Management matters: the link between hospital organisation and quality of patient care

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Abstract

Some hospital trusts and health authorities consistently outperform others on different dimensions of performance. Why? There is some evidence that "management matters", as well as the combined efforts of individual clinicians and teams. However, studies that have been conducted on the link between the organisation and management of services and quality of patient care can be criticised both theoretically and methodologically. A larger, and arguably more rigorous, body of work exists on the performance of firms in the private sector, often conducted within the disciplines of organisational behaviour or human resource management. Studies in these traditions have focused on the effects of decentralisation, participation, innovative work practices, and "complementarities" on outcome variables such as job satisfaction and performance. The aim of this paper is to identify a number of reviews and research traditions that might bring new ideas into future work on the determinants of hospital performance. Ideally, future research should be more theoretically informed and should use longitudinal rather than cross sectional research designs. The use of statistical methods such as multilevel modelling, which allow for the inclusion of variables at different levels of analysis, would enable estimation of the separate contribution that structure and process make to hospital outcomes.

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Introduction

Organisational researchers have long sought to establish the impact of organisational structures and managerial processes on outcomes such as profitability,[1] effectiveness,[2] performance,[3] and organisational growth and survival.[4] Organisational researchers have also focused on the public sector, particularly hospitals, in an effort to link organisational characteristics to a number of important outcomes for patients and staff.[5][6] Although few would now question that "management matters" in delivering quality health care, knowledge about the nature of the relationship is incomplete. The fact that we know so little about the relationship between structures, processes, and outcomes within hospitals makes it difficult to recommend, on the basis of sound theory and empirical evidence, ways of organising that could improve patient care.

One of the criticisms of research on hospital performance is that it has been rather insular, paying little attention to developments in related fields such as organisational sociology, organisational behaviour, management studies, or human resource management. Most of these disciplines study organisational performance in the context of a market and their dependent variables are usually profitability, productivity, or market share which are very different from many of the proxies for quality of care—such as mortality or morbidity—used in studies of hospital performance. However, these reports are similarly concerned with issues of motivating, engaging, and rewarding staff which may be linked to patient outcomes as well as to business success. Greater attention to the work that has been done on organisational performance, broadly defined, could illuminate our attempts to link the characteristics of hospitals and units to the kind of care they are able to provide to patients.

Of course, the disciplines of organisational sociology and human resource management are vast and the aims of this paper are modest. It is impossible to treat the literature on these subjects in great depth here. The main aim of this paper is to identify a number of "landmark

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studies", defined as frequently cited review articles, that try to make sense of the burgeoning literature on organisational performance. These studies could contribute to the development of theory in this area. A second aim is to identify variables at different levels of analysis—individual, organisational, and environmental—that could be used in future models of hospital organisation and quality of patient care.

Health policies motivating organisational research

The message from the current UK government that quality of care must be given greater priority than in the past has been widely welcomed by the professions. Some of the main policy documents relating to quality of care in the UK National Health Service are described in table 1. Within the quality initiative there is a clear recognition that only so much can be achieved by appealing to individual practitioners, and that more effort needs to be expended on understanding how the organisation and management of care affects outcomes. Many of the goals of the new NHS—including clearer lines of accountability and responsibility, better communication, and improved conditions for staff—require interventions at the level of the organisation.

One of the most important planks in the quality platform is the policy of clinical governance. Clinical governance has been defined as "a framework through which NHS organisations are accountable for continuously improving the quality of their services and safeguarding high standards of care by creating an environment in which excellence in clinical care can flourish".[7] Buetow and Roland[8] noted that the "duty of quality" relates to the organisation, not just to individuals within the organisation. Although a named individual, most often the Chief Executive, will assume statutory responsibility for quality, many trusts have already implemented structural changes, creating new layers of management and establishing new committees to enable them to meet the challenge of clinical governance. Clinical governance also demands cultural change towards openness, participation, staff empowerment, partnership, and collaboration; an important goal is to move away from a culture based on blame to one that emphasises learning from mistakes.[9] The emphasis on the need for structural and cultural change in both organisations and professions recognises that not all the quality goals of the NHS can be achieved by inducing or exhorting individual clinicians and managers to change their own practice.

