisation of decision-making reflected in national prescribing advice (correctly use morphine and consider geriatric dose reduction) and national labelling regulation overseen by the Medicines and Healthcare products Regulatory Agency (MHRA) (Manfrin et al., 2025). The benefit of centralisation is standardisation – the same, well-reasoned dosage advice is given and applied in the same way. Its problem is here rather cripplingly salient: the pitfalls of rigidity, and of the distance between the point of dispensing and the point of use - the national labelling requirements meant that instructions as to dosing were on an outer box rather than the bottle, a clever but flawed use of packaging that might or might not have been comprehensible to a national regulator far housed from a dot aging couple using a medicine (World Health Organization. Regional Office for South-East Asia, 2010). Centralised systems can also have single-point failures, such as those in the national pharmacovigilance safety-signal detection system in the MHRA's Yellow Card database, which relies on "front line" reporting, including that of individual patients; pharmacovigilance for the company's morphine sulphate solution was thus 'silently disabled' for this case.

A NEW ECOSYSTEM OF DISRUPTIVE BUSINESS MODELS MUST ARISE



Figure 4: Decentralisation Healthcare

(Source: Vaidya, 2025)

Good aspects of decentralisation and what went wrong in this example: Decentralising service segments and their failure in this example: Decentralisation gives local staff (GPs, pharmacists and district nurses) flexibility in the way they deliver care, which was good in

Len's case, because his GP responded quickly to his deteriorating symptoms (McNab et al., 2020). But lateral communication is lacking when decentralising, and sent messages, e.g., by GP to patient, and by pharmacist to GP and practice nurses, were not synchronised – there was no shared, real-time communication system to ensure that the patient knew he or she had understood the dose. Decentralisation of health systems has been found to increase the responsiveness of the health system and engagement with the community while introducing challenges of coordination between health-system decentralisation and central government, and fragmentation in technical expertise and accountability (Mahmood et al., 2024). The failure leading to Len's case is this: medicines safety was shared between the GP, the pharmacy, and the family carer, but no one was responsible for the risk of getting the reading of the label wrong, which is a textbook example of a failure mode for decentralisation.

Dimension	Centralised Feature	Decentralised Feature	How This relates to Len's Case
Decision-making	National prescribing/ dosing guidance (NICE, BNF)	GP clinical judgement at point of care, during or within 72 hours of the onset of SIRS symptoms.	Guidance was adhered to but not modified as per household risk
Regulation	MHRA labelling guidelines, national pharmacovigilance (Yellow Card)	The local dispensing and counselling practice of a community pharmacy service	Label regulation gap (box vs bottle) was a national systems failure
Accountability	Oversight by Department of Health / NHS England	Individual GP practice/ community pharmacy no levy or only a small amount of levy	Diffused accountability led to no one being able to confirm that patients understood
International comparator (hospital ownership, illustrating centralisation spectrum)	93.6% (Denmark) and 94.5% (Finland) of hospitals are publicly owned	100% private not-for-profit hospitals are located in the Netherlands	Emphasises the position within the continuum of NHS primary care was trine towards local autonomy
Reporting infrastructure	Centralised national databases of incidents (e.g. NRLS/LFPSE)	Local incident recognition and escalation of the incident(s)	Breaking the loop to the centre, from the Yellow Card

Table 2: Comparative features related to Len's case for centralisation and decentralisation

(Source: Self-Created)

Critically, neither pure centralisation nor pure decentralisation would have been able to save Len's life, but there was the problem on the level of the interface between the two. A

centralised safety requirement—mandatory bottle labelling, which was backed up by more personalised counselling a pharmacist verbally confirming the dose with elderly, vulnerable person in the house then there was redundancy. This helps with a critique in the BMJ literature which states that in the field of health care, "centralised versus decentralised" is often a "false dichotomy" because safety "depends on well-designed connections between the two, rather than on a structural decision" (Week 7 lecture notes, quoting BMJ literature).

