

THE NATIONAL QUALITY FORUM

MEASUREMENT FRAMEWORK: EVALUATING EFFICIENCY ACROSS EPISODES OF CARE

EXECUTIVE SUMMARY

In this report a Committee convened under the auspices of the National Quality Forum's *Priority Setting Pilot Project* presents its proposed measurement framework for evaluating efficiency across episodes of care. This framework is intended to provide guidance to help key stakeholder groups move forward along a path towards a high performing health care system that is patient-centered, focused on quality, mindful of costs, and intolerant of waste.

In developing its framework, the Committee first sought to establish a common vocabulary around efficiency measurement so as to better align existing and future efforts. Box 1 presents the definitions adopted by the Committee drawing from the prior work of the AQA.

Box 1

- *Cost of care* is a measurement construct characterizing the resources used to deliver a service or set of services.
- *Quality of care* is a measurement construct of pure benefit. It is as the Institute of Medicine has recommended multidimensional and is characterized by care that is safe, timely, effective, efficient, equitable, and patient-centered.
- *Efficiency of care* is a measurement construct of cost of care or resource utilization associated with a specified level of quality of care.

AQA Principles of Efficiency Measures

<http://www.aqaalliance.org/files/PrinciplesofEfficiencyMeasurementApril2006.doc>

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1 In order to guide its work, the Committee took an explicit stance on the purpose of the
2 health care delivery system – *to improve health, reduce the burden of illness, and*
3 *maximize the value of individual and societal resources allocated to health care* – which
4 is fundamentally rooted in the needs of the patient, and more broadly, society. An
5 effective measurement framework should contribute to that purpose by supporting
6 judgments about the degree to which the health care delivery system and all of its
7 component parts contribute to achieving this purpose.

8
9 The Committee concluded, based on this clarity of purpose and the definitions above,
10 that improving the efficiency of care will require the ability to evaluate the outcomes
11 and cost of care holistically and longitudinally over extended time periods. As a result,
12 the Committee found the theoretical construct of an episode of care a useful approach to
13 characterizing performance.¹ Importantly, sizable gains in the efficiency of care, as
14 defined by the Committee, cannot be achieved by an individual physician, a hospital, or
15 other type of provider acting in isolation. As such, the framework for evaluating
16 efficiency is intentionally structured to aggregate care across sites and providers, as well
17 as over time, so as to promote a shared accountability for a patient’s care.

18
19 Since efficiency measurement is multidimensional – encompassing quality and costs – a
20 comprehensive set of measures is needed to adequately portray performance. Therefore,

¹ An episode of care is defined as: *a series of temporally contiguous health care services related to the treatment of a given spell of illness or provided in response to a specific request by the patient or other relevant entity.* Source: 1985. Hornbrook et al. Health Care Episodes: Definition, Measurement and Use. *Medical Care Review*. Vol. 42; No.2: pp.163-218.

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1 the Committee recommends assessment in the following three major domains in the
2 context of an episode of care:

- 3 ▪ *Health outcomes important to patients*– a set of metrics which capture both clinical
4 outcomes (i.e., morbidity and mortality) and other outcomes that are relevant to
5 patients (i.e., functional status and health related quality of life).
- 6 ▪ *Processes of care* – a set of metrics that describe the extent to which the care
7 rendered during that episode conforms to evidence-based processes and was
8 aligned with the needs and preferences of the patient. Process measures should
9 be strongly linked to desired outcomes and be as parsimonious as possible to
10 minimize collection burden on providers. Other important processes captured
11 within this domain include engaging patients proactively in shared decision-
12 making and retroactively evaluating their experiences with care.
- 13 ▪ *Cost and resource use* – a set of metrics which capture the total costs of care across
14 the episode including both the quantity of services provided to patients and the
15 true costs paid for each service. Ideally, this includes all costs including the time
16 cost to patients and lost productivity.

17

18 The Committee also laid out a generic model (see Figure 1) for tracking a patient with a
19 health problem and the core components or “phases” that must be measured and
20 evaluated over the course of an episode of care including: (1) population at risk, (2)
21 evaluation and initial management, and (3) follow-up care. These three components of
22 an episode of care are considered foundational to any assessment of efficiency
23 regardless of type of the health problem presented – whether acute, chronic or a

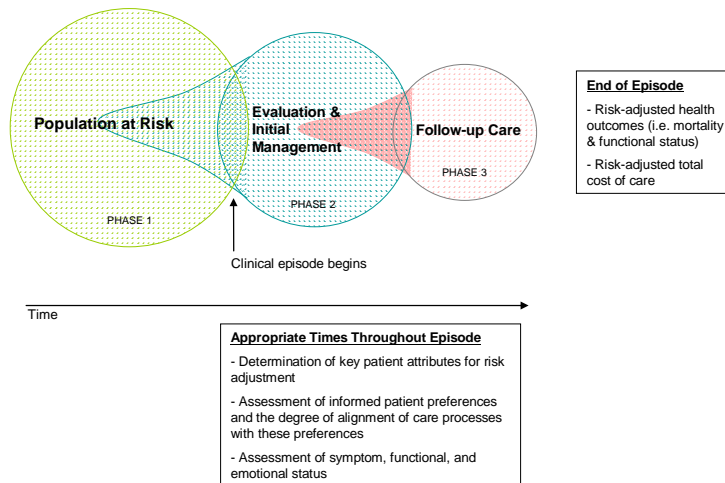
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1 combination thereof. This model is adaptable to multiple types of episodes and
2 provides a foundation for working out base case scenarios. It incorporates the
3 measurement domains discussed above that are essential for evaluating the efficiency of
4 care, while recognizing that judgments of value require an understanding of patient
5 preferences. The Committee applied this model to two chronic conditions: acute
6 myocardial infarction and low back pain.

