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Title: The effects of organisational and financial health system interventions on quality in health care: Evidence from systematic reviews

Running Title: Health system intervention effects on quality

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## **Abstract**

Health systems in high-income countries have experienced significant organisational and financial reforms over the last 25 years. The implications of these changes for the effectiveness of health care systems need to be examined, particularly in relation to their effects on the quality of health services (a pertinent issue in the UK in light of the Francis Report). Systematic review methodology was used to locate and evaluate published systematic reviews of quantitative intervention studies (experimental and observational) on the effects of health system organisational and financial reforms (system financing, funding allocations, direct purchasing arrangements, organisation of service provision, and service integration) on quality of care in high-income countries. Nineteen systematic reviews were identified. The evidence on the payment of providers and purchaser-provider splits were inconclusive. In contrast, there is some evidence that greater integration of services can benefit patients. There were no relevant studies located relating to funding allocation reforms or direct purchasing arrangements. The systematic review-level evidence base suggests that the privatisation and marketisation of health care systems does not improve quality, with most financial and organisational reforms having either inconclusive or negative effects.

## Introduction

Health systems in high-income countries are coming under unprecedented pressure from several directions. Firstly, they face upward pressure on costs, primarily as a consequence of the increasing cost of technology and, to a much lesser extent, an ageing population (Rechel et al., 2013). Secondly, some systems face downward pressure on expenditure, particularly in those countries that have pursued austerity measures following the global financial crisis (Karanikolos et al., 2013). Thirdly, some face ideological pressure from politicians that seek to scale back the welfare state (McKee et al., 2013). In some countries these pressures are being used to justify renewed calls to undertake major reforms to the financing and delivery of health care. This is part of a longer trend in high-income countries whereby the dismantling of the welfare state has included the marketisation and privatisation of health care provision since the mid-1980s (e.g. in the UK these date back to the internal market reform of the Thatcher era). The implications of these changes for the effectiveness of health care systems need to be examined, particularly in relation to their effects on quality of care (a pertinent issue in the UK in light of the Francis Report).

Though the way that health systems are organised is a political question, the debate should be informed by the highest-quality research evidence. Yet, in many cases, it is far from clear that this is the case (McKee, 2012). Evidence that does not support a particular ideology is often rejected or, as is increasingly clear from a growing body of research on cognitive processes, misinterpreted as offering support even when it does not (McKee and Stuckler, 2010). Furthermore, although there is a wealth of material describing health systems, there is much less evidence from rigorous evaluations of what works. In this paper we address the latter problem, by conducting a review of reviews of evidence linking system level

interventions to changes in the quality of care provided. A companion paper does the same with respect to equity.

## **Methods**

This study aims to review the systematic review level evidence base on the effects of organisational and financial health system interventions on quality of health care.

Systematic review methodology was used to carry out an 'umbrella review' of existing systematic reviews.

The review protocol was registered with PROSPERO (No. CRD42013003996). Details of the inclusion criteria, search strategy, data extraction and quality appraisal are presented in detail in a companion paper that appears in the same journal issue (Bambra, Garthwaite and Hunter, 2013). In brief, the inclusion criteria were defined in terms of population (adults and children of all ages); intervention (general health system financing, funding allocations, direct purchasing arrangements, organisation of service provision and health service integration); context (high income countries); outcomes (quality of care) and study design (systematic reviews including intervention studies with quantitative outcomes, and meeting two mandatory DARE (Database of Abstracts of Reviews of Effects) criteria). The outcome of the study, quality of care, was defined in terms of (1) professional performance; (2) efficient treatment and care; (3) clinical outcomes; (4) person-centred care; (5) holistic care; and (6) patient satisfaction.

Seven electronic databases were searched using a combination of inclusion criteria keywords (Appendix 1): Cochrane Database of Systematic Reviews (CDSR), Database of Abstracts of Reviews of Effects (DARE), Campbell Collaboration Database, PROSPERO, EPPI-Centre database of health promotion and public health studies, Applied Social Sciences

Index and Abstracts (ASSIA) and Medline. All databases were searched from start date to March 2013, and only English language publications were included. Citation follow up was conducted on the reference lists of included studies.

Identified titles and abstracts were screened for relevance, followed by screening of full text papers. Studies meeting all aspects of the inclusion criteria were data extracted by two independent reviewers. Quality appraisal of included studies was also carried out by two independent reviewers, using adapted DARE criteria.

## **Results**

### *Overview*

The literature search identified 1857 articles, 22 of which were removed as duplicates (Table 1). 1807 articles were excluded at title and abstract screening, and 28 full manuscripts were examined in detail. Sixteen articles were excluded because they did not fully meet inclusion criteria (Appendix 2) and twelve reviews met all criteria and were included in the synthesis. Seven reviews were identified from citation follow-up, three of which were grey literature reports not searchable on academic databases. Data from the reviews are presented in summary tables according to intervention category (Tables 2 - 4).

