

Original Investigation

Measuring, Reporting, and Rewarding Quality of Care in 5 Nations: 5 Policy Levers to Enhance Hospital Quality Accountability

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Policy Points:

- Similarities and disparities between countries and initiatives are identified. Measuring, reporting, and rewarding quality is heavily focused on process measures. Hospital-level benchmarking is not always available publicly. Quality-related payment schemes vary widely, with several countries only piloting small-scale initiatives.
- To increase quality accountability, the government has to set standards and incentives. The right balance between system centralization and decentralization has to be struck. Accountability needs to be based on outcomes, not process measures, and focus should be on hospital and medical condition levels. Providers have a central role as quality accountability advocates.

Context: Studies have documented wide quality variation among hospitals within and across countries. Increasing quality-of-care accountability for hospitals, especially for patients and the general public, is an important policy objective, but no study has yet systematically and comprehensively compared leading countries' initiatives in this regard.

Methods: Based on expert interviews and an extensive literature review, we investigate hospital quality accountability in England, Germany, the Netherlands, Sweden, and the United States. The underlying framework includes 3 elements: measuring quality, reporting quality, and rewarding quality. Each element is subdivided into 2 dimensions, with measuring composed of indicator type and data source, reporting composed of degree of reporting centralization

and data accessibility, and rewarding composed of extent of application and type of quality-related payments.

Findings: The results show a wide spectrum of approaches and progress levels. Measuring strategies are more similar across countries, while quality reporting and financial rewards are more dissimilar. Reporting of process indicators is more prevalent than reporting of outcomes. Most countries have introduced some quality-related payment schemes, with the United States having the most comprehensive approach. Based on the cross-country assessment, 5 policy levers to enhance quality transparency are identified and illustrated through country-specific examples: (1) the government should take a central role in establishing standards and incentives for quality transparency and health IT system integration; (2) system centralization and decentralization need to be balanced to ensure both national comparability and local innovation; (3) health systems need to focus more on outcome transparency and less on process measures; (4) health systems need to engage providers as proponents of quality transparency; and (5) reporting should focus on hospital and condition levels to ensure comparability and enable meaningful patient choice.

Conclusions: The findings facilitate cross-country learning and best-practice adoption by assessing hospital quality accountability strategies in 5 countries in a structured and comparative manner. The identified policy levers are relevant for enhancing breadth, depth, and value of quality accountability.

Keywords: health care quality assessment, quality accountability, pay-for-performance, hospital quality of care, public reporting, comparative health policy.

RECENT STUDIES INDICATE THAT QUALITY OF CARE VARIES considerably across providers and medical conditions.¹⁻³ Advanced health systems are thus encouraging quality accountability both to stimulate provider competition around quality and to support patient choice through public reporting of quality variation among providers. Many providers, however, resist the increased pressure and resource impact associated with collection of clinical quality data and quality-related payments.^{4,5} Likewise, patients often lack awareness of existing accountability initiatives or encounter confusing results for the same provider across different initiatives.^{6,7}

Since the early 2000s, England, Germany, Sweden, the United States, and, more recently, the Netherlands have particularly championed quality accountability. There are similarities in how these countries organize measurement, reporting, and incentivization of quality; there are also

important differences, including underlying data and indicators, degrees of mandatory versus voluntary reporting, and approaches to quality-related payments (QRP).⁸ These are partially determined by disparities in health system features such as insurance and payment schemes, size of inpatient versus outpatient sector, and private sector service provision.^{9,10}

Health systems still lack standardization and integration across countries regarding quality accountability, with limited learning and adaptation from international comparison.^{11,12} Thorough cross-country analysis of quality accountability approaches is rare and, where existent, outdated.⁸ Furthermore, the dimensions of quality accountability have primarily been examined in isolation,¹³ and a broad framework to describe and analyze the policy status of quality accountability in a comparative manner across countries is lacking. Likewise, an up-to-date analysis of key policy levers to improve quality accountability is needed, as health systems have gathered first experiences with quality accountability^{14,15} and key questions on the mechanisms of quality accountability remain unclear.^{6,7,16,17}

Policymakers and other stakeholders in the 5 countries are examining their hospital quality accountability approaches and preparing to initiate the next phase, in which quality will become more transparent for all stakeholders and relevant for provider payment. Countries can benefit substantially from an international comparative analysis of policy approaches and experiences; best-practice identification and adoption; and harmonization of indicators measured, reported, and included in QRP schemes to facilitate comparison.

This study addresses this research gap by introducing a more comprehensive, policy-oriented hospital quality accountability framework, which is then used to provide a cross-country perspective on the state of the art of measuring, reporting, and rewarding hospital quality, informed by in-depth country research. We also identify 5 policy levers important for the advancement of quality accountability and illustrate these with country examples.

Methods

The key elements of quality accountability are (1) measuring provider quality; (2) reporting provider quality; and (3), based on the obtained

data, incentivizing providers through QRPs. Each of these elements comprises a range of components and approaches, heavily influenced by individual health system parameters. To comprehensively assess the quality accountability systems and the 3 key elements, we conducted country reviews based on expert interviews, a review of academic and gray literature, and an examination of public reporting online portals.

In each of the countries (other than Germany), we conducted 4–6 interviews with academic, regulatory, and industry experts (displayed in Appendix Table A1). We engaged experts both at the start of our country analysis to understand key elements and institutions of quality accountability, as well as at later points to collect detailed information and to review and comment on finalized sections. We reviewed the relevant academic literature based on a PubMed search strategy that included terms such as “quality of care,” “outcome measurement,” “quality reporting,” and “value-based payments” (including different varieties thereof) linked with the terms “hospital” and “health care” and the respective country names. In addition, we investigated gray literature (eg, reports, documentations, and press releases), which we found through online desk research and on the websites of the relevant portals and agencies. We mostly included literature from 2005 onward, with a focus on more recent material to account for the constantly changing policy environment and evolving research and academic positions. We also received literature from our interviewed country experts. Lastly, we reviewed and tested the public reporting and benchmarking portals (eg, by conducting test hospital benchmarking) in the different countries.

We synthesized the assessment along an a priori outlined and continuously refined framework that captures the aforementioned elements and their most important dimensions:

1. **Measuring Quality:** Composed of *indicator type* (structural, process, outcome, or risk-adjusted outcome) and *data source* (clinical, administrative, or patient-reported).
2. **Reporting Quality:** Composed of *reporting centralization* (individual by medical condition, some grouping of conditions, or centralized for all conditions) and *data accessibility* (internal reporting, public reporting, or public benchmarking).
3. **Rewarding Quality:** Composed of *extent of QRP application* (pilots only, regional application or for several conditions,

large-scale or multicondition) and *type of quality-related payment* (bonus-malus, bundled payments, or capitation payments).

For all 3 quality accountability elements, we separately assessed the status for each country to paint a comprehensive picture for measurement, reporting, and rewarding of quality of care. Thus, we aimed to inform the use and further development of each. The 3 elements and their respective subdimensions across the 5 countries are also illustrated in 2-dimensional matrices, which convey the scope of the approaches to measuring, reporting, and rewarding quality, and indicate overlaps among country strategies.

This analysis focused on inpatient hospital care, which is most comparable across countries and it is where quality accountability is most advanced. Additionally, the analysis concentrated on hospital-level quality measuring and reporting, often captured in provider report cards, and less on national, regional, or physician-level reporting.

The framework was initially drafted after a preliminary literature review and after first discussions with experts in each country. After testing and with additional research insights, we refined the framework and used it to structure, record, and report both the academic and gray literature review as well as the expert interviews. As an organizing structure, we targeted a simple and easily accessible framework to maximize accessibility and comprehensibility for policymakers.

Results

Measuring Quality

Quality measurement is the foundation of quality accountability. The national approach to evaluate hospital quality determines which indicators can be utilized for reporting as well as rewarding providers. Countries make choices regarding voluntary versus mandatory, national versus regional, and public versus private measurement initiatives. Moreover, countries choose between using administrative, clinical, and patient-reported data as well as patient reporting and a combination of structural, process, outcome, and risk-adjusted outcome indicators. These decisions influence the width (ie, number of hospitals covered) and depth (ie, number of indicators measured) of quality measurement. They also determine the resource impact on providers necessary to

collect the data. Based on different choices along these parameters, each country has a distinct quality measurement ecosystem.

England. The National Health Service (NHS) standard contract requires all NHS trusts and contractors to participate in all clinical audits, clinical outcome review programs, and registries on the NHS England Quality Accounts List. The audits and registries included in the Healthcare Quality Improvement Partnership (HQIP) Quality Accounts oblige providers to measure results across a variety of treatment areas and indicators that are based on administrative, clinical, and patient-reported data. For 2015–2016, the Quality Accounts List included 41 hospital-level programs such as the National Joint Registry (NJR) and the National Adult Cardiac Surgery Audit (see Appendix Table A2 for a list of abbreviations by country). In addition, the Commissioning for Quality and Innovation (CQUIN), set up by the Department of Health in 2009, measures 52 indicators, consisting mostly of structural and process metrics and a few selected outcomes. The CQUIN indicators, however, are sometimes seen as complex and not comparable across trusts. Furthermore, Public Health England, an executive agency of the UK Department of Health, collects hospital-level infection rates for *Staphylococcus aureus*, *C. difficile*, and other hospital-acquired infections.