7

8 **Figure 1**

Generic Episode of Care



9

10

11 The path forward towards implementation of the framework will require efforts to
12 integrate or coordinate local providers and their data, and will necessitate the
13 development of practical approaches to support the collaborative and integrative work
14 required to improve care across episodes that span multiple providers and diverse care

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1 settings. Achieving this goal will require establishing an organizational context for the
2 work. The Committee believes that this is likely to require fostering shared
3 accountability through the development of accountable care entities with the capacity
4 not only to support measurement but also to respond to findings and improve care.

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1 INTRODUCTION AND OVERVIEW

2 Problem Statement

3 The average American will not be able to afford health care if expenditures continue to
4 grow at their current pace. In a recent survey of US adults, 50% of middle- and lower-
5 income families reported serious problems paying for their care and an equal number
6 are worried about the affordability of care for themselves and their families in the near
7 future.² US per capita spending on health care is more than double that of other
8 industrialized nations but the US ranks poorly compared to other countries on key
9 indicators of the quality of medical care and the health status of the population.³ For
10 example, in a comparative study of the US and five other industrialized nations, the US
11 ranked last in safe care and had the highest infant mortality rates.⁴ In light of these
12 findings, it is not surprising that 42% percent of adults report experiencing inefficient
13 care, poorly coordinated care, or unsafe care in the past 2 years.⁵

14
15 Clearly, Americans deserve better value for their health care dollars. Yet inefficiency and
16 waste are pervasive in US health care. In the US, for example, patients were more likely
17 to be sent for duplicate tests or not have their medical records available at the time of
18 their doctor visit than among other nations studied. And the US spends more on
19 administrative functions related to insurance (i.e., billing) than other countries – 7.3% of

² C. Schoen, S. K. H. How, I. Weinbaum, J. E. Craig, Jr., and K. Davis, Public Views on Shaping the Future of the U.S. Health System, The Commonwealth Fund, August 2006.

³K. Davis, C. Schoen, S. C. Schoenbaum, M. M. Doty, A. L. Holmgren, J. L. Kriss, and K. K. Shea, Mirror, Mirror on the Wall: An International Update on the Comparative Performance of American Health Care, The Commonwealth Fund, May 2007.

⁴ Comparison group: Australia, Canada, Germany, New Zealand, and the United Kingdom

⁵ Ibid footnote 2

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1 national expenditures on health – and if the US were in-line with other countries who
2 have mixed private-public insurance systems it is estimated that \$32-46 billion dollars a
3 year could be potentially saved.⁶ Furthermore, widespread variation in spending is
4 observed across the country – unrelated (or inversely related) to the quality of care. For
5 example, Medicare beneficiaries in higher-spending regions of the country do not
6 experience better quality of care than those in lower-spending regions – indeed in some
7 cases it was worse – nor did they have better health outcomes or were they more
8 satisfied with their care. Differences in spending appear to be due to differences in
9 physician practice patterns that are driven in part by the greater per-capita supply of
10 hospitals and specialists: patients in higher spending regions are much more likely to be
11 treated on an inpatient basis and by multiple different specialists compared to similar
12 patients in lower spending regions – and they receive more tests, imaging services and
13 minor procedures.⁷

14

15 Although serious problems plague our current health care system, there are several
16 important reasons to be optimistic about the potential for improving performance.
17 Performance measurement is widely accepted as essential to improvement (by
18 facilitating provider selection and motivating providers to improve), and substantial
19 recent progress has been made in the development of reliable measures and their wide
20 scale implementation. Promising examples exist across the country where organizations
21 are making significant headway in improving the quality of care in conjunction with the

⁶ Ibid footnote 3

⁷ 2004. Fisher, E.S. et., al. Variations in the Longitudinal Efficiency of Academic Medical Centers. *Health Affairs*. Web Exclusive October 7, 2004. <http://www.healthaffairs.org>

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1 goal of controlling costs. As the examples in Box 1 and Box 2 (see back of document)
2 illustrate, opportunities exist to improve the quality of care, rid waste from our health
3 care system, and control costs. Finally, there is a growing recognition that the potential
4 savings from reducing waste and improving efficiency are substantial – with perhaps
5 30% of U.S. health care spending devoted to discretionary services that provide no
6 benefits to health.⁸

7

8 Barriers to Transformation

9 Although progress has been made, serious barriers to achieving major improvements in
10 quality and the cost of care remain. A sizable amount of resources and energy are
11 currently being invested in the development of performance measures by many
12 organizations including: accreditation organizations, medical specialty and subspecialty
13 societies, government organizations, and proprietary organizations. Although
14 significant gains in measurement have been made over the past 20 years, current efforts
15 are poorly coordinated, often fail to focus on high leverage areas that have the greatest
16 potential to produce the gains in health outcomes and control costs, and are thus
17 unlikely to lead to fundamental change in the delivery system.⁹ Notwithstanding the
18 examples featured in the case studies presented in Boxes 1 and 2, widespread adoption
19 and diffusion of best practices such as these have been slow to occur. We must accelerate
20 improvement by:

⁸ 2003. Fisher, E.S., et. al. The Implications of Regional Variations in Medicare Spending Part 1: The Content, Quality and Accessibility of Care. *Annals of Internal Medicine*. Vol.138; No.4:pp.273-287. & The Implications of Regional Variations in Medicare Spending Part 2: pp.288-299.