No systematic reviews examined the effects of funding allocation reforms or direct purchasing arrangements on quality of care. Eight reviewed data on payment of providers, five were on arrangements for purchasing and provision of services, and six were on service integration. The reviews were of variable quality; nine were high quality (mostly Cochrane) reviews, three were of moderate quality, and seven were low quality. Studies in the reviews

were from the following countries: Australia, Canada, Denmark, France, Germany, Italy, Netherlands, New Zealand, Norway, Sweden, Switzerland, US, and the UK.

A wide range of quality measures were included in the reviews, most commonly patient satisfaction and factors relating to person-centred care such as continuity, responsiveness, and choice. Professional performance was also a common outcome, and measures included process of care and compliance with clinical guidelines. Measures of efficiency included resource use, staff-patient ratios and re-attendance rates. Clinical outcomes included avoidable mortality, hospital mortality and adverse events. Holistic care measures were least frequent, but included psychological measures and self-reported health. Low quality studies occasionally referred to 'quality of care' without explanation of its measurement.

#### *Payment of providers*

There were eight systematic reviews of provider payment (Table 2). The quality of evidence was mostly high, including five high quality, one moderate and two low quality reviews. However, the quality of included primary studies was reported as low to moderate. Results were generally inconclusive; half of the reviews concluded that financial incentives have little impact, while half reported mixed effects on quality.

One low quality review by Chaix-Couturier et al (Chaix-Couturier et al., 2000) studied the effects of all financial incentives for medical professionals on processes and outcomes of care. The evidence suggested that financial incentives can improve compliance with practice guidelines, while fundholding or salaried payment can reduce referrals. However the quality of the studies included was low and results were inconclusive. Chaix-Couturier et al found one randomised trial where fee for service improved continuity of care compared to salaried employment in a managed care organisation(Hickson et al., 1987). However a low

quality systematic review of fee for service and managed care in the USA (Robinson and Steiner, 1998) reported no significant difference in quality in the majority of studies examined. A more recent high quality review of systematic reviews (Flodgren et al., 2011) examined the effect of payment methods on compliance with clinical guidelines and found financial incentives to be ineffective, though mixed systems of financial incentives may be more effective than target payments or bonuses in isolation.

Two high quality reviews studied the effect of financial incentives on primary care physicians,(Gosden et al., 2000, Scott et al., 2011) though covering different time periods and quality outcomes (Table 2). The findings of Gosden et al suggest that payment method can impact quality, with fee for service associated with improved continuity of care and compliance with guidelines over salary and capitation payment respectively. Scott et al examined a variety of financial mechanisms, including target payments and fixed fee per patient achieving an outcome, but found the evidence to be inconclusive due to substantial risk of bias in most studies.

Three reviews examined the effects of pay for performance (P4P) on quality of care domains including process of care, patient-centredness, clinical effectiveness, and various provider performance targets.(Christianson et al., 2007, Van Herck et al., 2010, Petersen et al., 2006). These reviews found mixed results. Petersen et al separated physician-level and physician-group level financial incentives (mostly bonuses), and a slight majority of studies in each category showed a positive effect on process of care. Van Herck et al also found positive effects on process of care measures, with two before and after studies without control groups reporting improved coordination of care following the introduction of bonuses and the General Medical Services (GMS) contract for general practitioners in the UK

(Srirangalingam et al., 2006, Cameron et al., 1999). However, Van Herck et al reported mixed evidence for the impact of P4P on clinical effectiveness and patient-centredness, and no effect on patient satisfaction. An earlier moderate quality review (Christianson et al., 2007) recorded mixed results for P4P, and stated that existing research was too limited to draw conclusions.

### *Organisation of service provision*

Five low quality systematic reviews examined changes to organisation of service provision; three reviewed commissioning, general practice fundholding and internal markets, one reviewed privatisation and one reviewed competition (Table 3).

Two reviews (Smith and Wilton, 1998, Mays et al., 2000) assessed the effects of GP fundholding in the UK. Smith and Wilton characterise the evidence as incomplete, though neither review systematically appraised the quality of primary studies. Both reviews concluded that the evidence on efficiency is mixed and inconclusive; there was an initial, unsustainable reduction in the rate of growth of prescribing costs among fundholders, and some cost savings, but crude estimates suggest that increased transaction costs outweighed savings and fundholding appeared to have little effect on referrals (Mays et al., 2000). Smith and Wilton found little evidence to suggest that patients exercised greater choice, or that fundholders were more responsive to patient preferences. Mays et al found no evidence for the effect of general practice fundholding on quality of primary care, while one study reported little change in secondary care quality.

Mays et al also reviewed the effects of health authority purchasing, locality and general practitioner commissioning, and provider autonomy (NHS trust status) on quality, but the evidence was inconclusive. The effects of health authority purchasing could not be

separated from those of concurrent programmes, and there was little evidence to suggest that hospital autonomy, defined as NHS trust status, impacted quality. In some cases, quality improvements appeared to result from locality and general practice commissioning, but this was highly variable.