The Health and Social Care Information Centre (HSCIC) functions as the central data clearing house for NHS and its contractors. The HSCIC administers the Hospital Episode Statistics, a routine data collection, during a patient's hospital stay. The HSCIC also generates quarterly the widely used Summary Hospital-level Mortality Indicator (SHMI), which is a risk-adjusted mortality rate at the NHS trust level. The SHMI is defined as death occurring in the hospital and up to 30 days after discharge, and it included 137 trusts in 2014. In-hospital and post-discharge administrative information are linked together through the NHS number, which is a unique patient ID and is required for all NHS services. The HSCIC also collects patient-reported outcome measures (PROM) for the treatment areas of hip and knee replacements, groin hernia, and varicose veins.¹⁸

The NJR covers hip, knee, ankle, elbow, and shoulder joint replacements and collects quality measures at the hospital and physician level. Indicators include case volume, clinical outcomes (eg, 90-day risk-adjusted mortality and readmission rates), PROMs such as Oxford Score and quality of life (eg, EQ-5D), and patient characteristics. The National Institute for Cardiovascular Outcomes Research operates

6 clinical cardiac audits, including cardiac surgery, percutaneous coronary intervention (PCI), and heart failure. Indicators include mortality for emergency operations, risk-adjusted coronary artery bypass grafting (CABG) and aortic valve replacement surgery, and patient population risk factors. While clinical registry participation is widespread, it varies between providers in scope and thoroughness. Moreover, the annual NHS Inpatient Survey, conducted by the Care Quality Commission, measures patient experience at each NHS service hospital across treatment areas and includes measures such as trust in clinicians, patient involvement, cleanliness, received respect and dignity, and an overall composite measure.

Germany. Along with the introduction of diagnosis-related groups (DRG) in the early 2000s, the self-governance system of payers and providers and its highest body, the Gemeinsamer Bundesausschuss (Federal Joint Committee; G-BA), propelled by correspondent legislation, introduced a statutory quality assurance system.¹⁹ Annual, self-reported provider report cards compile structural, process, and outcome indicators at the hospital and medical department level for 30 tracer diagnoses and procedures, covering less than 30% of all inpatient cases across all 1,600 acute hospitals in the country.²⁰ More than 350 process and outcome indicators are collected, including evidence-based care compliance rates; readmission, infection, and mortality rates; and risk-adjusted readmission and mortality rates. Indicators are based on clinical data for the inpatient episode only. Further development and implementation of the quality assurance system has recently been centralized with the Institute for Quality and Transparency in Health Care (IQTIG).

Besides mandatory, national quality assurance, 3 notable measurement initiatives are Qualitätssicherung mit Routinedaten (QSR), which is operated by Allgemeine Ortskrankenkassen (AOK), the largest sickness fund, and Initiative Qualitätsmedizin (IQM) and Qualitätskliniken.de (4QD), which were both initiated by leading private hospital chains. QSR calculates risk-adjusted outcome indicators, such as 30-, 90-, and 365-day mortality rates; readmission and reoperation rates; and a composite indicator for 14 medical conditions and procedures such as acute myocardial infarction (AMI), PCI, stroke, appendicitis, prostate surgery, and hip and knee implants. The QSR initiative uses AOK administrative patient data and includes complications after hospital discharge.

IQM and 4QD, which both had around 300 member hospitals in 2015, pursue similar administrative data-based approaches to

measurement. IQM calculates its indicators, primarily case volume and raw and risk-adjusted mortality rates, for 40 treatment areas such as stroke, chronic obstructive pulmonary disease (COPD), and spine surgery. It uses the German Inpatient Quality Indicator set, which is calculated with administrative inpatient data based on the US Agency for Healthcare Research and Quality (AHRQ) inpatient quality measures.²¹ 4QD calculates process and outcome indicators such as blood infection postsurgery, pulmonary embolism postsurgery or colorectal cancer mortality rates, also based on administrative hospital data. IQM and 4QD, as well as the mandatory quality assurance system, strongly emphasize peer reviews to facilitate quality improvement through error identification and best-practice adoption.

Germany's registry infrastructure is currently limited, often voluntary, and primarily regionally based. Recently, however, some national registers, such as the German Joint Replacement Register and a nationwide standardized Cancer Registry, have been established. Furthermore, the patient experience questionnaire (PEQ) captures patient-reported experience measures (PREM) for all German hospitals at the medical department level. It consists of 15 questions in the categories of medical care, nursing care, hospital stay, and global hospital assessment. In Germany, no patient-reported outcome indicators are collected in a standardized, large-scale fashion.

The Netherlands. The Dutch Health Care Inspectorate (IGZ) supervises quality, safety, and access in Dutch medical care providers.²² All hospitals submit a mandatory set of IGZ quality indicators annually to the Dutch Healthcare Authority (NZa). These include structural, process, outcome, and PROM indicators, such as surgery volumes, postoperative controls, reoperation rates, and postsurgery pain levels, with mortality and length of stay risk-adjusted. In 2014, 42 tracer treatment areas—such as cardiac and birth care, hip fracture, and cataract surgery—were covered. The Dutch Hospital Data (DHD) foundation, a consortium of the Dutch Hospital Association (NVZ) and the Federation of University Medical Centers, functions as a data clearing house for administrative data-based indicators and transfers mandatory data to the NZa. Hospital standardized mortality ratios (HSMR) are calculated by the Central Bureau of Statistics for 50 diagnosis groups based on administrative data from DHD. Based on the UK SHMI, the HSMR is a risk-adjusted outcome measure that compares observed death with expected death, adjusting for the underlying patient population.

Several provider initiatives exist as well. The Dutch Institute for Clinical Auditing (DICA) combines 13 registries for conditions such as colorectal and breast cancer, lung and thoracic surgery, and gynecological oncology. DICA covers structural, process, outcome, and PROM indicators. Hospital membership is not mandatory, but due to IGZ pressure and increased public awareness, most hospitals have joined. Meetbaar Beter (measurably better) is another provider-led voluntary registry initiative; it covers cardiovascular diseases and collects clinical outcome and PROM indicators. In 2015, it included 14 out of 16 heart centers. In addition, the voluntary health insurer initiative Consumer Quality Index (CQI) measures PREMs by distributing, collecting, and aggregating questionnaires for 18 medical conditions and care processes.

Sweden. Sweden's National Board of Health and Welfare (Socialstyrelsen) compiles administrative information in the National Patient Register for all hospital treatments. Data include a unique patient ID, patient demographic and geographical information, and clinical data. In the Cause of Death Register, Socialstyrelsen collects ICD-10 codes and patient data that can be linked through the patient's ID with Health Care Quality Register data. Traditionally, Swedish quality measurement is based on condition-specific registers. With the first registers established in the 1970s, 100 quality registers exist today and collect structural, process, and outcome indicators from hospitals on a voluntary and mandatory basis for relevant inpatient conditions. Registers are generally based on clinical data, but 75% of registers also collect some PROMs.²³ SWEDEHEART, one of the most prominent registers, also introduced partially risk-adjusted quality indices for its main treatment areas. For example, the TAVI Quality Index is a composite index reflecting structural factors, case volume, serious complications, and risk-adjusted mortality.²⁴ While SWEDEHEART has 100% coverage for all its cardiovascular conditions, other registers are less comprehensive. However, about 70% of registers cover more than 80% of their target population.^{25,26}

The Swedish central and regional governments currently fund these registers with around €30 million annually.²⁷ To standardize outcome measurement across regions and medical conditions, Sweden consolidated its quality registers in 7 regional competence centers, with the stated purpose of enhancing IT infrastructure and sharing statistical expertise and methodologies across registers.²⁵ For example, the Uppsala Clinical Research Center operates 18 nationwide quality registers,

including SWEDHEART and SWEDVASC, the vascular surgery register.

United States. The National Quality Forum (NQF), a consensus-driven, all-stakeholder body, endorses most quality indicators used in public reporting and QRPs in the United States. NQF measures are preferred by federal programs as well as many state and private initiatives. Indicator development and measurement, however, is undertaken by numerous other organizations.

The AHRQ administers inpatient quality and patient safety indicators (IQI and PSI), which are calculated using Medicare hospital discharge data for 3,500 Medicare-registered, acute care hospitals. The 2015 IQI set includes 34 provider-level and regional indicators such as volume, utilization, and risk- and non-risk-adjusted mortality. With regards to mortality, the IQI indicator set covers esophageal and pancreatic resection, abdominal aortic aneurysm repair, CABG surgery, PCI, carotid endarterectomy procedures, AMI, heart failure, acute stroke, gastrointestinal hemorrhage, hip fracture, and pneumonia. The PSI indicator set includes 26 provider-level complication indicators, which are partially risk-adjusted and only cover complications treated in the same hospital as the initial care episode. Hospital-level PSI indicators cover areas such as pressure ulcer, bloodstream infections, sepsis, postoperative hip fracture, perioperative hemorrhage, postoperative deep vein thrombosis, and birth and obstetric traumas. About 75% of AHRQ provider-level indicators measure outcomes.