⁹ 2006. IOM. *Performance Measurement: Accelerating Improvement*. Washington, DC: National Academies Press. <http://www.nap.edu>

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- 1 ▪ Creating a roadmap for improvement that includes priorities and performance
2 improvement goals to unify and build upon existing efforts, and set a more
3 deliberate course of action for the nation;
- 4 ▪ Crafting clear definitions and a shared vision of what can be achieved around
5 quality, costs, and value;
- 6 ▪ Developing a workable and effective framework for evaluating the efficiency of
7 care over time that promotes better care coordination and a sense of shared
8 accountability among the multiple providers involved in a patient’s care;
- 9 ▪ Developing performance measures, and efficient data collection and reporting
10 strategies that will bring insights to our effort to improve key areas such as
11 enhancing care coordination, aligning care with patients’ preferences, or
12 controlling the cost of care; and
- 13 ▪ Creating an integrated national, regional, and local leadership model that will
14 guide and enable efforts to drive care improvement.

15

16 NQF PRIORITY SETTING PILOT PROJECT AND THE COMMITTEE’S CHARGE

17 In an effort to address the barriers described above, the National Quality Forum (NQF)
18 has embarked upon a *Priority Setting Pilot Project* and established a multi-stakeholder
19 Steering Committee (See Appendix A) whose principal objectives are to:

20

- 21 ▪ Develop a measurement framework to assess efficiency over extended episodes
22 of care. The framework will include a statement of purpose; clear definitions for
23 key constructs; a discrete set of domains for which to focus performance

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- 1 measurement efforts; and guiding principles for implementation of a
2 comprehensive measurement and monitoring system;
- 3 ■ Establish for at least two conditions a set of national goals and priorities, and
4 where possible, corresponding NQF endorsed measure sets that can be used by
5 multiple stakeholders; and
 - 6 ■ Provide specific guidance on a research agenda addressing important measures
7 that are in need of development and to evaluate models of shared accountability.

8

9 Although this project initially targets two chronic conditions – acute myocardial
10 infarction and low back pain – it is intended to serve as the beginning of an ongoing
11 platform to establish national priorities and goals that will focus performance
12 measurement, public reporting, pay-for-performance, and accountability efforts on high
13 leverage areas likely to yield the greatest gains in terms of improved health. The
14 Committee’s approach was to select two very different types of conditions and to
15 develop a framework that would work for both, thus making it more likely to be
16 generalizable. It is expected that this effort will move us towards better alignment of
17 measurement development and reporting activities with national priorities and goals,
18 address critical gaps in the quality measurement agenda, and to begin defining
19 comprehensive, longitudinal performance metrics that include patient-level outcomes,
20 resource use, and key processes of care. Further it is our desire to simplify the
21 measurement process so it is achievable and actionable to motivate and support each
22 provider and patient to realize the most efficient, high quality healthcare possible.

23

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1 FOCUS OF THIS REPORT AND FUTURE PUBLICATIONS IN THIS SERIES

2 In this report, the Committee presents its proposed measurement framework for
3 evaluating efficiency across episodes of care. The Committee views this framework as
4 providing guidance to help key stakeholders move forward along a path towards a high
5 performing health care system that is patient-centered, focused on quality, mindful of
6 costs, and intolerant of waste. In a subsequent report the Committee will lay out a
7 detailed implementation strategy for assessing efficiency across episodes of care using
8 two priority conditions—acute myocardial infarction and low back pain—as operational
9 examples.

10

11 MEASUREMENT FRAMEWORK

12 In the sections to follow, the Committee lays out its recommended measurement
13 framework. The first step is to define key terms, establishing a common understanding
14 as to what is meant by “efficiency” and related constructs (such as quality and cost). The
15 Committee then takes an explicit stance on the purpose of the health care delivery
16 system and the role that performance measurement should play in achieving that
17 purpose. The definitions and the clarity of purpose provide the logical foundation for
18 the Committee’s decision to emphasize the importance of focusing on health outcomes
19 and total costs over episodes of care as the conceptual framework for performance
20 measurement and improvement. And finally, the Committee presents its recommended
21 domains for performance measurement and a set of principles to guide future work.

22

23

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1 Key Terms and Definitions

2 The Committee recognized the importance of having a common vocabulary around
3 efficiency measurement and viewed this as a prerequisite for moving forward and
4 capitalizing on the many efforts already underway in the field. To this end, the
5 Committee looked to the work of the AQA which had already come to consensus on
6 straightforward definitions of key constructs inherent in measuring and evaluating
7 efficiency, and which gained approval from the AQA membership.¹⁰ The Committee
8 carefully considered the AQA work, agreed with their approach, and recommends that
9 the definitions in Box 3 (see back of document) be adopted so as to promote a common
10 understanding among the many stakeholders committed to this work, and to better
11 align existing and future undertakings in this area. Appendix B offers further discussion
12 of these terms and provides a “real life” example of to how they can be applied.

