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Transformative impact of Magnet designation: England case study

Linda H Aiken, PhD [Professor, Director],

Center for Health Outcomes and Policy Research, University of Pennsylvania, Philadelphia, PA, USA

James Buchan, PhD [Professor],

Queen Margaret University College, Edinburgh, Scotland

Jane Ball, and

Employment Research, Hove, Sussex, UK

Anne Marie Rafferty, PhD [Head]

Florence Nightingale School of Nursing Kings College, London, UK

Abstract

Aims—To test the impact of the implementation of Magnet principles of improving nurses' work environments.

Background—Magnet hospital designation developed in the United States in the 1980s to recognise hospitals that had created excellent patient care environments and supported the professional practice of nursing. A pilot initiative in England was the first test of the applicability of Magnet standards outside the US.

Methods—Research methods included surveys of nurses in the demonstration hospital in a predesign and postdesign and comparisons to survey results of nurses practicing in a national sample of 30 National Health Service Trusts.

Results—Prior to beginning the Magnet journey, the demonstration hospital had a nurse work environment that was somewhat less positive than the national sample NHS hospitals. Nurses practicing in the demonstration hospital were somewhat less satisfied with their jobs than nurses in other NHS hospitals. Following a two-year period during which the evidence-based Magnet standards were implemented and Magnet Designation was awarded, the quality of the nurse practice environment had improved significantly, as had job satisfaction of nurses and their appraisals of the quality of patient care. The quality of the nurse practice environment after Magnet designation was better than that of a national sample of NHS trusts. Improved nurse outcomes were because of the improved practice environment rather than staffing enhancements.

Conclusions—Implementation of the Magnet hospital intervention was associated with a significantly improved nursing work environment as well as improved job-related outcomes for nurses and markers for quality of patient care. Relevance to clinical practice. Nurses can use Magnet principles to improve the quality of their work environments.

Correspondence: Linda H Aiken, Professor, Director, Center for Health Outcomes and Policy Research, University of Pennsylvania, 420 Guardian Drive, Philadelphia, PA 19104-6096, USA. Telephone: xxxxxxxx. E-mail: laiken@nursing.upenn.edu.

Contributions

Study design: LHA, AMR, JMB; data collection and analysis: LHA, JB and manuscript preparation: LHA, AMR, JMB, JB.

Keywords

Magnet hospitals; nurses; nursing

Introduction

This paper assesses the impact of preparing for and achieving ‘Magnet’ designation status on the hospital nurse work environment and factors associated with nurse retention. It focuses on a case study of the Rochdale Infirmary, which was recognised as the first Magnet hospital in the UK and the first outside the United States. The paper draws primarily from the findings of two surveys of nurses working at Rochdale in 2000 and 2002 as well as comparisons with nurses employed in a national sample of NHS acute trusts. This study remains one, if not the only, example of research conducted before Magnet application and after achieving Magnet recognition that provides empirical documentation of the transformative nature of the Magnet accreditation process and its applicability outside the US.

‘Magnet’ institutions are healthcare organisations that have been identified as being ‘successful’ in recruiting, retaining and motivating nursing staff. Research on Magnet institutions has highlighted positive links between good human resource practice, staffing characteristics and out-comes of care (McClure & Hinshaw 2002).

The study was made possible by the inclusion of the UK as one of five countries in the International Hospital Outcomes Study (Aiken *et al.* 2001b, 2002a). The study provided a unique opportunity to collect objective indicators of process and outcome changes associated with a successful Magnet application and to assess the applicability of the Magnet concept outside the US where the Magnet Recognition Program was developed (see also Buchan 1994, 2002).

Background

The concept of the Magnet hospital was developed initially in the 1980s in the US by the American Academy of Nursing (McClure *et al.* 1983). At the time of nurse shortages, policy attention turned to identifying what were the characteristics of ‘successful’ hospital employers in challenging labour markets. The initial focus of the Academy’s research was to identify the human resource (HR) practices and associated organisational characteristics that enabled some hospitals to attract and retain staff in a context where other hospitals were experiencing acute shortages. The idea of the Magnet institution has been sustained and developed over the successive decades through research and by the development of a voluntary program of hospital accreditation by the American Nurses Credentialing Center (ANCC) (Monarch 2003, <http://nursecredentialing.org/magnet>).