The Joint Commission annually collects quality information from its 3,300 member hospitals. The 2015 manual included 73 active indicators, with 56 process indicators in areas like surgical and emergency department care and 15 risk-adjusted outcome indicators from the Centers for Medicare & Medicaid Services (CMS) mortality and readmission measures.²⁸

While most registries are regional and/or voluntary, the United States does have a few national mandatory registries. The Centers for Disease Control and Prevention (CDC) runs a mandatory national registry for assisted reproductive technology (ART) procedures. The Society of Thoracic Surgeons (STS) National Database collects voluntarily submitted quality process and outcome metrics for CABG, isolated aortic valve replacement, combined aortic valve replacement, and CABG at the surgeon and hospital level. It covers 90% of all adult cardiac surgery centers in the United States. New York's PCI and CABG registries collect data on

PCI and CABG procedures, including readmission rates, mortality rates, 40 patient risk factors, hospital and physician information, and patients' discharge status. With this data, the New York State Department of Health calculates risk-adjusted 30-day readmission and mortality rates. For CABG, similar statewide registry initiatives exist in Massachusetts, New Jersey, Pennsylvania, and California.

Furthermore, the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) is a standardized, national survey instrument for collecting PREMs. A total of 32 questions are administered to a random sample of adult patients across medical conditions and address aspects of patients' hospital stay, such as pain management, overall hospital rating, and hospital recommendation.

Table 1 (left column) summarizes the quality measurement results for each country; Figure 1 illustrates each country's scope of quality measurement vis-à-vis indicator types employed and underlying data source.

Reporting Quality

Internal reporting provides performance feedback to hospital clinicians and administrators. Public reporting through provider websites or benchmarking portals allows patients and admitting physicians to assess specific hospitals for certain procedures. It also facilitates benchmarking and best-practice sharing among providers. But clinicians often resist public reporting as they doubt the accuracy and comprehensiveness of risk-adjustment methodologies, citing possible negative welfare effects such as patient selection and up-coding.²⁹ Yet, public reporting can refocus provider competition away from pure volume to a more patient-centric model that includes quality of care.⁴ Some countries provide public access to reports (eg, in PDF format) that list the performance of different regions or hospitals along selected quality indicators. More generally, public reporting is often implemented via internet portals that allow specific hospital searches and at times benchmarking. The latest consumer information technology trends also include applications (eg, consumer reports, mobile apps) to make access to publicly available information more intuitive and faster. While most countries today have some public reporting, the information provided, the ability to benchmark hospitals, ease of use, and public and clinical acceptance levels differ widely.

Table 1. Summary Results Table for Measuring, Reporting, and Rewarding Quality^a

	Measuring Quality	Reporting Quality	Rewarding Quality
England	➤ 41 mandatory clinical audits, registries (Quality Accounts)	➤ NHS Choices/MyNHS as main benchmarking portal	➤ CQUIN with quality penalties at 2.5% of DRG payments
	➤ Volume, process, outcome, and PROMs indicators collected	➤ Composite measures reported at trust level, not at hospital, medical condition levels	➤ Best practice tariffs tie reimbursement to process quality
	➤ Data at hospital trust and physician levels	➤ Quality Accounts on hospital websites	➤ QRPs largely based on process performance
	➤ National Patient Experience Survey reports PREMs	➤ Private Dr Foster's Hospital Guide reports mortality rates	
Germany	➤ Mandatory report cards with structural and >350 process/outcome indicators for 30 conditions	➤ Main portal WeLi.de with condition- and hospital-based benchmarking	➤ Bundled payment pilots for integrated care contracts
	➤ National private payer and provider initiatives	➤ ~275 indicators published, with 70% outcome/15% risk-adjusted	➤ Small scale, selective contracting pilots by regional payers link to quality
	➤ PEQ patient experience survey reports PREMs	➤ AOK portal reporting QSR measures/selected registry participation	➤ Large scale, national bonus-malus payments planned for 2018
	➤ Postdischarge period included in AOK QSR indicators	➤ Providers generally oppose public benchmarking	

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Table 1. *Continued*

	Measuring Quality	Reporting Quality	Rewarding Quality
Netherlands	➤ National Health Care Institute collects structural, process, outcomes measures in 42 diagnosis groups	➤ Durrch Hospital Data and Durrch Institute for Clinical Auditing (registries) report primarily internally	➤ Durrch DBCs with some outpatient components and with selective contracting and free price negotiation
	➤ HSMRs centrally calculated for 50 diagnosis groups	➤ 2 online portals provide public provider-level information by disease/procedure, but benchmarking restricted	➤ Bundled payment pilots in chronic diseases (eg, COPD, diabetes)
	➤ 18 registries collect diagnosis-specific metrics		
	➤ Partly mandatory > 100 national quality registers	➤ Registries with some public reporting of hospital-level data	➤ Stockholm region with orthopedics bundles including bonus-malus payments
Sweden	➤ National mortality registry records mortality & causes	➤ Annual quality report focused on regions	➤ National SVEUS QRP initiative spreading QRP know-how to other regions
	➤ Volume, process, outcomes, PROMs collected	➤ Web Guide to Care expanding public reporting; hospital benchmarking not possible yet	
	➤ Government professionalizing registries		

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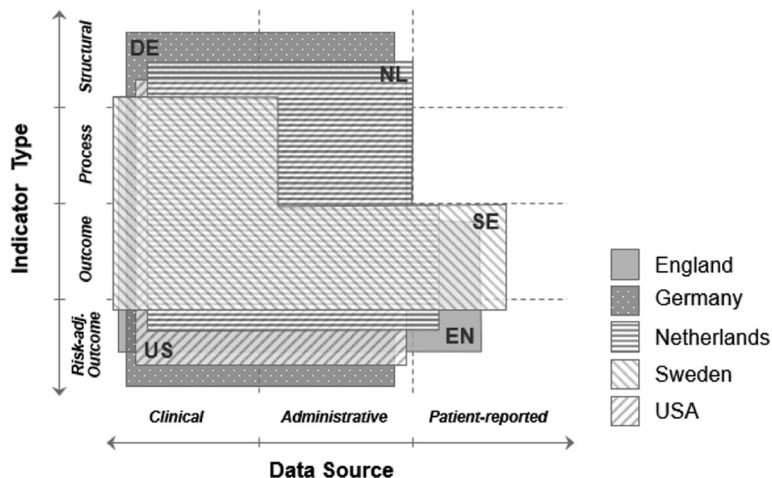
Table 1. Continued

	Measuring Quality	Reporting Quality	Rewarding Quality
United States	➤ All-stakeholder National Quality Forum endorses most measures	➤ Hospital Compare reporting AHRQ indicators and PREM hospital star ratings	➤ Several Medicare QRP (HVBP, HRRP, HACRP), partly outcomes-based
	➤ AHRQ IQI and PSI based on administrative data	➤ Joint Commission Quality Check and Leapfrog Hospital Safety Score allow online benchmarking	➤ BPCI initiative introducing bundled payments in existing FFS models
	➤ Joint Commission with own quality measures		➤ Private providers and payers with much innovation in bundled payment and capitation programs
	➤ Few national registries	➤ <i>US News</i> , Healthgrades, Consumer Reports provide benchmarking	
	➤ Much local, regional, and private innovation		
	➤ HCAHPS patient experience survey for PREMs		

Abbreviations: AOK, Allgemeine Ortskrankenkassen (general sickness funds); AHRQ, Agency for Healthcare Research and Quality; BPCI, Bundled Payments for Care Improvement; COPD, chronic obstructive pulmonary disease; CQUIN, Commissioning for Quality and Innovation; DRG, diagnosis-related group; DBC, diagnosis treatment combination; FFS, fee for service; HACRP, Hospital-Acquired Condition Reduction Program; HCAHPS, Hospital Consumer Assessment of Healthcare Providers and Systems; HRRP, Hospital Readmission Reduction Program; HSMR, hospital standardized mortality ratios; HVBP, Hospital Value-Based Purchasing; IQI, inpatient quality indicator; NHS, National Health Service; PEQ, patient experience questionnaire; PREM, patient-reported experience measures; PROM, patient-reported outcome measure; PSI, patient safety indicators; QRP, quality-related payment; QSR, Qualitätssicherung mit Routinedaten; SVEUS, a Swedish value-based health care knowledge development and sharing project; WeLi.de, Weisse Liste.de.

^aData from author analysis of research and expert interviews for each of the 5 countries.

Figure 1. Two-dimensional Overview for the Dimension Measuring Quality, Showing Which Type of Quality Indicators Are Collected and Which Data Type Is Used for Indicator Calculation



Source: Authors' analysis based on country research and expert interviews.