One low quality review (Smith et al., 2004) concluded that primary care-led commissioning improved responsiveness under general practice fundholding in the UK, citing evidence of improved provision of information in one Primary Care Group (Regen et al., 2001), and reduced waiting times in one Health Authority (Propper et al., 2002b). It was also stated that patients generally approved of the reforms, though this was not supported with data. In agreement with Mays et al, the review found several studies reporting an increase in transaction costs associated with commissioning, and little evidence to suggest greater patient choice.

The effects of privatisation on quality were examined by Heins et al, who compared non-profit, for-profit and public sector providers of care in terms of staff-patient ratios, user satisfaction, mortality and hospitalisation rates(Heins et al., 2010). 32 out of 46 studies reported that the growth of the for-profit sector resulted in declining service quality, though the specific domains of quality were not identified and the studies reviewed suffered numerous methodological problems. Further detail was provided on the impact on staff ratios, which were consistently found to be better in non-profit than for-profit institutions, and were best in government run facilities.

One review (Propper et al., 2006) observed the effect of increased marketisation and competition between providers on avoidable mortality, mostly from studies of managed care in the US. Competition appeared to improve outcomes post-1990 in one US study

(Kessler and McClellan, 1999), but results were more mixed in several later studies (Ho and Hamilton, 2000, Volpp et al., 2003, Gowrisankaran and Town, 2003). The evidence outside the US was primarily from the UK internal market of 1991-97, and two studies suggested a resulting fall in quality due to an increase in deaths from patients admitted to hospital with myocardial infarction (Propper et al., 2002a, Propper et al., 2004).

### *Integration of services*

Six systematic reviews examined the effect of changes to service integration on quality in health care; one studied financial integration of health and social care bodies, two studied organisation of services, and three studied integration of care (Table 4). The reviews were generally higher quality, but primary studies ranged from low to moderate quality.

One moderate quality review (Propper et al., 2006) examined methods of financial integration across health and social care bodies, including joint commissioning (combining health and social care purchasers), pooled funds, aligned budgets, integrated management and structural integration. The evidence was fairly limited; two before and after studies of integrated management interventions for care of elderly people in Italy recorded a decline in hospital admissions, while one randomised trial of integrated management, joint commissioning and pooled funding in Canada reported improved patient empowerment, choice and dignity (Landi et al., 2001, Kodner, 2006). A UK Audit Commission report revealed a lack of evidence that joint commissioning affected health outcomes, but the study was subject to several methodological weaknesses (Audit Commission, 2009).

Two reviews (Roberts and Mays, 1997, Khangura Jaspreet et al., 2012) assessed the effect of integrating or substituting emergency departments with primary care. Robert and Mays found that substituting primary care doctors for staff in traditional emergency departments

improved efficiency, with reduced use of diagnostic tests, referrals and emergency department utilisation. More recently, Khangura et al assessed the effects of providing primary care services alongside emergency departments, and concluded that the evidence suggesting GPs make fewer hospital admissions and order fewer diagnostic tests was weak. Two studies reviewed found no difference in satisfaction or self-reported health outcomes between patients visiting a general physician or an emergency physician, and no difference in re-attendance rates (Dale et al., 1995, Murphy et al., 1996).

Three high quality reviews assessed the effect of service integration in the form of interdisciplinary teams and case management (Aubin et al., 2012, Low et al., 2011, Renders Carry et al., 2000). Aubin et al found evidence to support the use of interdisciplinary teams; one randomised controlled trial reported improved psychological status and quality of life (Hanks et al., 2002), and two randomised controlled trials reported higher patient satisfaction (Hughes et al., 1992, Kane et al., 1984). Renders et al also observed positive impacts on patient satisfaction and clinical outcomes resulting from interdisciplinary teams in combination with case management and patient education. The third review, by Low et al, examined studies of integrated care, consumer-directed care and case management for older persons. Case management was found to improve clinical outcomes, while integrated and consumer-directed care did not. However case management and integrated care were found to have no effect or mixed effects on patient satisfaction, while low quality evidence suggested increased satisfaction under consumer-directed care.

## **Discussion**

Recent years have seen a major growth in synthesis of research on clinical interventions, encouraged by the Cochrane Collaboration. However, there have been few systematic

reviews of health system interventions in high-income countries for a number of reasons. First, modern health systems are complex and decisions about how to organise them are often highly contested. This creates both technical barriers to experimentation, as it may be difficult to change only one thing while all else remains the same, and political, as politicians must admit to uncertainty about what is best, something that they have often been reluctant to do. Second, studies on the scale necessary to identify significant differences are complex and very expensive; the RAND Health Insurance Experiment, which examined the impact of cost-sharing, took over a decade and cost almost \$300 million in current prices (Aron-Dine et al., 2013), but was underpowered to detect differences in health outcomes. Third, as health systems are complex social systems, influenced by their broader environments and prevailing cultures, results may not be generalisable beyond the settings in which they were undertaken. Fourth, interventions may achieve short term results that are not sustained in the long run. Finally, funding for health services and systems research in high income countries is very limited and what exists is concentrated in a few countries such as the USA and UK.

### *Summary of findings*

This umbrella review has identified only a small systematic review-level evidence base and substantial evidence gaps around certain interventions, most notably on changes to resource allocation systems (something also noted in our companion review of equity).