The ‘Magnet’ credentialing criteria developed by ANCC were the US specific and the Rochdale project was under-taken as the first ANCC pilot project to determine the applicability of the credentialing program outside USA. The core Magnet criteria were not altered for UK, but several changes were made in the application evidence requirements to reflect terminology, practice and management styles and data availability in UK.

The genesis of research on Magnet hospitals was the policy study commissioned by the American Academy of Nursing (AAN) in 1981 and published in 1983 (McClure *et al.* 1983). The study objective was to ‘examine characteristics of systems impeding and/or facilitating professional nursing practice in hospitals’ (p 2). The term ‘Magnet’ was used to highlight the success these institutions experienced attracting and retaining professional nurses. AAN fellows were asked to nominate hospitals that were known by nurses to be good places to

practice. The hospitals nominated were asked to submit data on nurse vacancies and nurse turnover rates. Forty-one hospitals were identified that had low nurse vacancy and turnover rates in local nurse labour markets where other hospitals were experiencing shortages; these hospitals were designated as Magnet hospitals. These original Magnet hospitals came to be referred to as 'reputational' Magnet hospitals as distinct from Magnet hospitals designated through a formal accreditation process that would develop later (Aiken *et al.* 2000).

Further research on the reputational Magnet hospitals was conducted through the 1980s and early 1990s primarily focused on identifying the organisational features common to Magnet hospitals and associated nurse outcomes such as nurse job satisfaction (see e.g. Kramer & Schmalenberg 1988, 1991, Kramer&Hafner 1989). These studies used the Nursing Work Index (NWI) as a research tool to examine characteristics of samples of nurses in Magnet and comparison hospitals. Nurse turnover and vacancy rates in the Magnet hospitals were found to be significantly lower and reported nurse job satisfaction higher, than in the comparison hospitals.

More recent published studies on Magnet organisations have diversified in two ways. First, studies moved to measuring outcomes of care and examining these in relation to organisational traits of 'magnetism'. Second, the ANCC accredited organisations first recognised in 1990 have provided a new and more up to date sample to research.

The links between lower mortality rates and Magnet hospital characteristics were first examined by Aiken *et al.* (1994). This study examined mortality rates in thirty-nine original or 'reputational' Magnet hospitals and 195 control hospitals using multivariate matched sampling to control for hospital characteristics that might explain mortality differences between hospitals. The study found that Magnet hospitals had a 4.6% lower mortality rate for Medicare patients than the matched control hospitals. Further research reinforcing the relationship between the organisation of nursing care and patient outcomes has been published from research conducted in the US (Aiken *et al.* 1999, 2000, 2002a, 2008, Aiken 2002, Friese *et al.* 2008), Canada (Estabrooks *et al.* 2004 and Tourangeau *et al.* 2007) and in other countries, including England (Aiken *et al.* 2002a, Rafferty *et al.* 2007).

The first published research examining the new ANCC accredited organisations was that by Aiken and associates (Aiken *et al.* 2000). It examined all ANCC accredited Magnet organisations at that time. The study concluded that ANCC Magnet hospitals selected by the new voluntary accreditation standards had similar organisational attributes to the original 'reputational' Magnet hospitals, thus serving to validate the new selection criteria. Nurses in ANCC Magnet hospitals reported higher job satisfaction, were less likely to report burnout than in control hospitals and were significantly more likely to assess the quality of care on their units as excellent. Subsequent studies that have reported positive findings in Magnet institutions have been Havens and Aiken (1999), Upenieks (2002), Kramer and Schmalenberg (2003, 2004) and Lake and Friese (2006).

Rochdale Infirmary NHS Trust was the first non-US organisation to prepare for ANCC Magnet designation. It began formal preparation in 2000 taking almost two years to complete the process and achieve Magnet designation. At the time of preparing for accreditation, Rochdale was a 561 bed combined trust based on two sites providing acute, long term and primary care employing approximately 2800 staff (full time equivalents).

The study

Aims

The study aimed to assess change in the nurse work environment during the period that Rochdale was preparing for and then achieved Magnet designation (2000–2002) and determine whether changes, if they occurred, were associated with improved nurse outcomes and quality of care. The study also aimed to examine whether the ANCC Magnet Recognition program was feasible to implement outside of the US.