England. The English health care quality reporting system has expanded substantially and shifted from private, internal reporting to public reporting due to the open data policies between 2007 and 2010. Launched in 2007, NHS Choices integrates all NHS online services. For quality of care, the internet portal enables benchmarking of hospital trusts along a variety of indicators and by geography and service area. Similarly, MyNHS integrates publicly available data for patients to monitor their clinical commissioning group and NHS trust. However, relevant quality indicators are overall composite measure based and not condition based (eg, risk-adjusted hospital mortality rate for the NHS Trust, recommendations by own staff, and ratings of patient safety events). Trust benchmarking is possible, but only for the composite measures and not at the medical condition level. PREMs from the National Inpatient Experience Survey and Care Quality Commission inspection results are also reported on NHS Choices. Several other more focused NHS-affiliated websites report hospital quality information online. For

example, Public Health England publishes spreadsheets on infection rates for all English trusts. In addition, the HQIP Quality Accounts are published online on a hospital's website.

Beyond NHS Choices, Dr Foster Intelligence publishes SHMI rates as well as its own standardized mortality rate HSMR, which captures in-patient mortality only. The Dr Foster Hospital Guide allows searches by NHS trust and downloads of league tables. Further, the portal includes benchmarking information on the quality of weekend care and commissioning care results for general practitioner groups. The latest report was published in 2013. HSCIC provides a public portal comparing PROMs for hip and knee replacement and groin hernia and varicose vein treatment. The hip and knee data is also published through a web portal run by the NJR, which allows hospital-specific searches and displays general volume information and clinical indicators such as 90-day, risk-adjusted mortality and revision rates, and PROMs. In general, several highly publicized reports (eg, the Francis report) of investigations into failings at NHS trusts³⁰ and strong political commitments to transparency³¹ have strengthened support for public reporting of hospital quality.

Germany. The Weisse Liste.de (WeLi) portal, based on a public mandate, provides access to the searchable and more user-friendly hospital report cards from the national G-BA quality monitoring system. PEQ PREM results are also integrated in the WeLi benchmarking tool. Based on medical and geographical information, users can benchmark hospitals on structural data and quality indicators at a medical condition level. Out of 351 indicators, only around 233 indicators are published (2016/2017), with 30% being process, 55% simple outcome, and 15% risk-adjusted outcome indicators. Moreover, all major sickness funds run individual transparency portals, such as the TK Klinikführer (hospital guide), or adapted versions of the WeLi portal. All sickness fund portals publish data from the mandatory quality assurance system, with the AOK portal supplemented by QSR results for 8 conditions and selected registry hospital participation information.

4QD provides a web-based, public benchmarking portal for its member hospitals for 30 conditions based on the public quality assurance scheme and other conditions with indicators based on administrative data. 4QD lists a composite quality score that comprises subscores for medical quality, patient safety, patient experience, admitting physician satisfaction, and ethical concerns. In contrast, IQM only requires its

member hospitals to publish their standardized IQM report cards on their individual websites.

Similar to the *US News & World Report* Best Hospitals rankings, the Focus Klinikliste reports rankings of hospitals for 15 medical indications and departments, including breast and colorectal cancer, cardiology, and orthopedics. Rankings are based mainly on reputation and volume and not on outcome data, and they are available only in magazine or in PDF format. Skepticism toward public reporting within the clinical community⁵ is still rather high, but political pressure and nonprofit activism³² in favor of public reporting and its integration into care pathways are increasing.

The Netherlands. Based on a public mandate, the IGZ monitors hospital quality and investigates complaints and accidents, alerting providers of identified shortcomings in their quality and provision of care. IGZ compiles hospital-level annual reports for all hospitals and reports these back privately. The website, ziekenhuizentransparant.nl (“transparent hospital”), operated by the DHD, publishes IGZ quality indicators; however, no hospital benchmarking is possible. Both DHD and DICA provide hospital internal-quality monitoring. DICA further aims to make its PROMs accessible to patients via a public DICA patient portal. Each hospital is also mandated to publish condition-based HSMR rates on its own website. In contrast, some disease-specific initiatives provide more thorough and consolidated public access to quality results. For example, Meetbaar Beter publishes an annual report providing mortality, readmission, reoperation, chest pain, and quality-of-life metrics for heart conditions—including coronary artery disease, atrial fibrillation, and aortic valve disease—at the hospital level.

Hosted by the National Health Care Institute, KiesBeter.nl (“choose better”) is one of two transparency portals. On a voluntary basis, hospitals submit IGZ and registry data, CQI, and their own quality and patient experience information. An aggregated individual provider report card is generated, which includes data on case volumes, number of wound infections, number of hospital-acquired infections, and mortality rates. Likewise, NVZ administers a website called nvz-kwaliteitsvenster.nl (“quality window”) that enables patients to review hospital quality along 10 dimensions across 114 hospitals and rehabilitation centers. Dimensions include patient experience, employee satisfaction, hospital infections, and the HSMR. The portal shows only the global HSMR, but provides a link for detailed HSMR reports by condition on respective

provider homepages. The NVZ portal offers a breadth of information; however, actual quality information by condition and direct provider benchmarking is limited.

Sweden. No mandatory national initiative exists in Sweden, but registers have increased public reporting of provider-level quality indicators in past years. For example, since 2008, SWEDEHEART has published annual reports providing hospital-level process and outcomes data. Many of the register reports, however, are targeted at researchers and expert clinicians, with information that is difficult for patients to process and data that are often not consistently provided at the hospital level, but instead at the regional level. Socialstyrelsen publishes an annual report entitled “Quality and Efficiency in Swedish Health Care” to make public health care more transparent and accountable. The report primarily showcases comparisons of Swedish regions, but hospital comparisons are also presented. In the 2012 report, 169 different quality and efficiency indicators across treatment areas were presented, of which 50 are also shown at the hospital level.³³

The Vårdguiden (“guide to care”) website publishes quality and access information at the provider level, but no quality indicator benchmarking is provided. The web portals Vardenisiffror.se (“care in numbers”) and Omvard.se (“about care”) also publish quality information, but the information is limited to mortality and complication rates at the regional level and patient experience results, respectively. While public and clinical support for public reporting is strong,³⁴ limited availability of risk-adjusted outcome indicators makes benchmarking of different hospitals more difficult than it is in other countries.

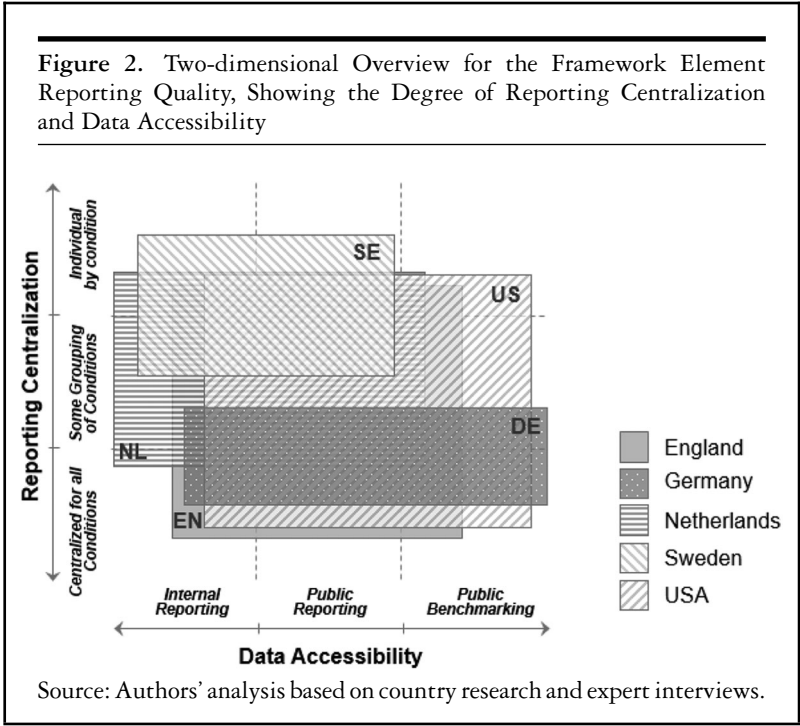
United States. The web portal Hospital Compare reports AHRQ indicator-based complication, readmission, and mortality rates for all 3,500 Medicare-certified acute care hospitals based on Medicare patient data. It also provides mandatory hospital-level patient survey data and structural information. Hospitals are benchmarked along the above criteria, with some verbal statements of whether a hospital is above, at, or below the national average. Further details, such as numeric rates and patient volumes, can be found by looking deeper into the data. In 2015, CMS for the first time published Hospital Compare Star Ratings based on patient experience as measured by the HCAHPS survey. For example, CMS awarded the top 5-star rating to 251 (7%) of the 3,500 hospitals assessed.

US News compiles the Best Hospitals national and regional rankings for 17 overarching medical specialties such as cancer, cardiology and heart surgery, gastroenterology, gynecology, and orthopedics. Among others, criteria include specialists' reputation over a 3-year period, 30-day risk-adjusted survival rates, 7 dimensions of patient safety, patient volume, and nursing intensity. All dimensions are aggregated in an overall ranking score. Further, the *US News* website allows a geographic search and report card-based benchmarking of hospitals. Healthgrades and Consumer Reports provide subscriber-based access to hospital report cards with composite indicators on mortality, complication, safety, infections, readmission, and adverse surgery events.