- **Paying providers:** The reviews of paying providers to promote quality are largely inconclusive. This needs to be set in a broader context. There is a strong theoretical and empirical case that individuals do respond to financial incentives in ways that are intended, such as increased undertaking remunerated tasks, but also in ways

that are unintended, in the form of gaming the system. Where the goal is straightforward, for example to produce more of an easily defined object, then financial incentives may work, but they are more problematic when the product is much less easily defined, as in health care.

- Purchasing and provision: The lack of conclusive evidence on the outcomes of various forms of purchaser-provider split is particularly striking. This is an idea that successive governments in the UK have sought to implement for two decades in various forms, but seemingly with little learning from earlier attempts. The findings suggest that structural changes, such as the creation of new purchasing organisations, have very little impact on patients or frontline providers, and any changes that do occur are short-lived. Furthermore, such arrangements seem to give rise to increased transaction costs that are not compensated for by cost savings. However, research on this issue is dominated by the United Kingdom, where changes being evaluated have been implemented alongside multiple initiatives, and any real effect would be difficult to isolate from concurrent reforms.
- Integration of services: In contrast, there is some evidence that greater integration of services can benefit patients, although much seems to depend upon the approach taken.

Although there is currently a political drive to increase private provision of health care in some countries, claims that this might increase efficiency are not supported by the available evidence. However, it does seem that any cost savings are at the expense of reduced staff numbers. Given other evidence that, for example, low nurse-patient ratios are associated with worse outcomes, this is a matter for concern (Aiken et al., 2002, Aiken et al., 2012,

Rafferty et al., 2007). Similarly, political enthusiasm for greater competition among providers receives little empirical support, for reasons that have been set out in detail (Pollock et al., 2011).

### *Limitations*

This paper is, by definition, limited to existing systematic reviews. The searches covered only seven databases, and it is possible that a broader search strategy would locate more relevant studies. It should be noted that the search strategy used here is comparable to other published umbrella reviews of health equity (Bambra et al., 2010, Main et al., 2008).

There is clearly a need for more systematic reviews to be undertaken but, as noted above, the primary research that they can draw on may be quite limited. However, health systems face evolving challenges, and those systems must respond to them. It will often be necessary to make decisions on the balance of probabilities rather than waiting until the evidence is beyond reasonable doubt. As one writer has noted, “the alternative is paralysis”(McGorry, 2012).

### **Conclusion**

The evidence base suggests that the privatisation and marketisation of health care systems does not improve quality, and that most financial and organisational system-level reforms have either inconclusive or negative effects.

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**Table 1. Number of articles**

<b>Database</b>	<b>Hits</b>	<b>Removed Duplicates</b>	<b>Excluded at title and abstract stage</b>	<b>Full papers examined</b>	<b>Included in final analysis</b>
<b>Cochrane</b>	587	585	571	14	6
<b>DARE</b>	40	39	34	5	4
<b>EPPI</b>	20	20	19	1	0
<b>Campbell</b>	194	194	194	0	0
<b>PROSPERO</b>	30	27	27	0	0
<b>Medline</b>	511	496	494	2	0
<b>ASSIA</b>	475	474	468	6	2
<b>Citations</b>	0	0	0	0	7
<b>Total</b>	1857	1835	1807	28	19

**Table 2: Reviews of payment of providers**

Citation	Intervention(s)	Quality Outcomes	Study Design. (Relevant Study N/ Total Study N)	Data base N	Synthe sis Metho d	Restrictions	Main findings	Quality appraisal*
Chaix-Couturier et al., 2000	Financial incentives for medical professionals.	Process and outcomes of care.	Randomized studies, same physician studies, same patient studies, same disease studies, observational studies, literature reviews (89)	6	Narrati ve	1993-99; English & French language; No country restrictions.	<i>Inconclusive</i> -Quality of care and patient satisfaction did not differ between prospectively paid and FFS physician groups in one randomised study. - Financial incentives can improve compliance with practice guidelines, but results are not conclusive. -A shift to fund-holding can reduce referrals, but the quality of evidence is weak. Salaried payment can reduce referrals, and result in lower activity and fewer home visits compared to fee for service (FFS). -FFS was associated with better continuity of care within a managed care organisation in one study.	Low 1, 6, 7
Robinson & Steiner, 1998	Fee for service (FFS) vs managed care organisations (MCOs)	Mortality or survival times, clinical markers, functional status, access convenience, communications with clinicians, perceptions of professional competence.	Not stated (27/70)	4	Narrati ve	1990-96; English language; No country restrictions	<i>Negative</i> -Majority of the observations indicate no significant difference in quality between MCOs and FFS. -Of the studies showing a significant difference, the majority suggested better outcomes with MCOs in terms of mortality, survival times, clinical markers, and functional status. -Measures relating to access, convenience, communications with clinicians, and perceptions of professional competence show higher quality under FFS in 19 out of 37 studies (51%).	Low 2,3
Flodgren et al., 2011	Financial incentives for medical professionals	Compliance with clinical guidelines	Systematic reviews of RCTs, CBAs, ITS, CCTs (4)	11	Narrati ve	1990-2008; No language or country restrictions	<i>Negative</i> -Financial incentives are not effective in improving compliance with guidelines. -Target payments and bonuses did not improve compliance with guidelines in any studies. Mixed systems of financial	High 1, 2, 3, 4, 5, 6, 7

