REVIEW

Where does infection control fit into a hospital management structure?

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Summary To be effective, infection prevention and control must be integrated into the complex and multiple interlinking systems within a hospital’s management structure. Each of the systems must consider how activity associated with it can be optimised to minimise infection risk to patients. The components of an organisational structure to achieve these quality assurance and patient safety aims are discussed. The use of performance management tools in relation to infection control metrics is reviewed, and the use of hospital-acquired infection as a proxy indicator for deficiencies of system management is considered. Infection prevention and control cannot be the role and responsibility of a single individual or a small dedicated team; rather it should be a priority at all levels and integrated within all management systems, including the research and educational agendas.

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Introduction

Where does infection control fit into a hospital management structure? The question should first be asked what a hospital management structure should provide in relation to infection prevention and control. Any such structure should set its sights beyond merely addressing any legislative and statutory requirements, and should provide a framework for organisational change as well as the systems required to support this change. Key elements of this framework include a belief in a shared purpose and aspiration to excellence, supporting reinforcement systems, assurance that staff have the skills required for change and that staff have consistent and multiple role models within the organisation. These elements could almost be

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considered together as an 'organisational change bundle'. The structure should also have the ability to foster reliability and resilience.\textsuperscript{1,2}

Hospital management must consider infection control primarily as a core aspect of patient safety, and as an indicator of quality of care. It must be acknowledged that achieving quality patient care and safety is entirely dependent on implementation of best practice in individual clinical care, and that this delivery requires expert input at both operational and strategic levels.

Role and interplay of multiple management systems

Infection prevention and control relies upon the successful interplay and management of multiple management systems, integrating infection prevention and control into management at all levels and forcing specific consideration of infection risk for patients throughout multiple management systems. To achieve optimally lowered infection risk for patients, action is required in a wide variety of domains. Examples of the diverse areas and aspects of a hospital infrastructure which must be considered as having a role in infection prevention and control include human resources (HR), staff:patient ratios, bed management, patient pathways, staff training, information and information technology, contract management, procurement, estates and facilities, capital planning, building, design, performance monitoring, antibiotic stewardship, organisational learning, adoption of innovation, risk management, governance, priority setting, resource allocation, communications, and business planning among others. Given the complexity of assuring high quality standards across such diverse groups and the contingency of each of these systems one on the other, achieving effective infection prevention cannot therefore be devolved to an individual specialist team or to an isolated group of committed experts. Instead a comprehensive whole-scale organisational approach is required. Infection risk needs to be considered in almost all areas of hospital management, patient pathways and delivery of care. Awareness of infection prevention priorities must be embedded and be considered a prerequisite in decision-making at all levels. Infection control must be fully integrated into the healthcare structure and systems, into performance and patient outcome metrics and into the hospital culture including in research and education strategy.

Impact of human resources management on infection control

Areas in which HR management has a direct impact on infection control include occupational health, health clearance and vaccination against preventable infection. However, manpower details such as working patterns, team formation and skill-mix are also inextricably linked to infection control outcomes. Infection risk has been shown to be strongly related to staffing levels and staff training. These are underpinned by other HR activities including recruitment and retention, staff appraisal, job descriptions, induction, leave management, agency staff and shift patterns. HR management has been shown to have particular impact in the context of critical care areas, especially intensive care units (ICUs). Staffing levels among nursing staff especially have been shown significantly to affect hospital-acquired infection, both in neonatal and in adult ICUs.\textsuperscript{3,4} Physician staffing levels have also been studied; infection-related outcomes are not addressed separately, but findings relate to the overall adverse impact on LOS and mortality.\textsuperscript{5}

An organisation-wide approach

A comprehensive organisational approach should be adopted, one which recognises existing management structures and facilitates development of a model that fully integrates infection control into hospital management and the quality agenda. Infection control must be a core part of governance and must maintain a high clinical profile alongside a high management profile.

Bridging the gap between managers and clinicians

Infection control provides an opportunity, agenda and framework for such a bridging strategy. If infection control sits solely within a separate service or team, unlinked to management strategy, or with little clinical and managerial influence, it has limited effectiveness and impact. Strategic decision-makers without knowledge or without systems to ensure consideration of infection control put patients at risk. Managers need to be aware of the direct impact, any knock-on effects and potential collateral damage that could occur as a result of any decision-making, whether it be about capital planning,
pathways, service reconfiguration, etc. Avoiding any compromise in infection prevention and patient safety depends on continuous awareness which can be achieved by improved dialogue and working to a common agenda. Skills and training needs of management and clinical staff must be realised, and there must be clear lines of accountability which follow funding structures, and which are supported by agreed performance indicators. These indicators should be recognised and incorporated in any balanced scorecards, dashboards or organisational performance monitoring tools.

Balanced scorecard for infection prevention and patient safety

The use of the balanced scorecard provides a framework to measure performance beyond finances in private industry. It allows alignment of performance measures with an organisation’s strategic mission and goals, measuring performance, and factors driving performance. In essence it is a tool that can provide a basis for executing good strategy well and managing change successfully. There are caveats with such an approach inasmuch as you get what you measure, and use of a scorecard is known to skew activity. The scorecard is not fixed; instead it needs regular refreshing and updating as priorities of the institution evolve. Many trusts use the balanced scorecard approach for internal performance managing. Indicators used must have credibility with frontline staff and have shared agreement of their value. Leaders must select outcome or process measures that represent the interests of frontline healthcare workers, must ensure that it has local face validity, and that performance on the chosen measure will help focus quality improvement.