The Joint Commission Quality Check allows patients and physicians to search hospitals based on geographic information and accreditation and certification program, but not by medical condition. The portal lists different accredited and certified service lines and Joint Commission quality awards and gives access to accreditation and certification reports. Users can also download Joint Commission quality indicators in Excel format for all certified hospitals. The Leapfrog Group, based on its Hospital Survey results, assigns a Hospital Safety Score to more than 2,500 US hospitals annually. The score aggregates 28 publicly available, primarily process indicators.

Registries publish their results on single-condition, registry-specific websites or in annual reports. The CDC publishes annual ART Success Rates reports and allows specific clinic searches. The regional New York State and other state CABG and PCI registries and departments of health publish annual reports (in PDF format) based on the provider-level report card results. In contrast, the STS provides primarily private reporting to its member hospitals, with a voluntary online public reporting option. In addition, the STS teamed up with Consumer Reports to publish voluntary heart surgery report cards, including overall performance, survival, and complications. Public and professional attitudes toward public reporting are mixed, with health consumers and employers demanding hospital quality information and benchmarking to inform their provider choice, but there is continued provider skepticism.³⁵⁻³⁷

Table 1 (middle column) summarizes the quality reporting results and Figure 2 illustrates the different reporting strategies, with regards to degree of reporting centralization and data accessibility.



Rewarding Quality

Measuring and reporting quality provides the basis for the introduction of QRPs, also termed pay-for-performance (P4P) or value-based payments (VBP). QRP programs generally reward providers for superior quality or penalize them for inferior quality. QRP programs can be implemented at a national or regional level and take mandatory or voluntary forms. They can comprise the entire reimbursement package (eg, bundled payments) or a share of reimbursement and base performance on structural, process, or outcome indicators.^{38,39} They can focus on a single medical condition or aim to improve inpatient quality of care more broadly across conditions.⁴⁰ The QRP timing can range from immediate payment reduction to reduction only after continued, multiyear subpar performance or continued indirect financial pressure through bundled payments.

Different QRP models can play different roles depending on type of medical condition and procedure. Chronic diseases are more likely to see capitation payments with focus on outpatient care, possibly with bonus-malus payments for avoidance of hospitalization. In contrast, acute care consists of more discrete interventions and is thus more fitting for bundled payments or bonus-malus payments, which reward providers with a bonus per patient if quality performance is above average or meets predefined thresholds. If complications, readmissions, and outpatient care are covered in the bundled payment, providers also have financial incentives to coordinate care, improve outcomes, and avoid underprovision of care.⁴¹ Furthermore, bundled payments are sometimes coupled with a bonus-malus component or close monitoring of quality standards to avoid negative effects on quality. Based on differences in measuring and reporting quality and varied degrees of P4P acceptance, the examined countries show a wide variation in scope and type of QRP application.

England. NHS England has implemented several QRPs, both in hospital care and in ambulatory general practitioner care (not discussed here). CQUIN allows NHS health commissioners to hold back 2.5% of the hospital payments contingent on quality; one-fifth is assessed according to 4 national metrics, with four-fifths assessed according to locally defined metrics. At the national level, CQUIN's clinical focus is on sepsis reduction, antimicrobial resistance, and medical care for the mentally ill. Indicators are mostly process indicators. Local measures focus primarily on overarching or population health areas and indicators, such as mental health or reduction in inappropriate emergency department visits and transfers.

Best practice tariffs (BPTs) pay hospitals higher-than-average fees for certain high-volume medical conditions depending on process quality achieved. Introduced in 2010, BPTs cover stroke, fragility hip fracture, cataract, knee fracture, interventional radiology, and day-case cholecystectomy. Each BPT consists of a base payment and a premium if predefined, condition-specific best practices are met. For example, for stroke care, the 2 process criteria are treatment in a stroke unit and immediate brain imaging. Participation in the BPT program is voluntary for hospitals, but clinicians often prefer BPT to CQUIN due to its clarity and standardization.⁴² Early analysis of BPT-associated quality indicates mixed results. For example, process and outcome indicators improved for hip fracture, but no improvements were seen in the more complex treatment of stroke patients.⁴³

Lastly, the voluntary program Advancing Quality in Northwest England provides incentives for process improvement in the care of 13 conditions—such as heart attack, dementia, and diabetes—to reduce mortality and hospital cost. Up to 4% of the hospital budget is withheld and only paid out if certain process goals are achieved.^{40,44}

Germany. QRP components are present today in a few local integrated care and selective contracting programs. In Germany's integrated care pilots, sickness funds pay a cross-sectoral group of providers (eg, one or more hospitals, one or more specialists or general practitioners in the ambulatory sector, and/or a rehabilitation provider) a fixed fee per patient. The integrated care models have been primarily applied for chronic diseases and in 2011 included 6,400 contracts, 1.9 million patients, and €1.4 billion in reimbursements.⁴⁵ Also, AOK Hessen's stroke integrated care contract includes bonus-malus payments depending on 30-day mortality or 1-year readmission rates. In addition, AOK Hessen's selective hip and knee implantation contracts, for example, require baseline standards on QSR quality indicators.

More broadly, recent hospital legislation stipulates that from 2018 onward, hospitals will receive bonuses or penalties depending on their performance above or below national averages on newly developed quality indicators. Likewise, quality will be integrated as a key dimension in sickness funds, inpatient medical services, annual contracting, and state hospital capacity planning processes, with the potential to exclude hospitals from medical service lines or to close hospitals if quality performance is continuously substandard.⁴⁶

The Netherlands. QRPs in the Netherlands are in their infancy. The Dutch DRG system—diagnosis treatment combinations (DBC)—covers inpatient care, with some minor components of outpatient care and some aspects of a bundled payment. After a significant reduction, the DBC system today consists of 4,400 multidisciplinary DBCs.⁴⁷ Health insurers are free to selectively contract with providers. For 70% of DBCs, they can negotiate prices. While competition is still mainly price-based, quality is increasingly taken into consideration.⁴⁸

Bundled payments were introduced in 2010 for chronic disease areas, including diabetes, COPD, and vascular risk management.⁴⁹ A principal contracting agent, most often a general practitioner within a larger care group, provides the medical care in-house or subcontracts with provider partners, which include hospitals for the needed inpatient care. The principal agent has responsibility for care organization, delivery, and

quality. Prices for the care group bundles are freely negotiated between care group leaders and insurers. Likewise, capitation payment pilots have been introduced in treatment of Parkinson's disease.

Sweden. In Sweden, QRPs are focused on bundled payments, which also have a bonus-malus aspect. In 2009, the Stockholm County Council (SCC) introduced payment bundles for cataract surgery and hip and knee replacements. The hip and knee OrthoChoice bundles cover treatment steps, diagnostics, surgery with postoperative care, implant, and follow-up checks. They include only patients from the lowest risk categories without comorbidities (ASA 1 and 2). Providers are responsible for nonacute complications of up to 5 years after surgery. A total of 3% of the €6,300 fee is paid depending on achievement of predefined outcome quality goals (eg, patient pain assessments). Patients are free to choose providers based on quality information provided on the SCC website.⁵⁰ Initial results have shown a positive effect for both outcomes and cost within the OrthoChoice program. Complication rates fell by almost 40% over the 2 years after OrthoChoice introduction and per-patient costs were reduced by 17% due to lower payments to providers.⁵¹ At the same time, SCC analysis based on data from the national case-costing database also indicates that, between 2008 and 2011, cost per procedure for hip and knee replacements for SCC acute-care hospitals increased by 19% due to higher fixed costs per procedure. New, private operators perform the less complicated procedures while acute hospitals provide care for the more complex procedures.⁵²

Based on the OrthoChoice experience, Stockholm County introduced additional, more advanced bundles. The spine bundle, for example, covers the entire care chain, payments are risk- and outcome-adjusted, and the provider covers cost of complications up to 2 years after treatment.⁵³ Other Swedish counties, guided by the joint value-based health care knowledge development and sharing project SVEUS, have introduced or are planning to introduce QRPs (eg, Skåne County in cataract and bypass surgery).

United States. Out of the 5 health systems examined, the United States has the most comprehensive QRP programs. On the one hand, Medicare has initiated large value-based payment programs including bonus-malus payments for good and bad quality and bundled payment elements. On the other hand, many large integrated-care delivery systems, compelled through the accountable care organization stipulations of the Affordable Care Act, introduced bundled payment programs

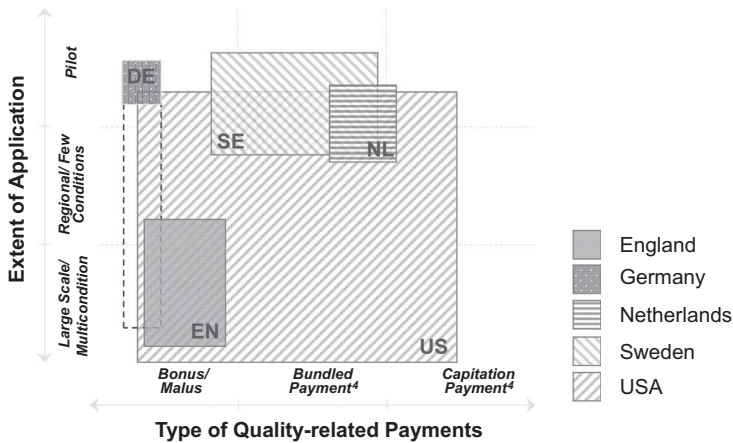
or, in conjunction with their own health insurance plan, introduced population-based, capitated payment programs.