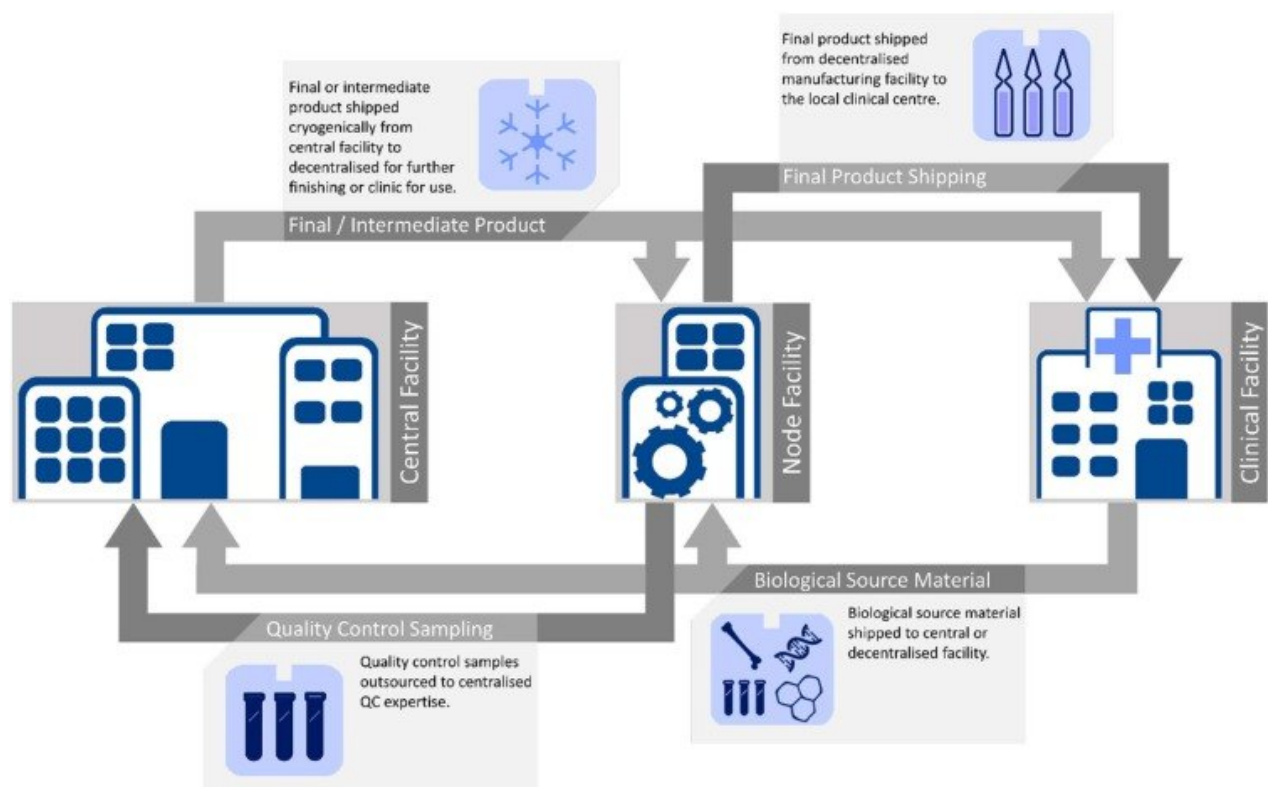


Figure 5: Centralisation or Decentralisation System in healthcare

(Source: Harrison et al., 2018)

As per study of Harrison et al. (2018), levels of directionality and complexity in the logistical chain of a DCM network illustrating the potential movements between facilities. Not every DCM scenario will have every path. Depending on the product's manufacturing approach, materials can move from the clinic to the node to the central facility in a variety of ways. It is crucial to remember that each direction of travel may occur more than once. Centralisation of health care services means that the actual quality of the services is uniformly high, there is optimal use of resources, economies of scale and equitable access (Ramsay et al., 2025). Decentralised care enhances responsiveness, flexibility, accountability, participation in the care, innovation, effective matching of services to the area needs.

2.3 Leadership Theories and Application to the Case Study

In this case, the culture that showed itself within the organisation was one of **transactional leadership**, marked by devotion to rules, adherence to standard operating procedure, and corrective action when things go wrong (Al-Rjoub et al., 2024). Pharmacy and GP did not challenge system redesign GP and Pharmacy prescribing records showed good compliance with guidelines, so transactional leadership just did the "same as the other guys" with "all

the appropriate steps" - no one challenged the leadership of the system had authority or motivation to ask "why is the label design itself unsafe? This is also consistent with evidence that hierarchical structures promote accountability but can stifle contextual issues and an impetus to proactively escalate (Week 1 lecture notes: healthcare hierarchy) (Relias, 2023). Lack of reporting of Yellow Card is a direct consequence of transactional and **reactive leadership**, as staff admitted that they were "under great pressure" not to report and that pharmacovigilance reporting was not a key duty that needed to be done and enforced by leadership (HSSIB, 2022).