Citation	Intervention(s)	Quality Outcomes	Study Design. (Relevant Study N/ Total Study N)	Data base N	Synthesis Method	Restrictions	Main findings	Quality appraisal*
							incentives improved compliance in a minority (5/13) of studies.	
Gosden et al., 2000	Capitation, salary, fee for service, mixed methods of payment	Compliance with clinical guidelines, patient satisfaction, continuity of care	RCTs, CBAs (4)	11	Narrative	1966-97; No language or country restrictions	<i>Positive</i> - Compliance with guidelines was higher under FFS than capitation in one study. -Continuity of care was higher for FFS than salaried doctors in one study. - In one study, differences in patient satisfaction between salaried and FFS doctors were tested (along four dimensions of humanness, continuity, access to physicians, overall satisfaction), but only access to physicians was significantly higher for salaried physicians.	High 1, 2, 3, 4, 5, 6, 7
Scott et al., 2011	Financial incentives for primary care physicians	Patient reported outcome measures, clinical behaviours, intermediate clinical and psychological measures.	Cluster RCTs, CBAs, ITS, controlled ITS (7)	9	Narrative	2000-09; No language or country restrictions	<i>Inconclusive</i> -Evidence on the use of financial incentives to improve the quality of primary health care is inconclusive. - Six out of the seven studies found a statistically significant and positive effect on quality, but only for one quality measure out of a range used in each study.	High 1, 2, 4, 5, 6, 7
Petersen et al., 2006	Pay for performance	Timely and appropriate care, patient experience, process of care	RCTs, CBAs (17)	1	Narrative	1980-2005; English language; No country restrictions	<i>Positive</i> - 5 out of 6 studies on physician-level financial incentives and 7 out of 9 studies on provider group-level incentives found partial or positive effects on quality measures. -1 out of 2 studies on payment-system level incentives found a positive effect on access to care, while the other showed evidence of gaming behaviour or adverse selection, suggesting a negative effect on access to care.	High 1, 2, 3, 4, 5, 7
Van Herck et al., 2010	Pay for performance	Patient-centredness, clinical effectiveness, continuity of care	RCT, cluster RCT, ITS, observational cohort, cross-sectional,	6	Narrative	1990-2009; No language or	<i>Inconclusive</i> - Evidence on the impact of P4P on clinical effectiveness is mixed, ranging from a negative or no effect to positive effect,	High 1, 2, 3, 4,

Citation	Intervention(s)	Quality Outcomes	Study Design. (Relevant Study N/ Total Study N)	Data base N	Synthe sis Metho d	Restrictions	Main findings	Quality appraisal*
			concurrent comparison, concurrent-historic comparison (128)			country restrictions	depending on measure and programme. -P4P can have positive effects on coordination of care. -Mixed results from studies looking at the impact of P4P on patient-centeredness (one study found no effect, one found a positive effect), and no significant effect found on patient satisfaction.	5, 6, 7
Christianson et al., 2007	Financial incentives to providers (P4P, direct payments or bonuses)	Provider performance targets	RCTs, quasi-experimental study, controlled observational study, observational study without control group (36)	6	Narrative	1988-2006; No language or country restrictions	<i>Inconclusive</i> - Financial incentives to reward providers for quality improvements have mixed results. Evidence is limited and few significant impacts are reported.	Moderate 1, 2, 4, 6, 7
Abbreviations: RCT = randomised controlled trial, CCT = controlled clinical trials, CBA = controlled before and after studies, ITS = interrupted time series analysis, P4P = pay for performance.								
* DARE quality guidelines met								

**Table 3: Reviews of arrangements for purchasing and provision of services**

Citation	Intervention(s)	Quality Outcomes	Study Design. (Relevant Study N/ Total Study N)	Data base N	Synthesis Method	Restrictions	Main findings	Quality appraisal*
Smith et al. 2004	Primary care-led commissioning	Patient satisfaction, responsiveness, efficient treatment and care, person-centred care	Not stated (37)	4	Narrative	Not stated	<i>Mixed</i> - Primary care-led commissioning can improve responsiveness through shorter waiting times and increased information on patients' progress. Some evidence that patients approved of the service changes brought about by primary care-led commissioners. - But primary care led commissioning has not had a significant impact on secondary care, and resulted in increased transaction costs. Primary care-led commissioning did not lead to more effective patient choice of provider.	Low 1,2
Smith & Wilton 1998	GP fundholding	Patient satisfaction and choice, efficient treatment and care	Not stated	2	Narrative	1990-96; English; UK	<i>Inconclusive</i> - Evidence is incomplete and mixed - Some evidence of shorter waiting times, and improved access to radiology and pathology services. - There is little evidence that patients exercised greater freedom of choice, or that fundholders were more likely to take account of patient preferences. - Evidence on efficiency is inconclusive	Low 1,3
Mays et al. 2000 (Summary of Le Grand J, Mays N, Mulligan J-A. Learning from the NHS internal market. King's Fund, 1998)	1991/2 British NHS quasi-market reforms	Patient satisfaction and choice, efficient treatment and care	CBA, retrospective or historic control studies, routine monitoring, case studies, indirect research, opinion surveys, writer opinion and anecdote (180)	Not stated	Narrative	1991-98; Language restrictions not stated; UK	<i>Inconclusive</i> -Little measurable change that could be attributed to the quasi-market reforms with any certainty. - Some evidence that fundholders provide more accessible services and shorter waiting times. - GP Fundholding thought to have had mixed effect on efficiency. Little change in the quality of secondary care, and no evidence on quality of primary care. - Fundholders were more willing to offer patient choice, but patients indifferent to this. -Case studies showed some quality gains through Health Authority	Low 1, 4, 6