Medicare pays for value primarily through 3 programs, the Hospital Value-Based Purchasing (HVBP) program, the Hospital Readmission Reduction Program (HRRP), and the Hospital-Acquired Condition Reduction Program (HACRP). In fiscal year 2015-2016, the HVBP program adjusted 1.75% of Medicare DRG payments, or about \$1.6 billion, according to whether hospitals performed below or above national average.^{54,55} The HRRP reduces all condition-specific DRG payments for AMI, heart failure, pneumonia, COPD, and total hip and knee arthroplasty by an amount determined by the condition-specific, risk-adjusted, 30-day readmission rate. If the hospital performs in line with or better than expected based on its patient population, no penalty payment is deducted. The HACRP adjusts payments according to a hospital's performance with regards to hospital-acquired infections based on the AHRQ PSI #90 Composite Indicator. At the end of 2015, CMS also started to publish the HACRP indicators on Hospital Compare, linking its quality reporting and QRP components.⁵⁶ While all these measures are applied to a broad number of hospitals and a large number of patient cases, the actual value at risk for inferior performance is marginal.

In 2012, CMS commenced the Bundled Payments for Care Improvement (BPCI) initiative, which includes 4 new bundled payment models that each cover different elements of the care cycle. The most advanced bundled care model includes the acute period plus 30-day readmission for 48 pilot conditions. A BPCI assessment is difficult due to the short time horizon since implementation and the small number of participating hospitals. Some early results indicate spending reduction for postacute care, signaling a possible alignment of incentives across different providers, but inpatient episode spending between BPCI hospitals and non-BPCI hospitals remained equivalent.⁵⁷

QRP innovation by large, private provider organizations is substantial. Geisinger Health System introduced a bundled payment model for elective coronary artery bypass graft surgery, which included pre-operative, hospital, and postoperative care and resulted in significant savings for the health plan and increased profitability for Geisinger.⁵⁸ Likewise, several providers—including Cleveland Clinic, Mayo Clinic, and Virginia Mason—have engaged in bundled payment contracts with larger US employers, such as Boeing, Wal-Mart, and Lowes, for complex, elective care such as cardiac surgery.⁵⁹

Figure 3. Two-dimensional Overview for the Framework Element Rewarding Quality, Showing the Extent of QRP Application and the Type of QRPs Employed



Source: Authors' analysis based on country research and expert interviews.

Accountable care organization agreements between insurers and providers, where providers care for certain patient populations within a shared risk payment model, have become more prevalent, with the Medicare Shared Savings Program the most widespread. Key characteristics are bonus payment for providers if cost objectives are met, quality indicators determining size of bonus payments, and free provider choice for patients.⁶⁰ Likewise, the Alternative Quality Contract between Blue Cross Blue Shield of Massachusetts and 11 provider groups includes global, capitated payments per patient and a time period to providers and P4P premiums if quality targets are met. The explicit control of and incentives for quality, with up to 10% of the total monthly member payment tied to quality goals, address some of the historic concern with global payment models.⁶¹

Table 1 (right column) summarizes the rewarding quality results; Figure 3 illustrates which type of QRPs have been employed and their degree of application.

Discussion

This section summarizes results across countries and identifies similarities, differences, and unique features of country strategies for quality measurement, public reporting, and quality-related payments. Based on country results and observation of best practices and commonly faced challenges, 5 general policy levers to enhance quality accountability were identified. These are illustrated with examples from the examined countries.

Measuring Quality

Approaches in quality measurement exhibit the most similarities across countries. The countries examined in this study use an overlapping set of structural, process, and outcome measures. Germany and the Netherlands cover the widest set of structural indicators, including physician staff levels and medical equipment. All countries measure case volume metrics, the structural indicator with the strongest link to quality,⁶² with each debating the trade-offs between clinical and administrative data, since more detailed clinical data enable t-discharge events in data coverage, as a way to reduce the burden of measurement on providers. National governments play an essential role, mandating some quality measurement in all countries.

Yet differences in measurements have emerged. Quality indicators commonly cover only the inpatient hospital stay, but QSR indicators in Germany and the SHMI in England cover periods of 30 days or a longer time frame post-discharge. While PROMs are increasingly being collected in England, Sweden, and the Netherlands, this occurs only in a very limited fashion in Germany and the United States. Other unique features to country approaches are noteworthy: Germany has the most comprehensive set of risk-adjusted outcome indicators, based on both clinical and administrative data, while Sweden and England benefit from unique patient IDs that allow patient data integration across regions and systems. Sweden is also the only country with a comprehensive registry infrastructure.

Reporting Quality

While quality reporting varies across countries, substantial overlap exists. Each country publishes at least some hospital-level quality

information; however, analysts and patient groups have expressed some concern about differing results for hospitals across initiatives and the quality of data representation.⁶ Some countries have web portals that allow comprehensive benchmarking of hospitals across a spectrum of quality indicators and treatment areas (eg, Germany and the United States); others are more hesitant on public hospital-level benchmarking (eg, the Netherlands and Sweden). Composite quality measures are also used differently across countries. England and the United States, for example, often focus on these while Germany, the Netherlands, and Sweden use fewer composite measures. Centralization and representations of reporting vary across countries. In Germany, one portal centrally reports data from mandatory measuring initiatives while in Sweden and the Netherlands reporting is diffused across registry platforms or annual reports. Due to the fragmented US health care system, several quality reporting (as well as measurement) initiatives have been introduced in parallel on national, state, or regional levels, covering public and/or private insurance programs and suffering from a lack of alignment. With Dr Foster Intelligence, England attempts to improve the visual representation of data for patients. At the same time, England has a multitude of different reporting systems (eg, NHS Choices and MyNHS) due to its open data policy; however, the plethora of platforms and information download options can potentially confuse patients. Importantly, physician and provider support for public reporting is strongest in Sweden.

Rewarding Quality

For the 5 study countries, QRP strategies exhibit the greatest diversity. Similarities are limited to an awareness of QRP relevance and pilots for selected medical conditions. But countries differ in their reliance on process and/or outcomes measures. Process measures are primarily used, but indicator application differs across scope and type of QRPs employed. The United States introduced outcome measures into selected QRP programs; England still relies exclusively on process measures. Further, countries focus on different QRP elements. Sweden, for example, emphasizes bundled payments, while England employs large-scale bonus-malus payments, but has not implemented bundled payments. The United States focuses equally on bonus-malus and bundled payments. Germany operates integrated-care bundle pilots and

plans to introduce a large-scale bonus-malus system by the end of 2018. The United States has the most advanced and comprehensive strategy vis-à-vis number of QRP elements employed, breadth of medical condition coverage, and financial impact on providers. Indeed, the United States is creating a market for quality information, where measurement, reporting, and quality improvements result in higher payments for providers. In response, private hospital chains (eg, Cleveland Clinic and Geisinger) are producing innovative measurement, reporting, and QRP approaches.

This assessment reveals diverse progress levels and policy approaches concerning hospital quality accountability and its 3 critical components: measurement, reporting, and incentivization of quality. Gathering distinct quality accountability approaches within a systematic framework facilitates international comparisons and allows the identification of general cross-country policy points. Countries less advanced in some aspects of quality accountability can adopt policies and best-practice approaches that have been found to be successful in other countries. Furthermore, the international discourse on quality of care measurement, reporting, and incentivization^{7,16,40,63} provides the latest insights and the backdrop on which the country results are assessed and more general policy lessons are developed.

Policy Levers

Based on the observed best practices and challenges and the widespread international debate around these issues, we can glean 5 policy levers that enhance breadth, depth, and value of quality accountability systems internationally. They are as follows:

1. Government support and standard setting for quality accountability
2. Balancing system centralization and decentralization
3. Provider involvement and support for quality accountability
4. Focusing on outcome indicators over process indicators
5. Quality reporting at hospital and disease levels

Government Support and Standard Setting for Quality Accountability. Health care is a public good. Combined with the complexity of health care markets in general and market inefficiencies in quality of care in

particular, governments must assume responsibility for promoting quality accountability and implementing the necessary measures for its fulfillment. Similarly, health systems struggle under the diverging interests of multiple stakeholders, and governments should facilitate interest convergence on quality accountability and quality improvement objectives.⁴

In the United States, for example, the Affordable Care Act substantially accelerated the shift toward quality accountability, compelling CMS and AHRQ to develop condition-specific, patient-relevant, and provider-level indicators and requiring CMS to expand its QRP systems to create the first-ever market for quality information. With the Medicare and Medicaid programs, CMS has both strong bargaining power and a standard-setting role as the largest single payer of hospitals' annual budgets in the country. In the Netherlands, quality accountability is a political priority for the government, which named 2015 "The Year of Transparency for Dutch Health Care." Significant resources have been invested to develop and implement quality indicators for provider-level measurement of quality.⁶⁴ Based on consensus among health care stakeholders, the Netherlands Transparency Calendar delineates a mandatory phase-in of provider-level quality indicators across conditions. In Sweden, the previous central government assumed an important role in consolidating a quality accountability system. The national and regional governments have provided registers and other system elements with significant financial support, direction, and standardization pressure.²⁷

Of all government quality accountability tasks, mandating and facilitating an integrated health system IT infrastructure and common information standards are particularly important. Virtually all aspects of health care delivery and payment is information intensive.⁴ Collecting, transferring, reporting, and assessing quality data across the entire health care system places a large burden on health IT infrastructure and human resources, and it requires hardware and software interoperability and common standards for indicators, data usage and storage, and algorithms.