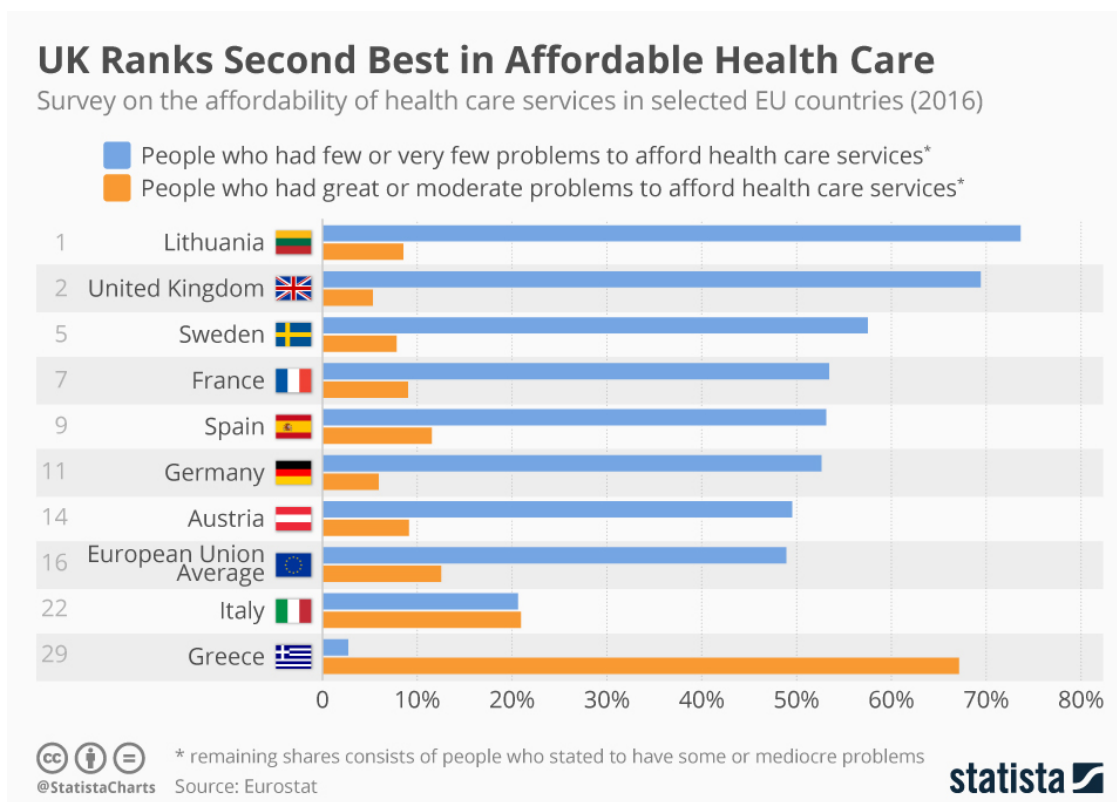


Figure 6: UK Ranks Second Best in Affordable Healthcare Services

(Source: Wagner, 2018)

Wagner (2018) report illustrate that 67% of Greek populations suggest UK healthcare services for best care services and well leadership approach due to the leaders of health organisations.

What was missing can be more understandably seen through the lens of complexity leadership theory, which views organisations as adaptive systems that need to be led in ways that foster emergent, networked problem solving, as opposed to command-and-control (Pacific College, 2022). An effective complexity leadership would have ensured that GP, pharmacist, district nursing and family were all involved in effective feedback loops that formed an adaptive unit for a high-risk elderly individual. Instead, leadership behaviour was siloed, administrative no one was in the "boundary-spanning" role to deliver "integration" between the primary care, pharmacy and social support functions as later Integrated Care Systems were designed to (Southern New Hampshire University, 2025).