Methods

The design of the study included cross-sectional surveys of nurses employed at Rochdale at two points in time before and after the implementation of the Magnet standards. Clinical nurses were used as informants about a range of features of the nurse work environment and quality of care. Comparisons were made with nurse informants surveyed in a national sample of 30 other NHS acute trusts using the same survey instrument.

Nurse sample

All full time nurses in NHS clinical grades D–F (the grades comprising most registered nurses) working in general medical or surgical in-patient settings at Rochdale were asked to complete a self-administered survey at two points in time: July/August 2000 ($n = 128$) and in September/October 2002 ($n = 109$). Lists of nurses were provided by payroll officers at Rochdale. The survey questions were designed to collect data on basic demographic characteristics (education, age, duration of job, qualifications), nurse workloads, nurses' evaluations of the quality of their work environment, their assessments of quality of care on their units and in their hospital and their job satisfaction.

Nurses received the questionnaires on their units in personally addressed envelopes, returning questionnaires by post to researchers' institution. Respondents were assured of the confidentiality of their responses. A modified Dillman approach was followed with the distribution of reminders at four and nine weeks. The response rate was 53% in 2000 and 50% in 2002. Ethical approval for the study was obtained from London School of Hygiene and Tropical Medicine and Oldham Ethics Committee.

The two Rochdale surveys used the same survey instrument employed in a larger study of nurses in 1999 in 30 acute NHS hospitals in England. The survey in the larger study yielded reports from 3984 nurses with a response rate of 49.4%. The design of the larger study used as a comparison frame here was followed in the Rochdale study and is described in detail elsewhere (Rafferty *et al.* 2001, 2007).

Measures

Nursing work environment—The Nursing Work Environment (NWI) is measured by the Nursing Work Index-Revised, an instrument consisting of 57 features of hospitals found in the literature to characterise professional nurse practice environments (Aiken & Patrician 2000, Aiken *et al.* 2002b, Lake 2002). Nurses are asked whether these features are present in their current work setting. Four response categories are provided from strongly agree = 1 to strongly disagree = 4. The items were reversed coded so that higher scores on the overall NWI and on each of the five sub-scales measured indicate greater agreement that the organisational characteristics are present. Over time, different subscales have been developed and used from the NWI. We report here the results of five subscales (administrative support for nurses; career support for nurses; working with competent nurses; nurse autonomy and doctor-nurse relations) plus a total presence score for all items representing a global assessment of the quality of the nurse work environment.

Nurse workload—Nurses were asked to record how many patients they cared for on their last shift. Nurse workload was measured as the mean number of patients assigned to direct care nurses on their last shift. The means reflect the reported patient to nurse ratios over all shifts and all specialties. Previous research has shown that nurse workloads measured from direct survey data provide a more accurate measure of the clinical workloads of bedside care nurses than institutional reports of staffing that usually include nurses in management and other roles that are not responsible for a defined number of patients (Aiken *et al.* 2002b).

Nurse job outcomes—Three nurse job outcomes were measured. Burnout was measured using the Emotional Exhaustion subscale of the Maslach Burnout Inventory (MBI), a standardised tool (Maslach *et al.* 1986). The nine items in this subscale ask respondents how often they experience various feelings of low physical and mental energy on a scale of 0 to 6 (never to every day). Nurse job satisfaction is a single item question with four response categories from very dissatisfied to very satisfied. Intent to leave is a single item question with 'yes' or 'no' response, 'Do you intend to leave your current job within the next year?'

Nurse assessments of the quality of patient care—Nurses were asked about how they would describe the quality of care delivered to patients on their units, whether the quality of care had improved, stayed the same or declined and how confident they were that patients could manage their care when discharged.

Results

Demographically, the nurse respondents were broadly similar in both Rochdale surveys, as noted in Table 1, although more respondents in 2002 had children living at home and the proportion of respondents from ethnic minority backgrounds was also greater in 2002. Data on the time since registration and time in post show that Rochdale had a relatively stable workforce with nurses who were on average older and had longer lengths of service than was found to be average in the 1999 study of the 30 other Trusts in England (Rafferty *et al.* 2001). Table 1 summarises the key demographic variables of the two samples of nurses surveyed at Rochdale and of the larger study conducted in England.