The quality of patient care may be related in an important way to the quality of life experienced by staff at work. Partly as a result of the quality initiative, concern about the way the NHS treats its employees has increased. Issues of human resource management have also been highlighted by the projected crisis in the number of nurses and by the dissatisfaction of junior doctors with their working hours. Too few trained nurses, combined with overworked and fatigued doctors, are not a recipe for excellence in patient care.[10] So, how can we improve the quality of working life in ways that will enhance the ability of the NHS to recruit and retain staff? Pay, flexible hours, and job prospects are obviously central, but improving the quality of working life also means helping individuals to develop their potential, to increase their sense of autonomy, and the ability to achieve their goals. At the same time, attention needs to focus on organisational development. Creating an environment that is perceived as "a good place to work" requires multiple interventions at different levels.

Clinical governance and better human resource management practices are important planks in the current health policies emphasising quality of patient care. Both planks demand attention, not just to the individual level of analysis, but to the ways that clinical directorates, divisions, trust boards, and professions work together to achieve quality. These goals move organisational research onto the centre stage.

Organisational research focusing on hospitals

Studies of the organisation and management of hospitals have examined the impact of a dizzying array of factors on the quality of patient care. Flood,[11] in a wide ranging review of organisational research conducted mainly in the USA in the 1980s, identified the basic sources of variation that were found to be associated with quality of patient care.

A number of studies have found a weak relationship between doctors' training and experience and quality of care. Flood[11] has interpreted this to mean ". . . not that physicians are unimportant for quality but that organisational context is far more important in setting limits (upper and lower) for physicians than formerly recognised . . .". Medical staff organisation—including peer review, selection and continued review of new staff members, and participation in policy making committees—have also been shown to be positively related to quality of patient care.

Few studies have examined whether a similar set of relationships hold for other staff, but studies of coordination and communication have focused on nurses and ancillary staff. Coordination appears to be particularly significant, and a series of studies conducted in intensive care found that "conflict management skills, including communication, problem solving and leadership, combined with a patient orientation" were positively related to quality of patient care.[11] Flood suggests that one promising area for future research will be the extent to which the boundary between the two traditional authority structures—professional and administrative—are breached in hospital organisations.

There is a well established relationship between the volume of patients passing through a health care unit and the quality of care delivered,[12] although there is disagreement as to the mechanism generating this relationship. The literature proposes at least five plausible hypotheses,[11] two of which rely on the idea

Table 1   Quality initiatives for the NHS in England introduced since 1997 (excluding documents relating to the development and regulation of the professions)