Citation	Intervention(s)	Quality Outcomes	Study Design. (Relevant Study N/ Total Study N)	Data base N	Synthesis Method	Restrictions	Main findings	Quality appraisal*
							<p>Purchasing.</p> <p>-Some quality improvements in primary and community health services with GP commissioning, but depended on local health authority.</p> <p>-NHS trust status had mixed effects on efficiency.</p>	
Propper et al. 2006	Purchaser-provider split, competition between providers	Clinical outcomes (avoidable mortality)	Not stated	7	Narrative	Not stated	<p><i>Mixed</i></p> <p>- Competition can improve outcomes, dependent on institutional design.</p> <p>-US studies of managed care show improved outcomes with increased competition post 1990, but later studies show more mixed results. Impact on quality depends on who sets reimbursement rates for hospitals.</p> <p>- Studies evaluating the UK internal markets 1991-7 suggest that quality fell during the internal market.</p> <p>-Best US evidence suggests that quality is higher where markets are more competitive, but this was not the case in the English internal market.</p>	Low 1,2
<i>Citation:</i> Heins et al. 2010	Non-profit, for-profit, or government hospitals	User satisfaction, mortality and hospitalisation rates, staff-patient ratios.	All study designs eligible (43/163)	5	Narrative	2001-06; No language or country restrictions stated	<p><i>Negative</i></p> <p>-No consistent evidence that non-profits perform better than the private sector.</p> <p>- 32 of 43 studies stated that the growth of the for-profit sector led to declining service quality.</p> <p>-The skill level and staff-patient ratio were consistently better in non-profit than for-profit institutions, and were best in government-run facilities.</p>	Low 1,2
<p>Abbreviations: RCT = randomised controlled trial, CCT = controlled clinical trials, CBA = controlled before and after studies, ITS = interrupted time series analysis, P4P = pay for performance.</p> <p>* DARE quality guidelines met</p>								

**Table 4: Reviews of the integration of services**

Citation	Intervention(s)	Quality Outcomes	Study Design. (Relevant Study N/ Total Study N)	Database N	Synthesis Method	Restrictions	Main findings	Quality appraisal*
Weatherly et al. 2010	Integrated Resource Mechanisms (financial integration across health and social care, mechanisms to allow resources to follow patients)	Health outcomes, patient satisfaction, professional performance (process measures).	Case studies, examples, reports (79)	8	Narrative	1999-2010;  English language  Excludes developing countries/countries not relevant to Scottish health system	<i>Positive</i>  - Improvements in carer burden, carer and patient satisfaction, and functional independence were reported, but most reviewed studies that assessed health outcomes found no effect.  - Some evidence of improvements in process measures, such as hospital admissions and delayed discharges.  -Other positive outcomes identified in the studies reviewed included patient empowerment and choice and respect for patient dignity.	Moderate  1,2,3,6,7
Aubin et al. 2012	Integration of services (multidisciplinary teams) for cancer patients	Patient satisfaction, continuity of care, holistic care	RCTs (2/51)	7	Meta-Analysis	No restrictions stated	<i>Positive</i>  - 1 study found patients supported by a multidisciplinary team had improved psychological status and quality of life.  -2 studies found interdisciplinary team model of care had significantly higher patient satisfaction.	High  1, 2, 3, 4, 5, 6, 7
Low et al. 2011	Integrated care, case management, and consumer directed care for older persons.	Patient satisfaction and clinical outcomes.	RCTs, non randomised trials, observational studies (35)	6	Narrative	1994-2009;  English language;  No country restrictions.	<i>Mixed</i>  - Case management has no effect on patient satisfaction, there is mixed evidence for integrated care, and low quality evidence that patient satisfaction is higher with consumer directed care.  -Evidence shows that case management improves clinical outcomes, but integrated care and consumer directed care do not.	High  1, 2, 3, 4, 5, 6, 7
Renders Carry et al. 2000	Interdisciplinary teams for diabetes patients.	Professional performance, patient satisfaction.	RCTs, CCTs, CBAs, ITS (41)	6	Narrative	1966-99;  No language or country restrictions	<i>Positive</i>  - The combination of a multidisciplinary team with case management and patient education showed favourable effects on process and patient outcomes.  - Organisational interventions that improve regular prompted	High  1, 2, 3, 4, 5, 6, 7