In the United States, the Health Information Technology for Economic and Clinical Health Act's incentive program has led to a substantial increase in electronic health record (EHR) adoption. In 2014, 75% of hospitals had an EHR system implemented, with almost 50% being comprehensive EHR systems.⁶⁵ While system interoperability between different providers is still challenging, widespread adoption of EHR systems has substantially facilitated electronic documentation and sharing of quality data.

In all 5 countries, government mandates, incentives, and standards have led to more quality accountability and spurred private sector initiatives. Government policy plays a central role in increasing quality accountability by setting software, information, and data system standards and by regulating and incentivizing public reporting and quality reimbursement. The degree of governmental standard setting varies across countries and even within a country's different quality accountability initiatives and health system components. However, the evidence shows that thorough, comparable, and lasting quality accountability requires a more comprehensive and potent government standard-setting role.

Balancing System Centralization and Decentralization. Health systems have substantially different degrees of centralization when it comes to quality accountability and factors such as decision making, technical infrastructure, and information standards. A more centralized approach facilitates national comparability and increases scope for provider quality competition and best-practice adoption. A less centralized, pluralistic approach allows more innovation and adoption at the local level and facilitates support from local providers.

A comparison between US and English quality accountability systems revealed the trade-offs between centralization and decentralization.⁶⁶ The United States has a multitude of local, regional, national, private, and public quality accountability systems that are often not integrated and have limited comparability. In England, in contrast, the NHS and associated regulatory agencies have substantial mandatory power and endow statutory powers to the HSCIC to ensure IT system integration and data comparability across the entire NHS system. Similarly, centralization of management structures in the US Veterans Health Administration was identified as one of the key enabling factors to quality improvement since the mid-1990s, especially in contrast to the more decentralized Medicare system.⁶⁷

Quality measurement and reporting are currently undertaken by a range of organizations in each country. These organizations can focus on specific medical conditions or procedures such as registries or cover multiple medical conditions. A condition-based system provides specific insights for particular medical and patient requirements in different conditions and procedures; however, it also creates information silos and does not allow direct benchmarking of providers across diseases and procedures. Having numerous parallel initiatives that cover multiple or

all conditions and procedures, such as the mandatory quality assurance system and the QSR initiative in Germany or Hospital Compare and the Joint Commission Quality Check in the United States, generates system competition and associated positive effects including system innovation, checks and balances, and more responsiveness. At the same time, this may lead to contradictory results for the same hospital and condition,^{6,68} which conflicts with patients', physicians', and regulators' interest in one accepted information source. Moreover, having multiple, overlapping public reporting outlets, such as NHS Choices, MyNHS, registry websites, and data.gov.uk, creates a reporting plethora of sources that can be hard for patients to navigate.

Balancing the advantages of a consolidated and streamlined quality accountability system with the innovative power and checks and balances associated with a more decentralized system are crucial to establishing an accountability system that generates maximum transparency for patients, providers, and payers and consistently improves its quality measuring, reporting, and rewarding strategies.

Provider Involvement in and Support for Quality Accountability. Quality accountability benefits immensely from provider support and involvement.⁴ Providers can use quality data to improve their services by identifying and implementing best practices. Physicians can explain reported data to their patients and can encourage them to use quality indicators to inform their health consumer decisions⁷; recent evidence showed that patients often require not just quality data but also advice and interpretation to make sense of the data.⁶⁹ Hospital management can institutionalize quality accountability by providing appropriate incentives and governance structures in their organizations.

Private provider groups—such as Helios Group in Germany or Cleveland Clinic, Partners Healthcare, and Geisinger in the United States—have started to emphasize quality accountability as a key business objective. Helios pursued a quality-focused expansion strategy in which they stressed the benefits of their quality measurement and reporting system for newly acquired hospitals and their patients.⁷⁰ The Helios strategy weakened the more quality accountability-skeptical position of the German Hospital Federation.

In Sweden, registers have mostly been founded by clinicians and remain independent and run by medical experts. A large majority of medical department heads support quality registers and are interested in expanding scope and usage.³⁴ Similarly, clinicians credit quality

accountability with a positive influence on outcomes and have been in favor of expanding the range of indicators and treatment areas covered in public reports. Thus, physician support for quality accountability has facilitated growth and a more central role of quality registers in Swedish health care provision.

While the benefits from provider involvement are clear, in practice providers are often still hesitant about quality accountability. Physicians often claim that quality cannot be compared across providers and, further, that competition on quality is not in line with the traditional, collaborative mind-set of medicine.^{4,5} As such, medical societies often constrain enhanced quality measurement and reporting. In 2013 and 2014, for example, German hospitals and regional hospital federations sued the AOK sickness fund to stop public reporting of QSR indicators. Providers criticized the lack of methodological clarity. The German provider initiatives IQM and 4QD recently combined under one umbrella organization, with one of its aims to oppose public hospital quality benchmarking portals.

Similarly, a recent survey of US hospital leaders' opinions on quality accountability showed a high degree of opposition, stating major concerns about validity and utility of quality measures and problems associated with public reporting.³⁶ A recent survey of US quality improvement experts also indicated provider opposition to public reporting as a major obstacle for quality accountability.³⁷ Physicians often exhibit a high degree of skepticism with regard to reliability and accuracy of measuring techniques and insufficient recognition of patients' rights to access and use quality performance data. Furthermore, the American Medical Association in June 2015 called for a slower timetable on introduction of HVBP schemes.

The aforementioned country examples demonstrate both the problem of continued provider opposition to and the power of provider endorsement of quality accountability. Getting providers and physicians to support and endorse quality accountability is a crucial step in encouraging patients to include publicly available quality benchmarks in their treatment decisions and provider choice and to focus competition among providers on quality.

Focusing on Outcome Indicators Over Process Indicators. As the results section demonstrates, in most countries, measuring, reporting, and rewarding quality still focuses on process indicators rather than on outcomes. While adherence to treatment protocols can contribute to positive

outcomes, outcomes achieved by following the same protocol may still differ substantially⁴ due to factors outside the protocol. Care may be exceptional in most process parts, but overall disastrously inadequate due to a vital error in one part.⁷¹ The scientific evidence for the positive relationship of process indicators to health outcomes is limited.⁷² In contrast, outcome indicators are of more intrinsic interest since they measure endpoints that directly matter to patients and providers, such as complication, reoperation, or mortality rates, or self-reported effects on mobility and pain levels. Outcome indicators, however, require sophisticated risk adjustment to ensure fair comparison between hospitals treating different patients and to avoid patient selection by providers.

Despite the relevance of outcome indicators and advances in risk adjustment, comprehensive reporting of risk-adjusted outcomes is scarce. The US health care system is heavily focused on process and patient experience measures. From the approximately 450 AHRQ, AMA, and Joint Commission indicators reviewed, more than 80% are process measures. Likewise, more than 80% of the 1,958 measures in the broader National Quality Measures Clearinghouse are process or patient experience measures and only 7% are actual outcome indicators.⁷³ The consensus-driven approval process of the NQF puts a premium on process measures favored by providers,⁴ in part because process comparability between hospitals is more easily achieved.

The 2015 introduction of star ratings on Hospital Compare is based only on HCAHPS (patient experience survey) results and not, for example, on AHRQ outcome indicators. In 2015, the Joint Commission suspended the collection of outcome indicators in several conditions and relaxed its outcome reporting requirements.²⁸ Moreover, the *US News* Best Hospitals rankings are almost entirely based on reputation and not, as stated, on a mix of indicators including outcomes.⁷⁴

Similarly, the Dutch quality accountability system focuses on structural and process indicators. The Court of Audits has criticized Dutch quality indicators, developed through the *Zichtbare Zorg* program, for their lack of meaningful, “practical value.”⁶⁴ Similarly problematic, Swedish registers have so far developed only few risk-adjusted outcome indicators, which are important for direct and fair provider-level benchmarks. In England, QRP systems CQUIN and BPT are exclusively focused on process measures.

While process measures and patient experience measures are often easier to agree upon in a consensus-based model, success in health

care delivery should be measured in better patient results and not compliance with predefined process standards or best amenities. Health outcomes are the ultimate validators of quality of hospital care.⁷¹

Quality Reporting at Hospital and Disease Levels. With regards to breadth, quality data can be reported at the regional, hospital group or trust, individual hospital, or physician level. With regards to depth, reporting can aggregate all diseases and/or procedures in a hospital, group diseases or procedures (eg, cardiovascular), report individual medical conditions or procedures (eg, CABG), or report outcomes for individual physicians.