Year	Source	Type of document	Title	Quality initiatives
1997	DoH	White paper	The new NHS: modern, dependable	Describes a 10 year plan to improve the NHS, including the replacement of the internal market with a system of integrated care. NHS to be primary care led. Introduced national service frameworks, new organisational structures to promote evidence-based care and monitor standards (NICE and CHI), the policy of clinical governance and NHS Direct
1998	NHSE	Consultation document	A first class service: quality in the new NHS	Announced a three part approach: ● National standards to be set by National Service Frameworks and the National Institute for Clinical Excellence ● Dependable local delivery systems to be achieved through clinical governance, lifelong learning for NHS staff, and a system of self-regulation ● Monitoring by the Commission for Health Improvement, a national framework for performance assessment and an annual survey of patients' and users' experiences Changes to be implemented through partnerships among government, NHS and related organisations and patients
1998	DoH	Green paper	Our healthier nation	Key aims are to improve the health of the population as a whole by increasing the length of people's lives and number of years people live free from illness. Describes the "third way" between blaming individuals and nanny state social engineering. Third way is a contract whereby the government, local communities, and individuals join in partnership to improve health
1998	DoH		Working together: securing a quality workforce for the NHS	A strategic approach to managing human resources in the NHS. Three aims: ● to ensure that we have a quality workforce, in the right numbers, with the right skills and diversity, organised in the right way, to deliver the government's service objectives for heath and social care; ● to demonstrate that we are improving the quality of working life for staff; ● to address the management capacity and capability required to deliver this agenda and the associated programme of change.
1999	NHSE	Implementation paper	The NHS performance assessment framework	Introduced a broader based approach to assessing performance in six areas: ● health improvement; ● fair access to services, irrespective of geography, socioeconomic group, ethnicity, age or sex; ● effective delivery of appropriate health care—care must be effective, appropriate and timely, and must comply with agreed standards; ● efficiency—to ensure that effective care is delivered and that the NHS achieves value for money; ● patient/carer experience—to assess the way people view their care to ensure the NHS is sensitive to individual needs; ● health outcomes—to assess the contribution of the NHS to the health of the population.
1999	NHSE		Improving quality and performance in the new NHS: NHS performance indicators	First set of data on high level performance indicators and clinical indicators to enable health authorities, primary care groups, and NHS trusts to monitor and compare their performance
1999	DoH	Implementation paper	Clinical governance: quality in the new NHS	Sets out the arrangements for implementing clinical governance. Regulates NHS organisations to put in place: ● clear lines of accountability and responsibility for the quality of clinical care; ● a comprehensive programme of quality improvement activities; ● clear policies aimed at managing risk; ● procedures for all professional groups to identify and remedy poor performance
1999	DoH	White paper	Saving lives: our healthier nation	An action plan to tackle poor health. Focused attention on cancer, coronary heart disease and stroke, accidents, and mental illness, and set targets for reduction of incidence. Established the Health Development Agency and the Public Health Development Fund
2000	DoH	White paper	The NHS plan: a plan for investment, a plan for reform	● A modernisation board, 10 task forces and a performance working group to oversee, advise, and drive forward the implementation of the plan ● New incentives for better performance and reward schemes ● New modern and better equipped buildings ● More staff working in better conditions with opportunities for career development and advanced training ● New educational systems and expansion of medical students, nurses and other health professionals ● New structures for regulating health professions ● New ways of involving and representing patients views ● New strategy for public health and prevention of disease ● New technologies, such as Care Direct
2000	DoH	Consultation document	A health service for all talents: developing the NHS workforce	A review of the workforce and its educational requirements. Established a National Workforce Development Board
2000	NHSE		Improving quality and performance in the new NHS: NHS performance indicators	Second set of data on performance

that "practice makes perfect"—that is, the skills of individual practitioners are enhanced by specialisation and by repeated performance of the same or similar tasks. Highly skilled and specialised practitioners also provide better peer review. A third mechanism involves units with good reputations attracting more referrals and consequently having a high volume. It has also been suggested that high volumes are associated with a more preventative orientation among a group of doctors, with patients being treated at an earlier stage of their illness. Finally, some studies have suggested that ". . . volume of similar cases leads to benefits because the organisation and its staff become more practised in managing and caring for these patients or because certain efficiencies can be introduced with sufficient volume much akin to economies of scale".[11]

Flood surmises that many different mechanisms may be operating at once to produce the relationship between volume and quality, but it is clear that extent of specialisation of staff, volume of patients, and case mix are important variables in relation to quality of patient care. Complexity can take many forms—for example, the severity of each individual patient's illness, the frequency of multiple diagnoses, and the number of patients who have combined health and social problems—which require the coordination of a large number of clinicians and services. It also includes characteristics of the work, such as whether or not admission patterns are predictable. Complexity could plausibly be related to quality of care and contingency theory would suggest that some managerial approaches will work for some groups of patients and types of services and not for others.

A number of stable characteristics of hospitals have also been related to outcomes. One consistent finding is that quality of care is better in hospitals affiliated to a major medical school. Findings over the last 30 years have shown, at least in the USA, that teaching hospitals affiliated to a major medical school tend to be associated with higher costs, better quality outcomes, and more sophisticated techniques, after taking into account patient mix.