13

14 Purpose of the Health Care Delivery System and Supporting Role of the Performance 15 Measurement System

16 Ultimately, a measurement framework will be deemed successful to the degree that it
17 contributes to the success of the health care delivery system at achieving its purpose.
18 Drawing on earlier work by the Institute of Medicine (IOM) and others, the Committee
19 concluded that the purpose of the *health care delivery system* is rooted fundamentally in

¹⁰ AQA Principles of Efficiency Measures

<http://www.aqaalliance.org/files/PrinciplesofEfficiencyMeasurementApril2006.doc>

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1 the needs of the patient, and more broadly, society.¹¹ The purpose of the health care
2 delivery system is:

3 *To improve health, reduce the burden of illness, and maximize the value of*
4 *individual and societal resources allocated to health care.*

5 Accordingly, the measurement framework should support judgments about the degree
6 to which the health care delivery system and its component parts (i.e., providers, health
7 plans, payers, and government agencies) contribute to achieving this purpose. And
8 even more importantly, a *performance measurement system* should both motivate and
9 support continual improvement in the health care delivery system and its demonstrated
10 capacity to achieve the goal of improving health and reducing both the cost and burden
11 of illness.

12
13 The Committee recognizes that having a clear purpose will not eliminate disagreements
14 or the need to make difficult decisions. Different stakeholders, for example, will have
15 different perspectives on efficiency. From a patient's perspective being seen in a timely
16 manner for an appointment is a relevant barometer of efficiency, considering their
17 opportunity costs of running late (i.e., missed wages), whereas a provider may find it
18 more "efficient" to overbook patients to ensure that all appointments are filled in order
19 to sustain the practice. However, the Committee concluded that its work should
20 proceed primarily from the patient's perspective. This perspective may offer a clear
21 path forward towards redesigning payment and care models to reduce the burden of
22 illness (including the burden of wasted time) while eliminating waste (allowing

¹¹ 2001. IOM. *Crossing the Quality Chasm: A New Health System for the 21st Century*. Washington, DC: National Academy Press. <http://www.nap.edu>

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1 providers to allocate their time efficiently to those who truly need it) and maximizing
2 value. A more difficult set of issues surrounds decisions about how best to allocate
3 resources to the health care system itself (compared to other societal investments) and
4 among competing potential priorities within health care. In this case as well, however,
5 judgments and prioritization will be fairer and better aligned with the purpose of the
6 health care system to the extent that they can be based on reliable information about the
7 impact of different clinical interventions – and approaches to care delivery – on patients’
8 and populations’ health, their burden of illness, and the overall costs and value to
9 patients of the alternative approaches to providing care.¹²

10

11 Rationale for using episodes of care to characterize performance

12 A measurement framework that can inform stakeholders’ judgments of the degree to
13 which the delivery system is improving health and reducing the burden of illness, at an
14 appropriate level of investment, should parallel the natural trajectory of the clinical
15 conditions (injuries, diseases, and disabilities) to be assessed.¹³ Therefore, the
16 Committee found the theoretical construct of an episode of care a useful approach for
17 characterizing performance. Specifically, an episode of care is defined as:

¹²1996. Weinstein MC, Siegel JE, Gold MR, Kamlet MS, and Russell LB. Panel on Cost-Effectiveness in Health and Medicine. Recommendations of the panel on cost-effectiveness in health and medicine. *JAMA*; 276:1253-58.

¹³ 1967. Solon et al. Delineating Episodes of Medical Care. *American Journal of Public Health*. Vol. 57; No. 3: pp. 401-8.

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1 ...a series of temporally contiguous health care services related to the treatment of a given
2 spell of illness or provided in response to a specific request by the patient or other relevant
3 entity.¹⁴

4 Thus, the Committee concluded that an episode perspective is required in order to
5 determine if the delivery system is indeed achieving its intended purpose – as this
6 approach allows for care to be analyzed over time and offers a better assessment of the
7 patient’s resulting health status.

8

9 Types of Episodes of Care

10 Episodes of care can be acute in nature, such as a fractured arm (which has in general an
11 easily defined onset and a relatively predictable period of recovery); or more chronic in
12 their duration, like diabetes (where the onset is gradual, treatment requires ongoing
13 efforts, and the goal is to prevent disease progression and minimize complications over
14 a prolonged period of time). A single episode can also include both acute and chronic
15 care. In the case of heart attacks, for example, the initial management requires effective
16 coordination of acute care resources (i.e., emergency services, hospital emergency
17 rooms, multiple physicians, cardiac catheterization suites, and intensive care units), but
18 maximal recovery requires marshalling of post-acute care services (i.e., rehabilitation)
19 and the implementation of effective secondary prevention strategies (i.e., smoking
20 cessation counseling, lipid lowering medications) to help prevent further progression of
21 disease, and perhaps another heart attack in the future. These examples underscore the
22 importance of careful attention to the varying duration of different health care episodes.

¹⁴ 1985. Hornbrook et al. Health Care Episodes: Definition, Measurement and Use. *Medical Care Review*. Vol. 42; No.2: pp.163-218.