Citation	Intervention(s)	Quality Outcomes	Study Design. (Relevant Study N/ Total Study N)	Database N	Synthesis Method	Restrictions	Main findings	Quality appraisal*
							recall and review of patients can improve diabetes management	
Khangura Jaspreet et al. 2012	Provision of primary care services within or alongside hospital emergency departments.	Resource use, re-attendance rates, patient satisfaction, self-reported health outcomes.	Non randomised trials (3)	10	Narrative	None stated	<p><i>Positive</i></p> <p>-Evidence suggests that physician type has no effect on re-attendance rates, patient satisfaction or patient self-reported health outcomes</p> <p>- Weak evidence to suggest that GPs prove more efficient treatment and care, making fewer admissions to hospital and ordering fewer blood or x-ray investigations than regular emergency departments.</p>	High 1, 2, 3, 4, 5, 6, 7
Roberts & Mays 1997	Substitution of primary care for traditional accident and emergency department	Patient satisfaction, resource consumption.	RCTs, ITS, CBA, uncontrolled before-after studies, non-random group comparison and retrospective studies with comparative analysis (33)	7	Narrative	1970-1997; No language or country restrictions.	<p><i>Positive</i></p> <p>-Patient satisfaction was not lower with primary care organisational interventions such as primary care emergency centres, appointment systems, or single-handed practitioners.</p> <p>- All studies found integration of primary and hospital care resulted in lower general use of diagnostic investigations and fewer referrals to secondary services.</p>	Moderate 1, 3, 4, 5, 6
Abbreviations: RCT = randomised controlled trial, CCT = controlled clinical trials, CBA = controlled before and after studies, ITS = interrupted time series analysis, P4P = pay for performance.								
* DARE quality guidelines met								

## **Appendix 1: Search Terms**

### **Medline (electronic, title and abstract)**

health care system OR social care

AND

funding OR financial OR pooling OR insurance OR insured OR provider OR provision OR tax OR taxation OR budget OR pay OR commission OR purchasing OR purchaser OR market OR marketisation OR privatisation OR marketization OR privatization

AND

quality OR outcome\* OR mortality OR quality of life OR survival OR satisfaction OR perform\* OR holistic OR competence OR risk OR efficien\* OR person-centred OR patient-centred OR person centred OR patient centred

AND

metaanaly\* OR meta-analy\* OR meta study OR meta synthes\* OR meta evaluat\* OR literature review OR synthes\* OR review\* OR systematic review

AND

Commonwealth Fund OR Australia OR Canada OR Denmark OR England OR Wales or Scotland or UK or United Kingdom OR France OR Germany OR Iceland OR Italy OR Japan OR Netherlands OR New Zealand OR Norway OR Sweden OR Switzerland OR United States OR OECD OR EU OR European

### **ASSIA (electronic, full text)**

health care system OR social care

AND

funding OR financial OR pooling OR insurance OR insured OR provider OR provision OR tax OR taxation OR budget OR pay OR commission OR purchasing OR purchaser OR market OR marketisation OR privatisation OR marketization OR privatization

AND

quality OR outcome\* OR mortality OR quality of life OR survival OR satisfaction OR perform\* OR holistic OR competence OR risk OR efficien\* OR person-centred OR patient-centred OR person centred OR patient centred

AND

metaanaly\* OR meta-analy\* OR meta study OR meta synthes\* OR meta evaluat\* OR literature review OR synthes\* OR review\* OR systematic review

AND

Commonwealth Fund OR Australia OR Canada OR Denmark OR England OR Wales or  
Scotland or UK or United Kingdom OR France OR Germany OR Iceland OR Italy OR Japan OR  
Netherlands OR New Zealand OR Norway OR Sweden OR Switzerland OR United States OR  
OECD OR EU OR European

**Campbell /DARE (electronic, all text)**

health care system OR social care

AND

funding OR financial OR pooling OR insurance OR insured OR provider OR provision OR tax  
OR taxation OR budget OR pay OR commission OR purchasing OR purchaser OR market OR  
marketisation OR privatisation OR marketization OR privatization

AND

quality OR outcome\* OR mortality OR quality of life OR survival OR satisfaction OR perform\*  
OR holistic OR competence OR risk OR efficien\* OR person-centred OR patient-centred OR  
person centred OR patient centred

AND

Commonwealth Fund OR Australia OR Canada OR Denmark OR England OR Wales or  
Scotland or UK or United Kingdom OR France OR Germany OR Iceland OR Italy OR Japan OR  
Netherlands OR New Zealand OR Norway OR Sweden OR Switzerland OR United States OR  
OECD OR EU OR European

**Cochrane (electronic)**

health care system OR social care OR health system **(title, abstracts, keywords)**

AND

funding OR financial OR pooling OR insurance OR insured OR provider OR provision OR tax  
OR taxation OR budget OR pay OR commission OR purchasing OR purchaser OR market OR  
marketisation OR privatisation OR marketization OR privatization **(full text)**