However, arguably, at the time when the Trust conceded that a Yellow Card should have been raised, but wasn't, because of workload pressure, there was no compassionate, emotionally intelligent leadership, no psychological safety and no empowerment of staff to raise concerns. This is in line with broader evidence of the NHS workforce: with more than 1.3 million full-time employees and ongoing resource pressure and demands on the delivery of services (NHS structure, week 1 lecture notes), employees under chronic stress adopt a 'no discretion only transaction' approach with an immediate focus on 'compliance' rather than 'safety', in the case of incident reporting, that is the immediate focus of voluntary incident reporting becomes 'compliance' (NHS Confederation, 2022).

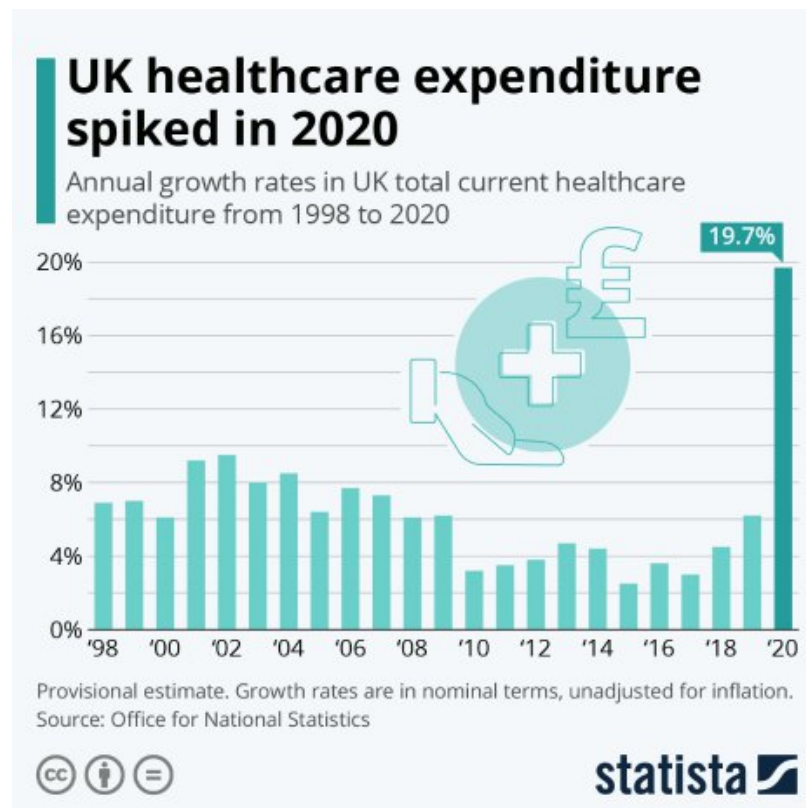


Figure 7: Spiked of UK Healthcare expenditure in 2020

(Source: Armstrong, 2021)

According to Armstrong (2021), due to COVID pandemic the government expenditure in healthcare increasing from 10.2% to 12.8% from 2019 to 2020, estimated £269 billion in costs as a share of GDP. The healthcare features and quality of services satisfied most of consumers.

Len's situation required proactive, purposeful leadership that considers the human factor (an elderly couple's ability to understand the pharmaceutical labelling) and one which avoids the 'doing what is in the protocol' approach that assumes 'close to the rules' is enough to ensure against errors with medicine. It is a chronic, recurrent problem archetype as demonstrated by data on the frequency of medication errors one error approximately every 23 hours per hospital (WFSA, 2022), and estimates by the WHO that 5% of hospital admissions result in a medication error (Week 2 lecture notes, "When Should We Use Systems Thinking"). This might have included a greater focus on **distributed leadership** ;

giving community pharmacists and district nurses clear authority (and protected time) to check that the patient knows how to take their high-risk medicines well and having cultures that encourage the reporting of near misses and adverse events as a leadership-mandated, non-discretionary activity rather than an optional extra that gets pushed by workload (Oklahoma City University, 2024).

Complex cases such as Len's with increased risk for safety demands **democratic leadership**, the clear benefits of which are important for NHS practice. Participative, empowering, emotionally intelligent managers mean better relationships and less stress for staff, thus increasing patient confidence and self-efficacy essential for safe medication administration (Carlton et al., 2015). In an NHS context democratic leadership is linked to impact on patient care quality and staff motivation, with higher motivation associated with recognizing the voice of frontline staff and an increase in concern about labelling, dosing and packaging issues. This style is especially strong in terms of the focus within the NHS People Plan on inclusive and compassionate leadership where decisions made with staff and patients are not imposed (Gruessner, 2023). A small number of NHS trusts are now actively implementing a democratic approach to leadership by setting up NHS staff forums, interdisciplinary safety committees and system of decision-making at the ward level, allowing nurses, pharmacists and doctors to have a voice in shaping safer opioid processes.