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1 Advantages of an episode of care approach

2 The Committee identified several advantages to using episodes of care for assessing
3 performance. First and foremost, this was viewed as a much more patient-centered way
4 of evaluating health system performance. The focus on episodes may therefore help to
5 address many of the gaps in our current performance measurement system identified by
6 the IOM and others.¹⁵ Because the natural trajectory of many episodes extends over
7 longer time periods (i.e., one-year) evaluation can provide insight into how effectively
8 services are coordinated across multiple settings, including during critical transition
9 points, such as the discharge from the hospital to the nursing home, where the evidence
10 shows errors and miscommunications are likely to occur.¹⁶ A longitudinal, episode-
11 based approach contrasts sharply with current approaches to performance assessment,
12 which usually focus on a specific setting or provider (i.e., hospital *or* nursing home) and
13 represents only a single point in time. A more longitudinal approach towards
14 measurement can help shift the focus away from individual provider's actions towards
15 focus on how providers can more effectively work together to improve the quality, costs,
16 and outcomes of care. The IOM called for measurement approaches that foster shared
17 accountability – where all members of the team are held accountable for high quality

¹⁵ The Institute of Medicine (IOM) report, *Performance Measurement Accelerating Improvement*, identified four areas where there are gaps in current performance measure sets: (1) limited scope of measurement, including few measures of patient-centered care, equity, and efficiency; (2) narrow time window, as most measures focus on a single point in time; (3) provider- centric focus, with existing measures centering around traditional silos of care (i.e., physician's office, hospitals); and (4) a narrow focus of accountability with emphasis placed on individual provider's actions. Source: 2006. IOM. *Performance Measurement: Accelerating Improvement*. National Academies Press. [http:// www.nap.edu](http://www.nap.edu)

¹⁶ 2006. Coleman, E. et.al. The Care Transition Intervention. *Archives of Internal Medicine*. Vol. 166: pp. 1822-1828.

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1 care and the “warranty” many are calling on the delivery system to provide to
2 patients.¹⁷

3
4 Second, the Committee saw episodes as a way to shift performance measurement
5 towards assessments that allow judgments to be made about *value*—by providing
6 measures of quality, cost of care, and outcomes that can only be interpreted in the light
7 of patients’ well-informed preferences. While they may serve as indicators of over-
8 utilization if appropriately benchmarked, traditional measures of resource use that
9 focus on the volume of services received by a defined population (i.e., physician office
10 visits, hospital admissions, and surgical procedures) provide an incomplete picture of
11 how medical services relate to one another, and provide no insight into the relationship
12 between the provision of services and the outcomes achieved once the decision to
13 provide a particular treatment has been made. Conversely, if the episode of care is the
14 unit of analysis, the entire set of interrelated services involved in the delivery of medical
15 care to treat a specific problem over time can be captured, *as well as* the results achieved
16 through the delivery of those services. Thus, focusing on episodes of care allows a more
17 direct assessment of the linkage between specific services provided (and their costs) and
18 the outcomes of those services.

19
20 Third, it was believed that episodes could foster and enable new strategies for financing
21 healthcare that could eliminate current incentives to overuse of certain services (i.e.,
22 imaging for low back pain) and underuse of others (i.e., preventive care such as

¹⁷ 2006. IOM. *Performance Measurement: Accelerating Improvement*. Washington, DC: National Academies Press. [http:// www.nap.edu](http://www.nap.edu)

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1 mammograms). An episode approach could also facilitate the development of alternate
2 payment models that would reward processes of care (i.e., patient self-management
3 support and medication reconciliation) which have been shown to contribute to better
4 patient outcomes.^{18 19}

5
6 And finally, at least in theory, an episode approach based on prolonged episodes (one
7 year or more) can provide more generalizable insights into the overall performance of
8 delivery systems. Patients with diabetes, heart attacks, cancer or other serious chronic
9 conditions will tend to experience other acute or chronic conditions during their period
10 of follow-up. Whether the outcomes and cost of care over time for different conditions
11 are highly correlated will thus be an important empirical question. If overall
12 performance on one condition predicts longitudinal performance on another, then a
13 measurement framework that focuses on important, high prevalence “tracer” conditions
14 could be generalized to provide meaningful comparisons across delivery systems,
15 communities and regions.

16

17 Limitations of an episode of care approach

18 Despite the advantages enumerated above, the Committee recognizes the limitations
19 associated with attempting to evaluate efficiency across episodes. These stem mainly
20 from the inability of existing commercial episode grouper methodologies to: (a) address

¹⁸2002. Bodenheimer, T. et. al. Patient Self-management of Chronic Disease in Primary Care. *JAMA*. 288: 2469-2475.

¹⁹2005. Coleman, EA. et.al. Posthospital Medication Discrepancies: Prevalence and Contributing Factors. *Archives of Internal Medicine*. Vol:165: pp.1842-1847.

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1 appropriateness of care; (b) adequately risk-adjust for different populations; (c) sort out
2 patients with multiple chronic conditions; and (d) facilitate comparisons among
3 organizations.

4

5 Determining the appropriateness of care is critical from two standpoints. First, it is
6 important to ensure that patients are receiving evidence-based interventions for which
7 they are eligible (even if it costs more). For example, screening for breast or colorectal
8 cancer may incur some early costs, while the potential benefits in regards to patient
9 outcomes (decreased mortality due to cancer) and cost savings (costs associated with
10 treating a chronic illness) are often not realized until years downstream. Conversely, it
11 would be wrong to label a provider as “efficient” if they deliver an intervention at low
12 cost and with good outcomes — *but the procedure should not have been performed in the first*
13 *place* — either because it was not clinically indicated, or even if clinically indicated, the
14 patient would not have chosen to receive it if fully informed of the risks and benefits
15 (based on their own values). An example of the latter would include many instances of
16 surgery for low back pain.