Flood[11] concluded from her review of studies of health care organisations that, although much of this research can be criticised both theoretically and methodologically, there is at least some support for the relationship between quality of care and a number of variables. The most serious deficiencies in this body of research lie in the failure to specify the mechanism linking organisational characteristics to outcomes, and in failing to show that organisational and managerial factors come logically before quality. It is still possible to infer from many studies of this type that quality of care might have caused changes in the structure of the organisation, managerial processes, or in the kind of staff who chose to work there, rather than the other way round. Many studies also focus exclusively on the internal structure and processes of the hospital and fail to consider the wider environment, particularly the network of relationships in which hospitals operate. The omission of environmental and relational variables would be particularly egregious in models of quality in the NHS where the links between the organisation and the healthcare system are particularly important. Flood also criticises the lack of attention to culture as an important influence on managerial decision making. Future research should try to make some theoretical progress in this area which will help to explain how organisational structures and processes, as well as the internal and external environments, are related to quality of care. The problem of causal ordering, which is ubiquitous in organisational research, can only really be addressed by longitudinal rather than by cross sectional research designs.

Whereas Flood[11] focused her review on the independent variables, a recent review has examined the variety of dependent variables that are frequently used in studies of hospital performance. Mitchell and Shortell[13] set out to examine "the state of the science with respect to morbidity, mortality and adverse events indicative of organisational variables in care delivery systems". They found a total of 81 studies in this area, most of which were conducted in acute care settings in the USA during the 1990s. The independent variables in these studies were more frequently features of the organisational structure (high technology, nurse staffing, professional expertise, size, ownership, urban/rural location, teaching hospital status) than organisational or clinical processes (collaboration and care coordination, volume of patients).

In general, they found that this body of work provides some support for the conclusion that nursing surveillance, quality of working environment, and quality of interaction among professionals distinguish hospitals with lower mortality and complications from those with higher rates of adverse events. However, empirical results are ambiguous. As researchers become increasingly adept at controlling for patient factors such as severity of illness, the organisation and managerial variables tend to decrease in significance.

The main contribution of this review is the fact that they distinguish between the different kinds of dependent variables—mortality, complications (surgical complications, infections), and other adverse events (falls, pressure sores, and medication errors). They show that these three are not interchangeable and suggest that there are problems in using each as a proxy for quality of care. The authors argue that mortality and adverse events are important outcome measures because they can alert us when things are going badly wrong in a healthcare setting. However, if we want to understand how the organisation and management of hospitals affects patient outcomes, mortality in particular may not be the best dependent variable because death rates are so heavily dependent on patient characteristics.

Mitchell and Shortell[13] suggest that ". . . given that adverse events appear more closely related to organisational factors than to mortality,

researchers need to refine and better define such events that are logically related to the co-ordinative organisational processes among caregivers." The "failure to rescue" measure developed by Silber *et al*[14] is a significant development in this area. This conditional probability—death rates following complications—has been found to be more closely related to hospital factors than raw mortality figures. The idea is that, while the likelihood that a patient will develop a complication is largely due to factors such as their age and severity of illness, the likelihood that they survive following development of a complication is at least partly a function of the care they receive. Finally, Mitchell and Shortell[13] recommend that future research should focus on smaller care giving units rather than on the hospital because units within a hospital vary greatly. Using the hospital as the unit of analysis may be masking the effect of organisational and managerial variables as the amount of variation within a hospital may be greater than that which exists between hospitals.

Organisation of nursing work

In the early 1980s the American Nurses' Association identified a group of hospitals that were known by reputation as "good places to work".[15] Designated as "magnet" hospitals because they had little difficulty in recruiting and retaining staff, they were found to share a number of organisational features, including:

- a relatively flat nursing hierarchy with few supervisors;
- the chief nurse had a strong position in the management structure of the hospital;
- nurses had autonomy to make clinical decisions in their own areas of competence and had control over their own practice;
- decision making was decentralised at the level of the unit;
- staffing was adequate and limits were placed on the number of new nursing graduates;
- methods to facilitate communication between nurses and physicians were established;
- the organisation of nurses' work promoted accountability and continuity of care—for example, primary nursing care;
- the institution demonstrated the value it attached to nurses—for example, by investing in their education.