In healthcare, transactional leadership utilizes specific roles, clear goals, monitoring and feedback, and consequences or sanctions. It can support hospitals in promoting adherence with protocols, infection control, accountability, productivity, resource utilization, and immediate patient safety. These practices result in improved product outcomes such as fewer mistakes, timely treatment, regular and accurate documentation, improved staff performance and reliable service delivery in ordinary and high risk situations as appropriate.

2.4 Improvement, and Lessons Learned

Leadership and governance were not very accommodating with one another: rules (prescribing guidance) were laid down by governance (national labelling regulation), but at the local organisation level, leadership was unable to convert that into a system resistant to human factors (Len's situation) (Fulop and Ramsay, 2023). It wasn't clinical knowledge; the right drug was used morphine was due, and calculation of dosage was correct it was the communication design and accountability for reporting.

Problem	Supporting Data	Improvement
Doses that are outside of the medication bottle and written on the box package	As the dispensing label was on packaging discarded before use, family had not seen the dispensing label (HSSIB, 2022).	Ensure dosing requirements are written on bottle/container for high-risk oral liquid opioids, and outer packaging.
Adverse drug reactions (Yellow Card) under-reported	A report had to be made but was not made due to staff pressure; Trust confirmed	Embed compulsory, low-burden, digital Yellow Card prompts within e-prescribing systems, eliminating reliance on discretionary staff time

National magnitude of opioid-related harm is under-documented	Independent Academic analysis revealed that the opioid-death data from the ONS was underestimated by up to 34% (KCL/ NPSUM, 2025)	Implement a continuous, accurate national surveillance system based on improvements in coronial toxicology reporting to enhance the development of local prescribing alerts
Complex medicines are sent to elderly/ isolated households without a verification process	Preventable medication harm affects 1 in 20 patients worldwide, and older adults are disproportionately exposed to the risk of preventable medication harm due to polypharmacy (WHO, 2024)	Implement a mandatory "Teach-back" verification phone call between the pharmacist/district nurse and the patient for new high-risk opioid prescriptions that are not enrolled in residential settings for patients > 75

Table 3: Supporting data and improvements based on data retrieved Table

(Source: Self-Created)

Linking these findings: system structure, leadership style and feedback loops interacted to convert a manageable clinical decision into a fatal outcome. No 'Yellow Card' was raised (although a cabin order was issued); the failure to write one created a failure of feedback, and the decentralised nature meant that frontline autonomy was not accompanied by centralised safeguards (bottle labelling standards) and the transactional leadership to notice and escalate the labelling risk was also absent (Åhlin et al., 2026). What is crucial to take away from this for other health organisations is that none of these factor's rules, hierarchy, or individual alertness can take over the other when it comes to safety, but must instead complement and rest upon one another, an idea reflected in WHO's "building blocks of a health system" approach in which health workforce, information systems, and leadership and governance are inextricably linked rather than divisible factors (WHO, 2007). Evidence and data that are used should not be 'reactive' (as here, on the back of a family complaint); it must be mandatory, inbuilt and rigorously monitored via technology when shortage times are defaulted on, so that individual discretion can be removed and reduced during shortage times for certain professions.