17

18 A recent analysis completed by MedPAC of two episode grouper tools provides a
19 related example of the challenges inherent in measuring efficiency with current
20 commercial measures. In the MedPAC study it was found that one region of the
21 country, Miami, appeared to be more “efficient” in terms of relative resource use per
22 episode for coronary artery disease (CAD) than Minneapolis.²⁰ However, upon further

²⁰ MedPAC June 2006 Report to Congress: Increasing the Value in Medicare

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1 investigation it was discovered that in Miami Medicare beneficiaries were diagnosed
2 and coded much more frequently than those in Minneapolis for CAD and other heart-
3 related episodes. Thus, Miami's costs for CAD alone appeared lower, as these
4 expenditures were spread across more episodes, thus pointing to perhaps over-
5 diagnosis or over-treatment in Miami contributing to making their providers look more
6 efficient. An important lesson from the examples above is that current episode groupers
7 can not distinguish the appropriateness of clinical services and patient preferences of
8 clinical services rendered, and as such efficiency measurement based purely on episodes
9 must somehow be balanced, possibly with population-based per capita resource use
10 measures.²¹ Another option would be to measure the number of episodes of a given
11 type per capita or to directly measure the degree to which care is aligned with well-
12 informed patients' values.

13

14 In closing two other limitations also deserve mention. One is that traditionally episodes
15 of care have been constructed on a condition-by condition basis; however in reality the
16 majority of patients have more than one chronic condition. Therefore, capturing quality
17 and cost of care for patients who have multiple chronic conditions with overlapping
18 episodes is a methodological challenge which still needs to be resolved. Another is that
19 although an episode-based measurement system is compelling for the reasons
20 enumerated earlier, such a strategy does not facilitate comparisons of relative efficiency
21 of one organization versus another – efficiencies that may indeed transcend diseases.

²¹ These types of population-based measures are currently used in the Dartmouth Atlas
<http://www.dartmouthatlas.org/>

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1 Thus, emphasizing the need for at least some institution specific or site-specific
2 measurement to support quality improvement and choice.

3

4 The discussion on limitations of an episode of care approach above clearly points to the
5 need for a comprehensive measurement system to be put in place that can not only
6 accurately and reliably assess the efficiency of care delivered but can also: monitor for
7 appropriateness of care; take into account patient preferences; address diverse
8 populations and those with multiple chronic conditions; and allow for meaningful
9 comparisons across organizations for quality improvement purposes and patient choice.

10 Indeed, one of the major obstacles to adopting an episode of care model is the
11 translation of theory into practice – as the Committee’s recommended approach
12 demands the ability to measure outcomes not only in the short-term (i.e., 30-day
13 mortality) but over extended intervals (i.e., initially at one year, and then 3-5 years and
14 beyond) which to date has yet to be successfully mastered. The Committee’s second
15 report will focus on an implementation strategy for moving towards a measurement
16 system that brings us closer to this ideal vision.

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1 Domains

2 The following domains represent the essential components and subcomponents for
3 measuring efficiency as it relates to an episode of care. All of these domains are
4 important, as there is a need for a complement of measures that pull providers together
5 across a full trajectory of a particular episode, which will vary. A focus on longitudinal
6 efficiency implies overall assessment of both quality and costs. Clear insights will
7 require measuring key components required by stakeholders so they can judge quality,
8 costs, and value.

9

10 In selecting the domains, the Committee strove for balance – hoping to ensure that they
11 were comprehensive enough to accurately and fairly evaluate performance both at the
12 system and provider level without imposing undue burden in regards to data collection.
13 Reflecting back to the original statement of purpose, it was also critical that the domains
14 capture patient-level outcomes and were capable of detecting unnecessary waste in the
15 system or exposing unjustifiable costs. Therefore, the Committee recommends three
16 overarching domains – *patient-level health outcomes, cost and resource use, and processes of*
17 *care* – for assessing efficiency, and ultimately value, across health care episodes.

18

19 Domain 1: Patient-level health outcomes

20 Drawing on the earlier work of Donabedian, the Committee recognizes the utility of
21 understanding measurement in terms of the classical structure-process-outcome triad.²²

22 They also acknowledge that our current repertoire of performance measures consists

²² 1980. Donabedian, A. Methods for deriving criteria for assessing the quality of medical care. *Medical Care Review*. Vol. 37; No. 7: pp. 653-698.

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1 predominately of process measures (i.e., administration of aspirin after AMI); far fewer
2 structural measures (i.e., nurse staffing levels); and only a sprinkling of outcome
3 measures (i.e., 30- day mortality for AMI). Nonetheless, the Committee advocates for
4 collecting and reporting patient-level health outcomes measures, and views doing so as
5 an essential component of any efficiency assessment – whether at the overall health care
6 system level or individual provider level. Hence, there is an urgent need for additional
7 outcome measures to be developed, tested, and more fully implemented. In the
8 meantime, the selection of existing structure/process measures for purposes of
9 accountability and quality improvement should be guided by an evidence base that
10 sufficiently links them to desirable patient outcomes and results in as parsimonious a set
11 of measures as possible to assure adequate breadth and high compliance.