Organisational learning and culture

This requires creation of an environment which permits continuous learning and quality improvement shared across professional bodies, and across directorates and units. Systems-based approaches embedded in the framework of the organisation must be adopted for sustainability. These systems must be shaped and supported by clinical and managerial expertise, within a culture that supports and reinforces infection control as a corporate priority, continually reinforcing the required behaviour and values. Interventions must be supported by regular feedback, monitoring systems and metrics which drive continuous learning and improvement. A critical component in all of these is strong corporate accountability and hospital leadership. Achieving safety requires more than individual carefulness. It is a corporate responsibility.

Leadership

Within a hospital structure leadership must come directly from the Chief Executive Officer (CEO) who must have demonstrable commitment to infection prevention and control and leadership. The Director of Infection Prevention and Control (DIPC) is the person appointed by each trust who has direct line of accountability to the CEO and this role provides opportunities for specialist leadership and composite roles. The DIPC leads and champions infection prevention and control at multiple levels within the organisation, ensuring that a consistent message is embedded in directorates, groups, teams, and networks. Consistent role models are key to organisational change. The DIPC must have a profile and recognition of this role by peer groups and the organisation and provide a bridging role between managers and clinicians. The multiple layered approach allows the DIPC to address issues pertinent to patients and to public concerns first and foremost, to communicate a clear message to staff which states and promotes the view of infection control as a shared goal involving all staff, across the multidisciplinary spectrum. This includes delivering a strong message to all prescribers relating to prudent prescribing and ensuring that antibiotic stewardship is fully addressed by the organisation. The DIPC role must deliver internal reinforcement, leadership, board-to-ward engagement, expertise and organisational commitment, as well as provide role modelling and exemplify corporate responsibility.

Lessons learned from approaches and processes from outside healthcare

Like many other areas of hospital management and patient safety, much can be learned from arenas outside healthcare. It is also worth noting that the significant reductions of MRSA bacteraemias made by many NHS trusts were due not to new technology or scientific advances but through better application of existing knowledge using a variety of managerial approaches. These include the risk
reduction and hazard management approaches from high risk industries.

Organisational approaches, as used in other complex industries, can be applied to acute trusts to embed infection control into the running of hospitals and delivery of clinical care, and organisational change management tools can be used to drive this. These include leadership and the development of a 'board-to-ward' approach of engagement, and performance indicators with scorecards or dashboards while maintaining awareness of their limitations. In addition to trusts addressing internal reinforcement systems, external reinforcement provides the scrutiny and incentives to achieve goals, and has been seen with public information campaigns, the introduction of mandatory reporting, the intense media interest and increased patient choice. Strong external reinforcement of CEO accountability for healthcare-associated infections (HCAIs) was provided not just by mandatory data submission in England, but also by the mandatory requirement that CEOs review and sign off data monthly. Finally the introduction of legislation made the delivery of infection prevention and control and compliance with core duties legal requirements for every NHS trust.

Valuable lessons from the safety arena include the use of quality improvement tools and the development and adoption of ‘care bundles’ to ensure best practice and minimising risk in particular clinical interventions. Local improvement campaigns can learn from advertising and politics, as have the national patient safety and quality improvement campaigns such as those of the Institute of Health Improvement’s ‘1000 lives’ campaign, the ‘5 million lives’ campaign, and the DoH ‘Saving Lives’ campaign. These national campaigns also provided additional external reinforcement to local programmes.

The effective use of teams has been recognised as a key aspect of delivering quality performance in other industries. This involves better use of team structures with an acknowledgement of individual skills, but with staff understanding that teamwork is valued rather than individual interventions. This relies on leadership, adaptability, as well as mutual performance monitoring and support. The team approach has been particularly valuable in reducing line-associated bacteraemia in ICUs. Staff can be further supported by encouragement of use of decision aids, systems which make the desired action the default, and clear delineation of processes and pathways, all of which seek to decrease the human factor and increase the system reliability.

HCAI as an indicator of complex systems management and organisational resilience

There is pressure for greater use of quality indicators and measures in healthcare, and infection rates and infection prevention is a major indicator of quality in clinical care and quality in management. Infection control can serve as a marker of an organisation’s capacity to manage multiple, complex systems, and HCAI rates can therefore be proxy indicators of levels of staffing, levels of training, organisational stress, management failure, inadequate systems, reliability, and resilience.

A resilient system is one that quickly recovers stability after an unexpected event or in the face of continuous significant stresses in a complex, dynamic environment; the stability is provided by constant change rather than continuous repetition. The challenge to the system is that it must facilitate reliability while developing resilience to both internal and external threats and stressors, e.g. mergers, leadership change, financial deficit, infection outbreaks, global recession, major policy shift, environmental incident and technology change among others.

Common to both the Maidstone and Stoke Mandeville Health Care Commission reports relating to C. difficile were themes related to organisational stressors; recent mergers, preoccupation with financial situation, service reconfigurations and high bed occupancy levels (>90%). This was in addition to the more obviously directly related issues such as poor antibiotic stewardship, issues relating to isolation facilities and the state of the hospital environment.

Resilient organisations hold to key principles: acknowledging even small failings, resisting oversimplified accounts of events, remaining sensitive and responsive to front-line operations, maintaining reserves and capability in anticipation of stressors, and are adaptable to shifting locations of expertise. Each of these principles should be addressed by a trust in its overarching approach to infection prevention and control.

Discussion

Infection prevention and control should have a presence and profile throughout the hospital management structure. From the top and down through every level of decision-making and care, supported by clear leadership, systems, structures...
and expert input, an organisational approach to infection prevention is needed, involving management structures and systems to change behaviour and culture, to drive quality improvement and support sustainable best practice in a resilient framework. In this context training needs must be addressed, and further applied research is needed to determine which healthcare models best deliver effective, reliable and resilient infection prevention.\textsuperscript{26,27}

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