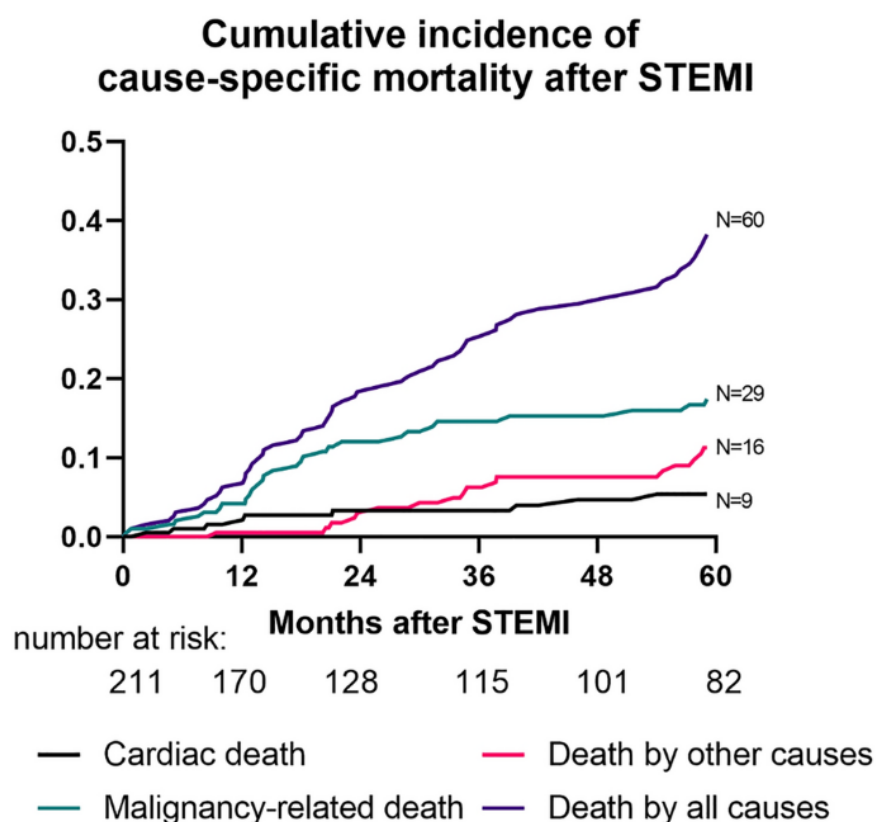


Figure 8: The Research on Cardiology and Therapy

(Source: Heemelaar et al., 2021)

A study of Heemelaar et al. (2021) showing that After STEMI, the 5-year cumulative incidence of death by all causes, including unknown cause of death (N = 6), is 38.1% (N = 60). Malignancy-related causes accounted for over half of all deaths (N = 29, 48.3%), followed by deaths from other causes (N = 16, 26.7%) and cardiac deaths (N = 9, 15.0%).

The innovative improvement to be sought in the case of Len needs to be human-centred and data-enabled, to create safety at source. The smartest change would be a big colour-coded label on the wall of the bottle or the outer label including a QR code added on to the label that, when scanned, sends a short, audio-visual description of the dose & frequency which would be more appropriate for older adults & carers (Ohring, 2026). This could be connected to a mobile app or landline call-back system that reminds the patient that they are about to take a prescribed dose and looks out for any mismatches and alerts the GP or pharmacist. Community pharmacies could also have a short digital checklist, which would be displayed on their terminal and the staff member would mark off the correct dose instructions when the patient re-entered them (Parekh et al., 2023). These innovations would combine to make packaging and counselling more than passive delivery of information to active protective measures to greatly diminish the risk of opioid misinterpretation in vulnerable patients.

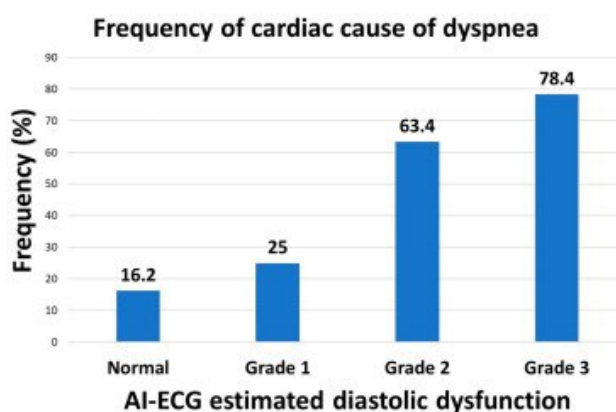


Figure 9: The Artificial Intelligence enable well patients care in an emergency

(Source: Yu et al., 2024)

A research on artificial intelligence to enable and estimated of health based on emergency showing that from the bar chart, one can observe that heart failure due to dyspnea increases significantly from AIECG estimated diastolic dysfunction. It is 16.2 % in the "Normal" patients, and reaches 25 % for the Grade 1. This is followed by a noticeably graded function between severity of the disruption and dyspnea, in the grades 2 and 3 respectively at 63.4% and 78.4%. Changes and lessons learnt about healthcare systems help identify issues, recognise root causes, avoid reoccurrence of errors and enhance patient safety (Ahn et al., 2025). They champion improved clinical performance, effective resource utilization, staff development, team working, and service quality by implementing change in an evidence-based way; monitor, review, act on, and share their practice with others within departments.

