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Health equity monitoring for healthcare quality assurance

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ABSTRACT

Population-wide health equity monitoring remains isolated from mainstream healthcare quality assurance. As a result, healthcare organizations remain ill-informed about the health equity impacts of their decisions – despite becoming increasingly well-informed about quality of care for the average patient. We present a new and improved analytical approach to integrating health equity into mainstream healthcare quality assurance, illustrate how this approach has been applied in the English National Health Service, and discuss how it could be applied in other countries. We illustrate the approach using a key quality indicator that is widely used to assess how well healthcare is co-ordinated between primary, community and acute settings: emergency inpatient hospital admissions for ambulatory care sensitive chronic conditions ("potentially avoidable emergency admissions", for short). Whole-population data for 2015 on potentially avoidable emergency admissions in England were linked with neighborhood deprivation indices. Inequality within the populations served by 209 clinical commissioning groups (CCGs: care purchasing organizations with mean population 272,000) was compared against two benchmarks – national inequality and inequality within ten similar populations – using neighborhood-level models to simulate the gap in indirectly standardized admissions between most and least deprived neighborhoods. The modelled inequality gap for England was 927 potentially avoidable emergency admissions per 100,000 people, implying 263,894 excess hospitalizations associated with inequality. Against this national benchmark, 17% of CCGs had significantly worse-than-benchmark equity, and 23% significantly better. The corresponding figures were 11% and 12% respectively against the similar populations benchmark. Deprivation-related inequality in potentially avoidable emergency admissions varies substantially between English CCGs serving similar populations, beyond expected statistical variation. Administrative data on inequality in healthcare quality within similar populations served by different healthcare organizations can provide useful information for healthcare quality assurance.

1. Introduction

Quality of care and health equity have become two of the key issues on policy agendas worldwide. However, despite the inclusion of equity dimensions in foundational works on healthcare quality (Donabedian, 2002; Institute of Medicine, 2001) and efforts by organisations such as the Institute for Healthcare Improvement (Institute for Healthcare Improvement, 2017) and the English National Health Service (NHS) (NHS England, 2017b) to integrate equity and quality, responses to these issues have often progressed along separate lines. Efforts to improve quality have focused on safety and cost-effectiveness, with improvements in equity largely a by-product of reducing variation in performance between providers (Doran et al., 2008), whereas policy responses to health equity have focused on the wider social determinants of health rather than healthcare delivery (World Health Organization, 2014). Due to this parallel development, quality improvement agencies (for example, the Organisation for Economic Co-operation and Development's (OECD) Health Care Quality Indicators project) (Raleigh and Foot, 2010) and quality improvement frameworks (for example, the Quality and Outcomes Framework in the UK (NHS Digital, 2017b) and accountable care organizations (ACOs) in the US (Centers for Medicare and Medicaid Services, 2017) often overlook equity. Because quality targets tend to be more difficult to achieve for socially disadvantaged populations, there are concerns that quality frameworks penalise providers serving these populations (Delgadillo et al., 2016; Doran et al., 2016; Yasaitis et al., 2016) potentially exacerbating existing disparities in the quality of care (Buntin and Ayanian, 2017). Adjustment for social risk factors is now being

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advocated (Fiscella et al., 2014; Joynt et al., 2017; National Academies of Sciences and Medicine, 2016) but this falls short of providing useful information about equity of care for vulnerable populations, which requires stratification by social risk factors. And whilst there have been isolated examples of quality improvement programs that have explicitly addressed equity (Badrick et al., 2014; Blustein et al., 2011) most are not designed to address this issue.

A major obstacle to improving equity in healthcare has been a lack of appropriate analytical tools. Performance measures in healthcare focus on a mythical “average” patient, providing insufficient information about differences in quality and outcomes that are considered unfair (Cookson et al., 2016; Fiscella et al., 2000). Periodic reports on healthcare inequalities are produced in some countries (Agency for Healthcare Research and Quality, 2016; Harvey et al., 2016; Moy et al., 2005) but these typically focus on large geographical regions (Mayberry et al., 2006) or local government areas without specific responsibility for healthcare (Remington et al., 2015) and lack the more specific equity metrics and benchmarks needed for assessing and improving the quality of healthcare organizations. To hold healthcare decision makers accountable for the equity dimension of quality, new metrics are needed which (1) speak directly to organizations with direct responsibility for healthcare purchasing, planning and delivery, and (2) are responsive to short-term changes in healthcare delivery. Only then will health equity metrics be incorporated into quality assurance dashboards commanding the attention of senior healthcare executives.

To address this challenge, in 2016 the English NHS introduced a new approach to health equity monitoring for internal quality assurance and external public accountability purposes (NHS England, 2016a, 2016b). The initial NHS focus was on equity indicators based on rates of potentially avoidable emergency hospitalization at the neighborhood level, one of which we illustrate in this article, and consideration is being given to adding further indicators in due course. The new approach can be used to construct equity indicators based on many standard indicators of healthcare structure, process and outcome quality including – but not limited to – primary care supply, primary care process quality, hospital waiting times, hospital re-admissions, hospital mortality, and mortality considered amenable to health care (Cookson et al., 2016).