12

13 *Health Status/ Health Related Quality of Life*

14 In addition to evaluating outcomes such as morbidity and mortality for a particular
15 condition or treatment intervention, other important constructs to be measured in this
16 domain include patient self-perception of: health status, functional status, and physical
17 and psychological health. These variables represent key dimensions of health related
18 quality of life (HRQoL), a more relevant and appropriate construct for chronically ill
19 populations because of its focus on aspects of individuals' overall well-being that are
20 affected by progressive changes in their health status and quality of health care. The
21 ability to cope with functional deficits and views about the meaning of their lives are
22 prominent among the factors that can significantly affect individuals' perceptions of
23 their health status and quality of their lives. Those perceptions also can be influenced by

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1 the quality of health services.^{23 24 25} HRQoL is consistent with the current emphasis on
2 “person centered care” (health care responsive to the person’s wants, needs and
3 preferences), a principle stressed in recent IOM reports on quality.²⁶ Data on the
4 multiple domains of HRQoL can inform decisions about the use of innovative clinical
5 practices or technologies for this population. Recent studies have demonstrated the
6 significance of HRQoL measures in selecting among alternative interventions and
7 guiding decision making when there is a real trade-off between length and quality of
8 life.²⁷ Many standardized survey instruments have been developed to measure these
9 dimensions of outcome.²⁸

10

11 Domain 2: Cost and Resource Use

12 The most important measure of resource use would be one that captures the total cost of
13 care across the episode – capturing both the quantity of services provided to patients
14 and the true costs paid for each service. Because prices paid for identical services can
15 vary across geographic areas and among payers, and since individual providers may not
16 have control over all prices, measures of overall resource use based on both the actual
17 prices paid and standardized prices are important. Other measures that can help

²³ Wilson, IB, and PD Cleary, *Linking clinical variables with health-related quality of life. A conceptual model of patient outcomes.* JAMA, 1995. 273(1):59-65.

²⁴ Kane, RA, et al. *Quality of life measures for nursing home residents.* J Gerontol A Biol Sci Med Sci, 2003. 58(3):240-8.

²⁵ Gold, M, et al. (Eds.) *Cost-Effectiveness in Health and Medicine.* 1996, Oxford University Press: New York.

²⁶ 2001. IOM. *Crossing the Quality Chasm: A New Health System for the 21st Century.* Washington, DC: National Academy Press. <http://www.nap.edu> and 2006. IOM. *Performance Measurement: Accelerating Improvement.* Washington, DC: National Academies Press. <http://www.nap.edu>

²⁷ Guyatt, GH, et al. *Measuring quality of life in the frail elderly.* J Clin Epidemiol, 1993. 46(12):1433-44.

²⁸For example, the RAND Medical Outcomes Trust 36- Item and 12-Item Short Form Health Survey (SF-36 and SF-12) <http://www.outcomes-trust.org/instruments.htm>

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1 provide insight into differences in resource use include the volume of services, such as
2 the quantity of physician visits and the number of hospital or nursing home days
3 provided to patients during the episode.

4
5 It is also important to consider opportunity costs to patients due to inefficiencies in the
6 health care system (i.e., time wasted waiting for an appointment) as well as out-of-
7 pocket costs for care. This highlights the importance of the next domain, processes of
8 care, which supports incorporating patient's experiences as an important determinant of
9 overall efficiency.

11 Domain 3: Processes of Care

12 This domain includes measures of process such as administration of an evidence-based
13 bundle of appropriate medications at admission and discharge for patients who have
14 had a heart attack. To minimize collection burden, process measures should be strongly
15 linked to desired intermediate and final outcomes.

16
17 Also within this domain is the important process of soliciting feedback from patients
18 both proactively and retroactively, for example, determining upfront whether or not a
19 patient took part in a shared-decision making process that was designed to assist them
20 in making an informed choice – aligned with their preferences and values – regarding
21 potential treatment options. Measuring decision quality become particularly relevant in
22 helping to determine the appropriateness of care, as discussed earlier, since many

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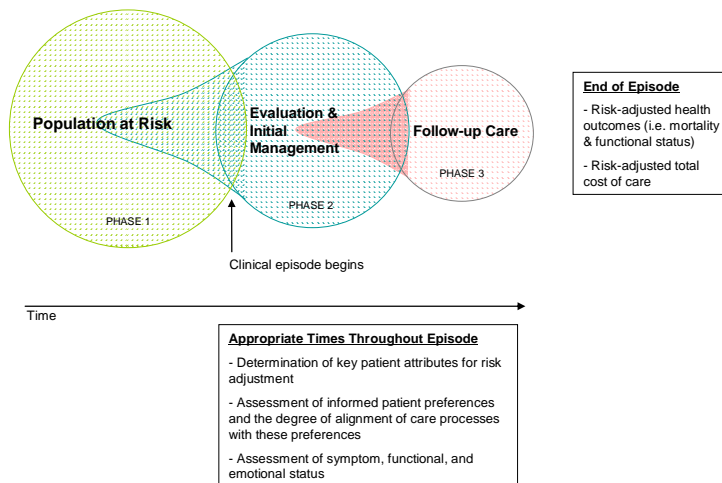
1 patients when given balanced information will choose not to have a given procedure or
2 diagnostic test, even if they meet eligibility and appropriateness requirements.²⁹
3 And on the back-end, follow-up from the episode patient-centered inquiry occurs to
4 gather feedback on their experiences with care. This can be done by administering a
5 survey tool such as the CAHPS family of instruments or others.³⁰

6

7 GENERIC EPISODE OF CARE

8 Figure 1

Generic Episode of Care



9

²⁹ 2007. Weinstein, J.N., Clay, K., & Morgan, T. Informed Patient Choice: Patient-Centered Valuing of Surgical Risks and Benefits. *Health Affairs*. Vol.26; No.3: 726-730.