3. Recommendations

When NHS primary and community care organisations are dealing with high-risk drugs and elderly and isolated patients, three priority points should be considered for immediate action.

First is the leadership style; it requires a move away from transactional, protocol-only type of leadership and toward a much more distributed/compassionate one that involves community pharmacists and district nurses having time and authority to conduct verification checks (teach-back) when new highly risky prescriptions are issued. This focuses directly on Len's human-factors gap.

Second, governance strengthening: NHS England and the MHRA need to issue requirements that dosage instructions are included on the immediate container and not just the outer packaging for high-risk oral liquid medicines and that the adverse event reporting system prompts are compulsory rather than optional in e-prescribing and/or dispensing software for pharmacists.

Third, systems integration: Integrating Care systems should create shared, real-time communicating systems between GP and pharmacy to community nurses for opioid users over 75 years, to overcome the 'silo effect' that was found in the case and in the broader literature on bed blocking and fragmented care decision-making in the NHS (Week 2 lecture notes).

Investing in low-cost, high-impact measures (standardised labelling and “digital reporting prompts”) should be prioritised over high-cost but non-resource-intensive infrastructural change to improve technical and allocative efficiency, given indications that the problem is not necessarily just one of lack of resources (Lei, 2025). Continuous learning needs to be integrated via the IT systems and regular, anonymous sharing of near miss and adverse event data from ICS to ICS, along the lines of what WHO's Global Patient Safety Action Plan recommends to have a 50% reduction in severe avoidable medication-related harm. It is crucial that patients and family carers can co-create and be involved, for example, as in Len's case, they might be the first to spot the systemic issues, but often this understanding is only gathered after an incident. This has arisen co-production and stakeholder engagement in safety governance particularly in primary care and pharmacy places these as a proactive early-warning mechanism rather than a reactive complaint route (World Health Organization, 2024).

Further recommendations for Case Study 3 should focus on innovative, technology-enabled safeguards at the point of prescribing, dispensing and use. NHS England may be able to add smart packaging to liquid morphine, with large label boxes with a similar colour coding and 'QR/barcode' on the outer box, which could be scanned to provide simple spoken instructions in the patients preferred language, reducing misreading risk for older people and carers (World Health Organization, 2023).

The second part focused on the needs to be a digital team-back process build into both community pharmacies and GP practices so that a record of whether the patient has repeated the dose as intended will be provided by the staff member/technician, with AI supported prompts and follow up small message service texts (SMS) or telephone calls to identify potential misunderstandings at an early stage. Third, if the level of smart packaging could be linked to secure apps and calls back or automated voice systems, dose-time reminders and alerts could be sent to doctors when usage trends indicate overdose or poor adherence, based on the information the systems gather (Astier-Peña et al., 2021). Composed of these innovations, health literacy in practice turns Len's potentially fatal misunderstanding on its head, into a preventable risk seen through data.

Healthcare recommendations for the future will need to be planned for in relation to evidence; have measurable targets; be resourced appropriately; be held to account; be regularly assessed and adapted; support increased access to, quality of and outcomes from, healthcare processes and services; and enhance efficiency and long-term system resilience within various communities, in equitable ways.

4. Conclusion

Len's death demonstrates that patient harm arising from such circumstances is seldom caused by one sole culprit, but a series of interacting systems where none of the systems

involved in the care of the patient maintains good communication, where none of the systems is proactive in raising critical issues, and where none of the systems has a meaningful feedback mechanism to better understand the risk at hand.

The fact that this is not an isolated tragedy is acknowledged by global and national statistics that indicate that such medication-related harms are not uncommon, but in fact part of a significant and probably under-recognised burden of preventable harm, disproportionately affecting older, vulnerable patients. Its solution does not depend on a complete centralisation or a complete decentralisation but on a conscious and deliberate engineering of redundancy over governance, leadership and information that represent the pragmatic application of systems thinking, distributed compassionate leadership and systematic use of data as essential tools to avoid patients like Len from dying again.

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