Aiken and colleagues at the University of Pennsylvania have since shown in a series of studies that cardinal features of the "magnet" hospitals are related to lower mortality rates,[6] increased patient satisfaction,[16] and lower burnout rates[17] and needle stick injuries among nursing staff.[18] These methodologically sophisticated studies use a research strategy whereby data gathered from individuals about their sense of autonomy, control over their own work, and quality of communication are aggregated to describe important characteristics of the organisation. This enables the researchers to estimate the relationship between structural characteristics of the organisation and outcomes for patients and staff. This research programme has now expanded to include an international sample including hospitals and nurses in Scotland and England. The results of this study, which is currently underway, will have much potential to inform policies for changing the organisation of nursing work to promote positive patient outcomes.[19]

Research on non-hospital organisations

Although there are many differences between hospitals and other kinds of organisations such as business firms and industries, research on organisational outcomes provides support for some of the independent variables identified by Flood and Aiken and suggests some additional variables that might be considered. Clues from the literature on industry, firms, and other businesses suggest that decentralisation and participation in management, which are organisational level variables related to autonomy and control at the individual level, should be considered as contenders for a place in a causal model. Some of these variables refer to organisational structures and others to processes, and these will be discussed in turn.

Mintzberg[20] explains the importance of structure in the following way: "Every organised human activity—from the making of pots to placing a man on the moon—gives rise to two fundamental and opposing requirements: the division of labour into various tasks to be performed, and the coordination of these tasks to accomplish the activity. The structure of an organisation can be defined simply as the sum total of the ways in which it divides its labour into distinct tasks and then achieves coordination among them."

Most standard texts in management studies have at least one chapter on organisational structures. Dawson,[21] for example, in a chapter entitled "Coordination and control: structure and organisational design" defines organisational structure as ". . . the socially created pattern of rules, roles and relationships that exist within [the organisation]." In contrast, the culture of an organisation refers to the collection of values and beliefs within it. Mintzberg implies that there is a strong relationship between culture and structure. His classification of organisational *configurations* suggests, for example, that organisations with relatively non-hierarchical structures such as universities are likely to have very different cultures from organisations such as the army that have a strong hierarchical structure. One of the most interesting features of an organisational structure is the extent to which it is centralised or decentralised.

According to Simon *et al*[22]: "An administrative organisation is centralised to the extent that decisions are made at relatively high levels in the organisation; decentralised to the extent that discretion and authority to make important decisions are delegated by top management to lower levels of executive authority". The two concepts are not mirror images; some empirical work suggests that they are, in fact, weakly correlated.[23] Studies also suggest that

there are at least two separate notions embedded in the concept of decentralisation, the first referring to the hierarchical levels at which decisions are made (or influenced) and the second referring to the extent to which different levels participate in the decision making process. These arguments suggest that both centralisation and decentralisation should be seen as multidimensional concepts.

Traditionally, centralisation is measured in two main ways. Pugh *et al*,[24] who pioneered the examination of organisational structures, collected data on, for example, the Chief Executive's span of control and the ratio of workers to supervisors, mainly from documentary evidence collected from organisations. Hage and Aiken[25] focused on participation in decision making and hierarchy of authority. In their landmark study of centralisation these authors interviewed staff in 16 social welfare and health organisations in the USA where they focused on behaviour—particularly participation in hiring, promotion, policies, and programmes—as well as the extent to which each individual felt he or she had to defer to a supervisor. Although both of these measures have been well used in organisational research, we might question whether either would provide an adequate measure of decentralisation in the NHS in the UK.

Acorn *et al*[26] used Hage and Aiken's[25] instrument to survey acute care nurse managers in a recent US study. The dependent variables of interest were autonomy, job satisfaction, and commitment to the organisation. Scores on decentralisation were not normally distributed because, the authors argue, most hospitals in the USA are decentralised to some degree, and were recoded as a trichotomous variable. Path analysis showed that decentralisation produced significant positive effects on autonomy, job satisfaction, and organisational commitment, and influenced commitment through autonomy and job satisfaction.