AND

quality OR outcome\* OR mortality OR quality of life OR survival OR satisfaction OR perform\*  
OR holistic OR competence OR risk OR efficien\* OR person-centred OR patient-centred OR  
person centred OR patient centred **(full text)**

AND

Commonwealth Fund OR Australia OR Canada OR Denmark OR England OR Wales or  
Scotland or UK or United Kingdom OR France OR Germany OR Iceland OR Italy OR Japan OR  
Netherlands OR New Zealand OR Norway OR Sweden OR Switzerland OR United States OR  
OECD OR EU OR European **(full text)**

**Prospero (electronic, all fields)**

health care system OR social care

**EPPI-Centre (manual, topic)**

Health care, Health commissioning, Health inequalities, Health insurance, Health policy – evaluation, Incentive schemes, Integrated care and education

## Appendix 2: Excluded articles

Reason	References
Do not include relevant quality outcomes	<p>Roberts E, Mays N. Can primary care and community-based models of emergency care substitute for the hospital accident and emergency (A &amp; E) department? 1998; 44:191-214.</p> <p>Hayes Sara L, Mann Mala K, Morgan Fiona M, Kelly Mark J, Weightman Alison L. Collaboration between local health and local government agencies for health improvement. Cochrane Database of Systematic Reviews: John Wiley &amp; Sons, Ltd, 2012.</p> <p>Giuffrida A, Gosden T, Forland F, Kristiansen I, Sergison M, Leese B, Pedersen L, Sutton M. Target payments in primary care: effects on professional practice and health care outcomes. Cochrane Database of Systematic Reviews: John Wiley &amp; Sons, Ltd, 1999.</p> <p>Grimshaw JM, Winkens RA, Shirran L, Cunningham C, Mayhew A, Thomas R, Fraser C. Interventions to improve outpatient referrals from primary care to secondary care. Cochrane Database of Systematic Reviews 2005:CD005471.</p> <p>Sturm H, Austvoll-Dahlgren A, Aaserud M, Oxman Andrew D, Ramsay Craig R, Vernby Å, Kösters Jan P. Pharmaceutical policies: effects of financial incentives for prescribers. Cochrane Database of Systematic Reviews: John Wiley &amp; Sons, Ltd, 2007.</p> <p>Wong Christopher X, Carson Kristin V, Smith Brian J. Home care by outreach nursing for chronic obstructive pulmonary disease. Cochrane Database of Systematic Reviews: John Wiley &amp; Sons, Ltd, 2012.</p>
Does not review empirical evidence	<p>Braithwaite J, Travaglia JF, Corbett A. Can Questions of the Privatization and Corporatization, and the Autonomy and Accountability of Public Hospitals, Ever be Resolved? Health Care Analysis 2011; 19:133-53.</p>
Do not include intervention studies	<p>Ezziane Z, Maruthappu M, Gawn L, Thompson EA, Athanasiou T, Warren OJ. Building effective clinical teams in healthcare. Journal of Health, Organization and Management 2012; 26:428-36.</p> <p>Heaney D, Black C, O'Donnell C A, Stark C, van Teijlingen E. Community hospitals--the place of local service provision in a modernising NHS: an integrative thematic literature review. BMC Public Health 2006; 6:309.</p>
Not a systematic review according to DARE criteria	<p>Humphreys K, McLellan AT. A policy-oriented review of strategies for improving the outcomes of services for substance use disorder patients. Addiction 2011; 106:2058-66.</p> <p>Wilson DM. Public and private health-care systems: what the literature says. Canadian public administration 2001; 44:204-31.</p>
Interventions are not relevant	<p>Wilson Andrew D, Childs S. Effects of interventions aimed at changing the length of primary care physicians' consultation. Cochrane Database</p>

	<p>of Systematic Reviews: John Wiley &amp; Sons, Ltd, 2006.</p> <p>Parmelli E, Flodgren G, Schaafsma Mary E, Baillie N, Beyer Fiona R, Eccles Martin P. The effectiveness of strategies to change organisational culture to improve healthcare performance. Cochrane Database of Systematic Reviews: John Wiley &amp; Sons, Ltd, 2011.</p> <p>Laurant M, Reeves D, Hermens R, Braspenning J, Grol R, Sibbald B. Substitution of doctors by nurses in primary care. Cochrane Database of Systematic Reviews: John Wiley &amp; Sons, Ltd, 2004.</p> <p>McGaughey J, Alderdice F, Fowler R, Kapila A, Mayhew A, Moutray M. Outreach and Early Warning Systems (EWS) for the prevention of Intensive Care admission and death of critically ill adult patients on general hospital wards. Cochrane Database of Systematic Reviews: John Wiley &amp; Sons, Ltd, 2007.</p>
Does not review quantitative studies	<p>Newman M, Bangpan M, Kalra N, Mays N, Kwan I, Roberts T. Commissioning in health, education and social care: Models, research bibliography and in-depth review of joint commissioning between health and social care agencies. London: EPPI-Centre, 2012.</p>