Nurse workloads

As noted in Table 2, nurse workloads did not change between the two surveys. The number of respondents in some cases are small (four or five); so, caution is needed in interpreting these data. Overall, the results suggest that there was no significant change in nurses' average workloads over the period of Magnet standards implementation. The average across the trust in 2000 was 10.1 patients per nurse and in 2002, the average workload was virtually identical at 10.2 patients per nurse. This is very typical for acute trusts in England; the average across all nurses surveyed in the 1999 England study was 10.02 patients per nurse (Rafferty *et al.* 2007).

Nurse work environment

Significant changes took place in the nurse work environment over the time that the Magnet standards were implemented as noted in Table 3. Nurse autonomy at Rochdale in 2000 was the same as nurse autonomy in other NHS trusts. However, between 2000–2002, nurses' reports of autonomy increased significantly at Rochdale.

Administrative support for nurses was rated somewhat lower at Rochdale at baseline than in other NHS trusts. Administrative support includes assessments by nurses that administrators act to resolve patient care problems identified by nurses, good relations between nurses and

ancillary support services and having competent nurse managers. By 2002, significant reported improvements in administrative support for nurses were found.

Career support for nurses at Rochdale was somewhat less favourable at baseline than that was found in the national sample of NHS trusts. Career support includes educational opportunities for nurses, opportunities for advancement and mentoring programs for novice nurses. By 2002, there was a significant improvement in career support for nurses at Rochdale compared to 2000.

Nurses were asked to rate the competence of their nurse colleagues on their units. Nurses were significantly more likely to agree that their nurse colleagues were highly competent after the Magnet standards were implemented in 2002 than in 2000. The quality of nurse and doctor relationships did not change significantly over the period of implementation of the Magnet standards at Rochdale.

Staff nurse involvement in hospital decision making is one theme upon which nurses at Rochdale were consistently and significantly more positive compared to the respondents in the other trusts. The results are striking. Whilst in the national study in 1999, 38% of nurses reported that staff nurses were involved in the internal governance of their hospitals and 26% agreed that staff nurses could serve on hospital committees; in the Rochdale surveys, nurses were twice as likely to respond positively to these items. Similarly, whilst only 36% of nurses in the England study reported that staff nurses had the opportunity to participate in policy decisions, the proportion at Rochdale was 47% in 2000 and 56% in 2002.

The global measure of the quality of the nurse work environment represented by the total NWI score increased significantly at Rochdale between baseline and post Magnet implementation. At baseline, the quality of the nurse work environment at Rochester was roughly similar to that in the national sample of hospitals. However, by 2002, the average appraisal of the quality of the nurse work environment was significantly better at Rochdale than in comparison hospitals.

Nurse outcomes

Responses to the question, 'On the whole, how satisfied are you with your present job?' indicated that the proportion of Rochdale nurses who were moderately or very dissatisfied with their jobs was higher at baseline (47%) compared to the national sample (37%), but declined significantly by 2002 to 32%. Burnout, as measured by the Emotional Exhaustion scale, was not significantly different at two points in time in Rochdale and was similar to average burnout rates in NHS trusts.

Intent to leave decreased significantly at Rochdale over the period of Magnet implementation. In 2000, 38.9% of Rochdale nurses said they planned to leave their jobs within a year, the same as nurses in the national sample of trusts. By 2002, the proportion of nurses at Rochdale intending to leave decreased significantly to 27.5%.

Nurses' assessments of quality of care

Three proxy measures of quality of care were measured. First nurses were asked to rate the quality of care on their units. Forty per cent of nurses at Rochdale rated the quality of care on their units as excellent in 2000. That proportion increased to 45% by 2002, but the difference over the two time points failed to reach statistical significance.

Second, nurses were asked whether quality on their units had improved, stayed the same or declined over the past year. A significant increase was observed in the proportion of nurses at Rochdale reporting that care quality had improved over the past year from the baseline of 2000 when 23% said care was improving to 40% when nurses were resurveyed in 2002. The

proportion of nurses perceiving improved quality at Rochdale was significantly greater than among nurses at a national sample of NHS trusts.