Decentralisation is related to the notion of "participative management" which is widely used in organisational behaviour and management studies. Wagner[27] defines participation as ". . . a process in which influence is shared among individuals who are otherwise hierarchical unequals". Participative management practices mean the involvement of managers and subordinates in information processing, decision making, and problem solving. Cotton *et al*[28] identified 68 studies of participation but found that there were some important differences in the way researchers defined the key term. In order to analyse the effects of different forms of participation they classified studies into six groups depending on the focus of the study, as shown in box 1.

Cotton *et al*[28] then showed that not all forms of participation are equally effective. The "winners" appear to be participation in work decisions, informal participation (which was associated primarily with enhanced job performance), and employee ownership (associated with enhanced job satisfaction). We might speculate that participation appears to be most effective when it is a permanent and inclusive

- Participation in work decisions: permanent programmes where workers take a formal direct role in decisions about their work
- Consultative participation: long term interventions such as quality circles where employees are consulted as managers make decisions
- Short term participation: brief but formal exercises in participatory decision making about job issues
- Informal participation: managers and subordinates engage in informal influence sharing despite the absence of a formal programme
- Employee ownership
- Representative participation: employees are elected as council or board members

Box 1   Different types of participation.[28]

feature of the employment relation rather than sporadic or exclusive. This would explain why consultative, short term, and representative participation—which are either episodic or involve only selected individuals rather than all employees—appear to have less impact on performance and job satisfaction than other more consistent forms of participation.

The significance and cost effectiveness of participative management have been the subjects of some debate in management studies. The literature seems to suggest that participation has some beneficial effects, but is it worth the costs of reorganisation and training of staff that would be involved in implementation? To establish the current state of knowledge Wagner[27] examined 10 meta-analyses which focused on the effects of participation on job satisfaction and performance. The author excluded from the review studies of delegation where managers relinquished all influence to their subordinates, studies of consultation where subordinates were involved in idea generation but were not involved in selecting the final idea, and more comprehensive and extensive programmes, such as job enrichment interventions and quality of work life programmes. He concluded that current evidence is consistent with the claim that participation has a statistically significant positive effect on job performance and satisfaction but that the actual effects are limited in size. In practical terms, this leaves unanswered the question of whether the high costs associated with introducing participation in management are justified. If, as Wagner suggests might be the case, the effect of participation is cumulative, with "small episodic influences" building over time, then it may indeed be a good strategy for an organisation to pursue. Current research, which is predominantly cross sectional, may miss changes that occur over time.

Decentralisation and participative management are related to a number of other "innovative work practices" which have been reviewed by Ichniowski *et al*.[29] Within this broad term they include efforts to improve workers' involvement (such as profit sharing, flexible

and broadly defined work assignments), improved communication and dispute resolution mechanisms, and worker participation in decision making. These can be contrasted with traditional work practices where jobs have clear boundaries and associated rates of pay, where there are clear lines between workers and supervisors, decisions are made almost exclusively by managers, and communication flows through the formal chain of command. They concluded that: "Innovative human resource management practices can improve business productivity, primarily through the use of systems of related work practices designed to enhance worker participation and flexibility in the design of work and decentralisation of management tasks and responsibilities". They also suggested that there are potentially large payoffs—that is, the consequences of adopting participative work practices can have economically important effects on the performance of firms that adopt them. Perhaps the most important finding is that the *specific* work practice is less effective than the co-existence of a number of similar practices that improve productivity and attitudes as well as decrease turnover and accidents. This is the phenomenon of "bundling", which is used to describe the combination of high involvement work practices and supporting management practices. "Workers cannot make good decisions without sufficient information and training, and they are unlikely to make suggestions if they feel that this will cost them their jobs or reduce their pay".[30] It is tempting to conclude that some underlying cultural shift in the relationship between workers and managers is a necessary prerequisite for beneficial changes in the structure and functioning of the organisation. In other words, tinkering with one or two organisational innovations is not enough. The question of the extent to which high involvement work practices and supporting management practices have been adopted in the NHS has still to be determined. However, if trusts do vary on these dimensions, it makes an empirical test of the relationship between work practices and quality of care at least theoretically possible.