The NHS chose to focus initially on potentially avoidable emergency admissions for two reasons. First, average rates of these admissions are responsive to short-term changes in health care delivery (Harrison et al., 2014; Huntley et al., 2014; Purdy and Huntley, 2013). Second, they rise steeply with neighborhood deprivation, raising concern not only about equity of access to preventive and co-ordinated healthcare (Asaria et al., 2016a) but also about cost pressures on the healthcare system as a whole (Asaria, et al., 2016b). Under the new approach, inequality in potentially avoidable emergency admissions was measured within the populations of “clinical commissioning groups” (CCGs) – care organizations in England with responsibility for purchasing and planning healthcare for patients enrolled with local NHS family practices. Equity within the CCG's enrolled population was then compared against two benchmarks: the national average level of inequality and the average level of inequality within ten CCG populations that are comparable in terms of deprivation, age profile, ethnic mix and rurality (NHS England, 2017a). In this article we illustrate the NHS equity indicator based on the sub-set of potentially avoidable emergency admissions for chronic ambulatory care sensitive conditions. This is an indicator of the quality of ambulatory care services in managing long-term conditions (Herrin et al., 2015; Purdy et al., 2009; Torio and Andrew, 2014) and the equity version of this indicator is intended to provide quality assurance information about the NHS duty to consider reducing inequalities in both access and outcomes of healthcare (Health and Social Care Act, 2012). In this paper, we use this indicator to illustrate the general analytical approach and discuss its potential application to healthcare quality assurance in other countries.

2. Methods

2.1. Data

2.1.1. Organizational geography

In England in 2015 there were 209 clinical commissioning groups (CCGs) – each serving a mean of 272,000 NHS patients registered with a local family practice (range 73,000 to 913,000). CCGs are responsible for purchasing and planning healthcare for the vast majority of their resident populations. However, the registered and resident populations do not fully overlap because residents can choose to register with a practice in a neighboouring CCG. We used registered population data from practice registers, rather than resident population data from the census, to match the legal responsibility of the CCG and to illustrate how the approach can be applied to ACOs in the US and other settings where the enrolled population does not coincide with the resident population. CCGs were introduced in April 2013. There were 211 CCGs initially, falling to 209 in 2015. Before that, there were 152 “Primary Care Trusts” (PCTs). Despite this numerical change, however, there was stability in most areas with 180 of the 211 CCGs being formed from a single PCT or part of a single PCT, and the opening and closing of practices to accommodate local population change does not cause substantial change in CCG boundaries.

2.1.2. Small area geography

Our basic unit of analysis was the “CCG-LSOA” – a block of CCG registered population residing within a neighbourhood census unit called a “lower super output area” (LSOA). Each patient has a neighbourhood or “Lower Super Output Area” (LSOA) in which they live. Each LSOA has a deprivation score. Patients register with a GP practice and these practices belong to CCGs responsible for their hospital care. To calculate the inequality in a CCG, we include everyone who is registered with that CCG's GP practices based on the LSOA where they live. Effectively we split each LSOA into CCG blocks, as illustrated in Fig. 1.

We include all the shaded blocks for each CCG, taking the deprivation score of the LSOA in which they are located. LSOAs have a mean population of 1650 (range 1000 to 3000), while CCG-LSOAs have a mean population of 636 (range 1–2536 from 1st to 99th percentile). Our CCG-LSOA population estimate was based on the fraction of the relevant NHS practice list attributed to the LSOA. The resulting mean number of CCG-LSOAs per CCG was 428 (range 95 to 1972). CCG-LSOAs with smaller-than-resident populations arise near CCG boundaries, where residents of an LSOA are registered in more than one CCG with such LSOAs appearing in the analysis for more than one CCG. However, most LSOAs have a majority of their population registered with a single CCG (95.4% on average). Even among LSOAs whose populations are registered with multiple CCGs, the largest proportion

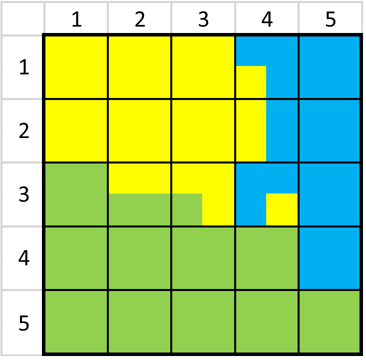

Fig. 1. How CCG-LSOAs are constructed – fictional example.
Note: The 3 shaded areas are CCGs, the 25 (5*5) cells are LSOAs, and the 30 shaded blocks within the cells are CCG-LSOAs.