Third, nurses' assessments that patients were sufficiently prepared to care for themselves at the time of discharge increased significantly at Rochdale between the two time periods from 63–79% and this measure of quality was significantly better for Rochester than for other NHS trusts.

Discussion

Our findings suggest that pursuit of ANCC Magnet Recognition through the implementation of 14 evidence-based standards is associated with positive changes in the professional nurse practice environment. These findings provide empirical evidence that the process of pursuing Magnet status is not only a form of recognition for excellence in nursing but also a transformative process that creates an environment more supportive of professional nursing practice. As would be predicted from the research literature on the importance of the care environment for favourable nurse outcomes and quality of care (Institute of Medicine 2004), improvements in the care environment at Rochdale were associated with improved nurse outcomes and improvements in indicators of quality of care.

The study suggested that the ANCC Magnet Recognition Program was feasible to implement outside the US and was associated with the types of nurse reported improvements in care outcomes and in working environment as had been documented by research in US. Importantly in terms of the replicability of the Magnet concept, the improvements in outcomes observed at Rochdale were not because of nurse staffing increases as our data suggested that workloads remained about the same in the two periods and nurse staffing at Rochdale was similar to that in other trusts. The changes were primarily in the organisation and culture of caregiving at Rochdale. Changes in culture are difficult to achieve but not necessarily expensive, as compared to significant increases in nurse employment.

The Magnet journey was associated with a significant decrease in nurse job dissatisfaction and intent to leave, both important precursors to voluntary nurse turnover. Nurse turnover is expensive for the hospital and contributes to nursing shortages at the unit level. Perceptions of widespread nurse dissatisfaction also negatively impact the potential applicant pool for nursing schools potentially contributing to national nurse shortages.

Proxy measures of quality of care suggest that patients fared better after the implementation of Magnet standards. Because there was only one UK hospital that implemented the Magnet program, it was not possible to conduct a thorough evaluation of patient outcomes including objective patient outcomes from independent sources as was the design of the study of the 30 NHS trusts (Rafferty *et al.* 2007). While the nurse-assessed outcomes are suggestive of improved quality of care, confirmation would be required in a larger study. It should be noted that nurse-assessed quality of care measures have been validated against independent measures of patient mortality and found to be a good predictor of actual outcomes (Aiken *et al.* 2001b).

A limitation of the study is the lack of comparative data from other trusts at time 2. It is possible, but not likely, that the quality of the nurse work environment improved for all NHS trusts over the study period. The NHS reforms that brought additional resources to NHS hospitals were not fully enacted until after the period of this study. The response rates of close to 50% are the norm for survey research involving health care workers, but there is the possibility of respondent bias that cannot be ruled out (Rafferty *et al.* 2007). Previously published research in the US provides validation that the numbers of nurses surveyed at Rochdale were sufficient to produce reliable estimates of survey items at the institutional level (Aiken *et al.* 2002b).

The evidence from this study suggests that the journey to Magnet Recognition at Rochdale exerted a positive impact on the organisation and its nurse workforce (Buchan *et al.* 2004). However, in the year following achievement of Magnet status, Rochdale was involved in an externally driven merger with other local NHS trusts to become Pennine Acute Hospitals Trust (PAHT). The merger resulted in the dissolution of the executive leadership team at Rochdale and created difficulties in sustaining key requirements of Magnet Recognition in a substantially changed organisation. The commitment to the Magnet concept was largely generated by the specific leaders at Rochdale and was not shared by the new leadership of the merged trust. Ultimately, there was a mutual decision by the leadership of the new trust and the ANCC to withdraw from active Magnet status. This outcome underscores the difficulty of replicating the Magnet program one institution at a time outside the US where there is now a critical mass of Magnet designated hospitals. The UK pilot would have been a stronger test of the Magnet concept if a larger number of UK institutions had been involved. Also in countries without a strong competitive market, the motivation for Magnet recognition is more internal than external and thus more vulnerable to externally driven changes.