Similar conclusions emerged from a review of the literature on the determinants of organisational performance commissioned by the National Health Service Executive and conducted by Pettigrew and colleagues at Warwick and Aston Business Schools.[30] They were asked to identify and synthesise what is known and not known about the determinants of performance in private and public sector organisations, and about the practices and techniques of performance management. They found there is more literature on performance measurement, less on performance management, and least on the determinants of performance. Relative to research on the private sector, research on the determinants of public sector performance is very limited in quality as well as quantity. In fact, they

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- Leadership and management skills
- Clear organisational objectives and strategies for achieving them
- The "fit" between organisational objectives, external environment, and strategy
- Change management processes
- An organisational culture that is receptive to change and good working relationships among key actors
- Good relationships between separate parts of the NHS network with clarity over "who does what"
- Use of performance management, supported by good information systems, to drive change
- Recognition that "good performance" is multidimensional and that the components of performance, such as quality of care and financial success, are not necessarily competitive

Box 2   Organisational and managerial factors related to organisational performance.[33]

could find no quality studies of the determinants of performance in trusts. They concluded that the most comprehensive, illuminating, and useful research on performance determinants in healthcare settings has been carried out in the USA by Shortell and colleagues.[31] This work, which was mainly conducted on managed care organisations, raises important findings and questions for the implementation of primary care groups.

There is some evidence—for example, in the work by Shortell *et al*,[31] Pettigrew,[32] and Collins and Porras[33]—for the impact of a number of organisational and managerial factors that are related to organisational performance in both the public and private sectors (box 2).

Pettigrew *et al*[32] criticised this work for the historical tendency to focus on one determinant of quality such as human resource management practices, rather than attempting to construct and estimate multivariate models. In some ways the idea of "bundling" can be seen as an attempt to redress the balance in favour of more complex models.

These authors identified the recent theoretical writings of industrial economists Milgrom and Roberts[34] as an important impetus to future work in this area. The complementarities approach argues that sets of factors can be mutually reinforcing in their effects on performance. Their recommendation is that future research on the performance of healthcare institutions should, at least in part, use the idea of complementarities.

Towards a model of the organisational impacts on quality of patient care

The aim of this paper has been to identify, from the literature, some of the organisational variables that might belong in a model of quality of care. These appear to fall into a number of categories which are summarised in box 3.

Structural features of the organisation might include the extent to which the organisation is centralised or decentralised, which can be

Independent variables
- Organisational structures, e.g. decentralisation
- Organisational processes, e.g. human resource management practices, coordination of care, interprofessional relationships
- Environmental variables, e.g. quality of relationships with other organisations
- Social psychology of work, e.g. individuals' experience of participation in decision making, sense of autonomy, and control
- "Fit" among strategy, structure, and environment

Intermediate variables
- Staff outcomes, e.g. job satisfaction
- Organisational outcomes, e.g. rate of sickness and absenteeism

Control variables
- Hospital characteristics, e.g. size, specialisation, teaching status, number of staff
- Patient characteristics, e.g. severity of illness, multiple diagnoses
- Characteristics of work, e.g. predictability of admission patterns, volume
- Socioeconomic factors, e.g. social class characteristics of local population, urban/rural location
- Economic variables, e.g. financial state of the organisation

Dependent variables
- Clinical indicators, e.g. deaths in hospital within 30 days of admission
- Adverse events, e.g. medication errors, falls
- Complications, e.g. hospital acquired infections
- Constructed indicators, e.g. failure to rescue
- Administrative targets, e.g. state of waiting lists, financial viability
- Patients and carers' experiences, e.g. complaints, response to surveys

Box 3   Types of variables that might be included in modelling organisational outcomes

measured either as the level at which decisions are taken or by the number of levels in the hierarchy. The ratio of supervisory to non-supervisory positions is a crude measure of centralisation. NHS hospitals also differ in the extent to which departments such as finance or personnel are devolved out of their own professional departments into management teams. The extent to which clinicians are involved in management also seems to be an important distinguishing feature of some current NHS trusts, which might have important implications for sharing power and responsibility.