Quality reporting needs to be meaningful and actionable for patients, admitting physicians, and treating physicians. *Meaningful* implies differentiation between diseases and procedures with different complications and risk profiles. *Actionable* implies an ability to differentiate between the relevant care units so patients and physicians can choose the best providers at the disease or medical department level, and so providers can assess their own performance relative to national and competitor benchmarks. Composite measures aggregate individual quality indicators into summary measures and might provide an ostensibly clearer picture of overall performance. However, they also average out performance across departments, reduce visibility for patients mostly interested in a single procedure, and assume a weighting of underlying indicators, which conflicts with the many different preferences across patients⁷⁵ and admitting physicians.

Furthermore, the reporting level needs to take into account statistical constraints of indicators, mainly the risk-adjustment capability and the need for large case volumes. Both are better served at the hospital as opposed to the physician level. Quality measures need to be comparable between hospitals to ensure an apples-to-apples comparison. This implies risk adjustment, but also demands standardized and validated indicators and data inputs.

In England, many of the indicators collected and reported indicate quality at the hospital trust level. While most trusts are composed of only one large hospital, trust consolidation is grouping hospitals together. Thus, trust-level reporting averages different hospital-level quality and obscures outcomes at the relevant hospital unit of analysis. NHS England is also facing sectionalism among NHS trusts and Clinical Commissioning Groups, which often compose and report their own local quality indicators on top of national ones.

While the current Swedish outcome accountability system facilitates regional health system competition around outcomes, reporting of outcomes at a hospital level occurs only in isolated circumstances. This limits both hospital-level competition on outcomes and patients' ability to source hospital quality information in an effortless and standardized fashion. The relevant level of quality-of-care competition is not the county, but the provider level.

Balancing the need for meaningful indicators against the statistical and reporting requirements of sound indicators is best achieved at the hospital level for diseases and procedures. Quality performance has to be displayed at the relevant unit of production, which is the disease area or procedure within a hospital.

Conclusion

This study shows that measuring, reporting, and rewarding quality has evolved substantially. It also identifies considerable differences and varied progress levels in the quality accountability strategies of the countries examined. Each country pursues its own policies, often leading to increased efforts and costs, uncertainty, and worse policy outcomes than would happen with more cross-country comparison and learning.

Today's quality accountability systems help to identify substantial quality variation between health providers and across medical conditions. However, they are often insufficient to truly facilitate provider competition around quality. They report quality not at the hospital but at a more aggregated level, focus only on few conditions, and often use process indicators that are less meaningful to patients. Furthermore, due to provider resistance, easily accessible hospital quality benchmarking is not always available. Advancing the 5 aforementioned policy levers will help to facilitate more comprehensive quality accountability and quality competition among providers.

This article aims to enhance best-practice learning and data comparability across countries. Similar objectives are pursued by international institutions like the Organisation for Economic Co-operation and Development (OECD) and the International Consortium for Health Outcomes Measurement (ICHOM). Through the Health Care Quality Indicators project, the OECD measures and compares the quality of service provision at a system level across countries and fosters a

harmonization of outcomes data across member states. The OECD strives to stimulate cross-national learning, in particular with regards to the effects of certain health system factors on quality of care.⁷⁶ ICHOM develops international outcome indicators across medical conditions to facilitate best-practice identification and adoption across geographies.⁷⁷ Research institutes such as the Commonwealth Fund, the Rand Corporation, or the European Observatory on Health Systems and Policies support evidence-based health policymaking through comprehensive analysis and comparison of health system dynamics across countries.

By learning from strategies and experiences in other countries, health care stakeholders can apply best practices and avoid others' mistakes. The government takes a central role in establishing standards and incentives for quality accountability and health IT system integration. The benefits and costs of centralization and decentralization need to be balanced to ensure both national comparability and continued innovation. Health systems need to shift toward quality measuring, reporting, and rewarding based more on outcomes and less on process measures. Providers need to become proponents of quality accountability, especially within their organizations and to their patients. Quality measurement and reporting should focus on the hospital and disease or procedure level to enable meaningful and actionable choices for patients. Operating these policy levers can enhance quality accountability within each of the 5 examined countries and facilitate integration, comparability, and best-practice sharing among countries to achieve higher performing health systems.

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Appendices

Table A1. List of Experts Interviewed by Country (Name, Position, and Institution)

Country	Name	Position	Institution
US	David Himmelstein	Professor	CUNY School of Public Health at Hunter College
US	Tom Rice	Distinguished professor	Department of Health Policy and Management, University of California Los Angeles
US	Kevin Boziac	Chair of surgery & perioperative care	Dell Medical School, University of Texas at Austin
US	Caleb Stowell	VP of standardization and business development and partnerships	International Consortium for Health Outcomes Measurement (ICHOM)
US	Natasha Taylor	Principal	The Boston Consulting Group (BCG)
US	Neil Shah	Attending physician	University Medical Center Brackenridge
EN	Irini Papanicolas	Assistant professor	LSE Health, London School of Economics
EN	Vaeena Raleigh	Senior fellow policy	The King's Fund
EN	Roger Taylor	Strategy director, co-founder	Dr Foster
EN	Thomas Kelley	VP of business development and partnerships, EMEA	ICHOM
EN	Mark Ferreira	Medical director	Alliance Medical
NL	Johan van Manen	Senior policy adviser	Dutch Health Authority
NL	Evout van Ginneken	Senior researcher	European Observatory on Health Systems and Policies, Berlin University of Technology

Continued

Table A1. *Continued*

Country	Name	Position	Institution
NL	Pieter de Bey	Principal	BCG
NL	Lisa Haverkorn	Researcher	Dutch Institute for Clinical Auditing
SE	Lisbeth Serdén	Project manager	Swedish National Board of Health and Welfare
SE	Birgitta Lindelius	Researcher	Swedish National Board of Health and Welfare
SE	Anna Dörvan	Researcher	Swedish National Board of Health and Welfare
SE	Hanna Sjöberg	Program director	Swedish Agency for Health and Care Services Analysis
SE	Charlotta Gyland	Activity controller	Skane University Hospital
SE	Gabriel Osterdahl	Senior knowledge expert	BCG
DE	Jens Deerberg-Wittram	Executive director	BCG

Abbreviations: DE, Germany; EN, England; NL, the Netherlands; SE, Sweden; US, United States.

Table A2. List of Abbreviations

AMI	Acute myocardial infarction
CABG	Coronary artery bypass graft
COPD	Chronic obstructive pulmonary disease
DRG	Diagnosis-related group
EQ-5D	EuroQol five dimensions questionnaire
ICHOM	International Consortium for Health Outcomes Measurement
QRP	Quality-related payment
PCI	Percutaneous coronary intervention
PREM	Patient-reported experience measures
PROM	Patient-reported outcome measure
England	
BPT	Best practice tariff
CQUIN	Commissioning for Quality and Innovation
HQIP	Healthcare Quality Improvement Partnership
HSCIC	Health and Social Care Information Centre
NJR	National Joint Registry
SHMI	Summary Hospital-level Mortality Indicator
Germany	
AOK	General Health Insurance (Allgemeine Ortskrankenkassen)
G-BA	Federal Joint Committee (Gemeinsamer Bundesausschuss)
IQM	Initiative Qualitätsmedizin
IQTIG	Institute for Quality and Transparency in Health Care
QSR	Qualitätssicherung mit Routinedaten
PEQ	Patient experience questionnaire
4QD	Qualitätskliniken.de
WeLi	Weisse Liste.de
Netherlands	
CQI	Consumer Quality Index
DBC	Diagnosis Treatment Combination
DICA	Dutch Institute for Clinical Auditing
DHD	Dutch Hospital Data foundation
HSMR	Hospital standardized mortality ratio
IGZ	Health Care Inspectorate
NVZ	Dutch Hospital Association

Continued

Table A2. *Continued*

NZa	Dutch Healthcare Authority
Sweden	
SCC	Stockholm County Council
SVEUS	Swedish national collaboration for value-based reimbursement and monitoring of health care
SWEDEHEART	Swedish Web-system for Enhancement and Development of Evidence-based care in Heart disease Evaluated According to Recommended Therapies
SWEDVASC	National Vascular Surgery Register
United States	
ACA	Patient Protection and Affordable Care Act
ACO	Accountable Care Organization
AHRQ	Agency for Healthcare Research and Quality
AMA	American Medical Association
ART	Assisted reproductive technology
BPCI	Bundled Payment for Care Improvement
CDC	Centers for Disease Control and Prevention
CMS	Centers for Medicare & Medicaid Services
EHR	Electronic Health Record
HACRP	Hospital-Acquired Condition Reduction Program
HCAHPS	Hospital Consumer Assessment of Healthcare Providers and Systems survey
HRRP	Hospital Readmission Reduction Program
HVBP	Hospital Value-Based Purchasing
IQI	Inpatient quality indicator
NQF	National Quality Forum
PSI	Patient safety indicator
STS	Society for Thoracic Surgeons