While the Magnet program did not take roots in the NHS, there have since been Magnet hospitals designated in Australia and New Zealand and several other countries have expressed interest in the concept or are actually working on a Magnet application. Additionally, a successful pilot initiative in four hospitals Russia and Armenia suggested the applicability of the Magnet concept to improving care in countries with developing and transitional economies (Aiken 2006). Medical tourism may create a new international market for Magnet designation.

Relevance to clinical practice

There are few innovations in the organisation of nursing with as strong an evidence base for improved care outcomes as Magnet designation (Aiken 2002). The Magnet program has substantial momentum now with over 250 hospitals in three countries with Magnet designation. Whether hospitals elect to formally apply for Magnet status or not, this paper suggests that the blueprint that has been developed to guide Magnet application could be used by nurses anywhere to improve the quality of their work environments.

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Table 1

Demographic profile of surveyed nurses at Rochdale in 2000 and 2002 and at 32 other acute hospitals

		2000	2002	30 acute hospitals in England 1999
Gender	Women (%)	89	95	91
	Men (%)	11	5	9
Age	Mean age (years)	39	39	35
	Children living a home (%)	53	44	42
Dependants	Other dependants (%)	6	6	7
	White (%)	94	83	90
Ethnicity	Other ethnic group (%)	6	17	10
<i>n</i>		128	109	5006

Table 2
Number of patients assigned to each nurse on wards/units on last shift*

	2000			2002		
	mean	range	n	Mean	range	n
Medical	13.4	4-26	28	12.9	3-37	38
Surgical	11.0	2-15	22	12.0	6-15	12
Intensive care	1.0	1-1	12	1.0	1-1	6
Coronary care	5.9	4-7	7	5	2-13	5
Accident and emergency	12.8	1-20	6	12.3	2-37	6
Orthopaedics	13.4	5-22	11	9.3	6-14	6
Renal	3.0	2-4	4	5.5	2-10	6
admissions unit	8.8	6-12	6	8.29	6-12	7
Other	10.1	1-22	16	9.57	2-25	14
Average for all wards/units	10.1	1-26	114	10.2	1-37	100

* zeros and >40 responses excluded from analysis, wards with <4 cases not presented.

Table 3

Comparison of Rochdale hospital at baseline and after Magnet designation and compared to 30 NHS Trusts

	<i>p</i> -value*	Time 1 <i>n</i> = 128	Time 2 <i>n</i> = 109	NHS Trusts surveyed in 1999
		Mean ± SD	Mean ± SD	Mean ± SD
Autonomy	<0.01	13.38 ± 3.04	14.35 ± 2.86	13.68 ± 2.77
Relationship with doctors	n.s.	6.03 ± 1.16	6.23 ± 1.17	5.89 ± 1.20
Emotional exhaustion	n.s.	22.53 ± 11.83	22.23 ± 13.46	22.88 ± 11.08
Administrative support	<0.001	12.41 ± 3.65	14.61 ± 3.37	13.61 ± 3.38
Career support	<0.001	20.66 ± 4.51	23.98 ± 5.82	21.92 ± 4.89
Nurse competence	<0.01	5.92 ± 1.28	6.37 ± 1.21	6.19 ± 1.21
NWI total [†]	<0.001	124.47 ± 20.48	138.82 ± 25.25	126.94 ± 20.28
		Proportion (%)	Proportion (%)	Proportion (%)
Job dissatisfaction [‡]	0.008	47.2	32.1	36.9
Plan to leave [§]	0.03	38.9	27.5	38.9
Rating quality care excellent [¶]	n.s.	40.2	45.4	29.3
Care improvement ^{**}	<0.01	22.8	39.6	20.1
Patient management ^{††}	<0.001	62.6	78.5	59.7

* *t*-test comparing Rochdale waves 1 and 2.[†] The sum of 49 of NWI items reverse coded, were included in this scale.[‡] Job dissatisfaction scale is coded as 1 if very dissatisfied and somewhat dissatisfied and 0 if moderately and very satisfied.[§] Intentions to leave was coded as 1 = in the following six months and 12 months and 0 = No in the next 12 months.[¶] Rate quality of care was code as 1 = excellent or 0 = otherwise.^{**} Patient care has been coded as 1 = improved and 0 = same or deteriorated.^{††} Patient management 1 = confident and very confident, 0 = somewhat or not at all confident.