Organisational processes, such as innovative human resource management practices and procedures to facilitate communication, conflict resolution, and participation are also

important. Both of these categories are at the organisational level of analysis because neither set of variables is reducible to the behaviour of individuals. They are therefore logically prior to the *social psychological* variables that describe the experience of working in a particular place. In this category the literature stresses the relationship between participation in decision making, sense of involvement in the organisation, and sense of autonomy and control. Taken together, the structural features of the organisation and the processes it employs partially determine the subjective experiences of workers (*staff outcomes*) such as job satisfaction and morale, and contribute to *organisational outcomes* such as difficulties in recruiting and retaining staff.

The main variable that we want to explain is *quality of patient care* which could be estimated, in the first instance, by using the NHS performance indicators published for England in 1999 and 2000. These could also be used to calculate more theoretically defensible dependent variables such as the "failure to rescue" measure described by Silber *et al*.[14] We also need to consider a number of *control variables*. These are variables which have been shown to have a significant association with quality—for example, size, teaching status, extent of specialisation, staff number and skill mix, and the volume and case mix of patients. This group of variables would also include human capital variables such as the training, education and experience of staff, or tenure in the case of the top management team. Finally, having criticised previous research for omitting environmental variables, we could include some measures of the extent to which the organisation is influenced or controlled by external forces and the quality of relationships they enjoy with other organisations. A diagrammatic representation of the model is shown in fig 1.

Taking this work forward

Understanding how the organisation and management of hospitals affects the quality of patient care is no mean task. Previous research can help us to identify some of the variables that appear to be relevant, but we do not yet have a theory that reflects the complexity of the relationships involved. This paper, by drawing on a number of different fields of literature, has sought to identify variables at different levels of analysis—individual, organisational, and environmental—that might be linked. The next step will be to articulate how they might be related to each other and to build simple models that will guide empirical investigation. This will entail dealing with issues such as causal ordering, identification of mechanisms, and specification of temporal sequences that have dogged this tradition of research for many years. Ideally, future research will be more theoretically informed, will use longitudinal rather than cross sectional research designs (so that the problem of causal ordering can be addressed), and will use statistical methods such as multilevel modelling which allow for the inclusion of variables at different levels of analysis.
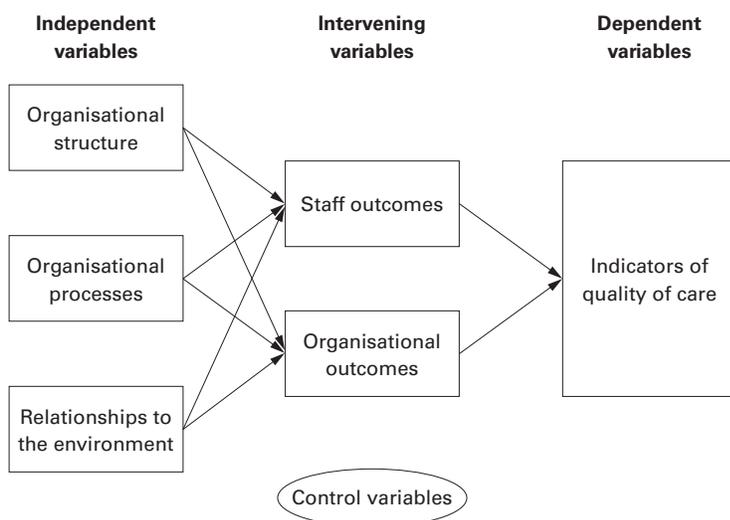
Independent variables — Intervening variables — Dependent variables

Organisational structure

Organisational processes

Relationships to the environment

Staff outcomes

Organisational outcomes

Indicators of quality of care

Control variables

Figure 1   Proposed model of the organisational impacts on quality of patient care

A great deal of research is currently underway that will strengthen the evidence on which recommendations about the organisation and management of hospitals can be based. However, the process of producing good quality research can be prolonged. In the meantime, it is important to communicate the importance of organisational factors to clinicians, to whom they may be relatively unknown. Medical and nursing education tends to focus, quite rightly, on individual patient care, and an awareness of how each clinical encounter is constrained or enabled by the system within which it is embedded can take many years of clinical practice. We all need to become much more conscious of how the way we work together, and the way that care is organised, affects patients' experience of the healthcare system.

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