³⁰ CAHPS domains include: access to care; coordination of care; doctor's communication and thoroughness; shared decision-making; health promotion and education; follow-up on test results; medical office staff; patient concerns about cost of care; and global rating of doctor. For additional information see website: <https://www.cahps.ahrq.gov/default.asp> Accessed 7/23/07

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1 In Figure 1 the Committee proposes a generic model for tracking a patient with a health
2 problem and the core components or “phases” that must be measured and evaluated
3 over the course of an episode of care. This model is adaptable to multiple types of
4 episodes and provides a foundation for working out base case scenarios. It incorporates
5 the measurement domains discussed above that are essential for evaluating the
6 efficiency of care, while recognizing that judgments of value require an understanding
7 of patient preferences – thus highlighting the importance of actively engaging patients in
8 their health care decisions. The Committee applies this model to two common
9 conditions – acute myocardial infarction and low back pain – in Appendices C and D
10 and will discuss implementation issues for both of these priority areas in their second
11 report.

12
13 At the same time, since a growing body of evidence alerts us to the potentially harmful
14 unintended consequences of measurement approaches that focus too narrowly on
15 guideline adherence for individuals with multiple chronic conditions^{31 32} the
16 Committee’s generic “episode” model should be viewed as the first stage of an
17 evolutionary strategy that is informed by the emerging evidence base. The complexity of
18 illness and the clustering of illnesses (i.e., a diabetic patient with heart disease, back
19 pain, and depression) will require over time a more sophisticated model which will
20 allow us to measure how well clinical services are aligned with patient needs,

³¹ 2004. Tinetti, M., et.al. Potential Pitfalls of Disease-Specific Guidelines for Patients with Multiple Chronic Conditions. *NEJM*. Vol. 351; No. 27 pp. 2870-2874.

³² 2005. Boyd, C., et.al. Clinical Practice Guidelines and Quality of Care for Older Patients with Multiple Co-Morbid Diseases. *JAMA*. Vol. 294; No.6: pp. 716-724.

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1 preferences and social supports. Hence the urgent need for a research agenda in order
2 to learn how to most effectively do so.

3

4 The generic model for evaluating the efficiency of care over time consists of three
5 phases: (1) population at risk, (2) evaluation and initial management, and (3) follow-up
6 care. These three components of an episode of care are considered foundational to any
7 assessment of efficiency regardless of type of the health problem presented – whether
8 acute, chronic, or a combination thereof.

9

10 Phase 1: Population at Risk

11 The Committee acknowledges that primary prevention of a health problem, both in a
12 generic sense for this model, and more specifically for an acute condition with long-term
13 chronic implications such as heart attack, is the most efficient approach to care – both
14 from the patient’s perspective and with respect to societal resources. Thus, the
15 Committee believes a strategy for evaluating health promotion and primary prevention
16 may require sampling another population other than those who have started in the
17 clinical phase of the episode of care.

18

19 Phase 2: Evaluation and Initial Management

20 This phase begins at the onset of clinical illness and should include an initial assessment
21 of an informed patient’s preferences in regards to available treatment options and if
22 warranted palliative care. Assessment of key evidence-based processes of care should
23 occur at appropriate times during this phase and a determination of how well aligned

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1 these processes are with patient's preferences. For some more complex episodes, it may
2 be informative to ascertain relevant measures such as quality of life, functional status,
3 morbidity/mortality, and patient experiences with care, and costs.

4 Phase 3: Follow-up Care

5 Measurement during this phase should focus on seamless care coordination, targeting
6 care transitions and medication reconciliation particularly during hand-offs across
7 different settings. Initiation of secondary prevention also figures prominently. Patient
8 preferences should continue to inform which processes of care are executed. Ongoing
9 evaluation of relevant patient outcomes may be appropriate.

10

11 Assessment at the End of the Episode of Care

12 At the end of the episode of care – the length of which will vary depending on the type
13 of health problem – two key outcomes should be assessed: (1) patient-level outcomes,
14 and (2) overall resource use. Patient-level outcomes ideally should include risk-adjusted
15 morbidity and mortality, and importantly, domains encompassing health related quality
16 of life measures such as patient self-reported functional status. Resource use comprises
17 the risk-adjusted total cost of care across the entire episode. Recognizing the challenges
18 in doing so, risk adjustment should be performed by taking into account key patient
19 demographic and clinical factors that affect outcomes through a well tested and
20 validated statistical model. The Committee recommends that although the length of an
21 episode will differ among health problems, for chronic conditions the initial standard
22 should be to evaluate patient-level outcomes and total cost of care at 1-year, and when
23 feasible pushing further beyond to 3 to 5 years or more.

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1 GUIDING PRINCIPLES

2 The following principles are intended to guide development and implementation of the
3 Committee’s recommended measurement framework as applied across episodes of care.

4

5 Principle 1: Efficiency measurement is multidimensional

6 Judgments made about efficiency should be based on a comprehensive set of measures
7 that adequately portray performance in three domains: patient-based preferences and
8 outcomes, cost and resource use, and processes of care. Explicitly, these domains should
9 drive towards outcomes relevant to all the IOM aims for the health care system in
10 addition to efficiency including safety, timeliness, effectiveness, equity, and patient-
11 centeredness. Therefore, efficiency measurement is by definition multi-dimensional and
12 as such should be evaluated accordingly.

13

14 Principle 2: Choice of measures to inform judgments on efficiency should include 15 consideration of potential leverage

16 When choosing among potential measures consideration should be given to those that
17 have the highest likelihood of positively influencing desirable patient outcomes at
18 reasonable costs *and* offer the greatest opportunity to spur systems-level improvement.
19 Process measures should have strong evidence of their link to health outcomes.

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1 Principle 3: Measures used to inform judgments on efficiency should promote shared
2 accountability across providers and be assigned to the smallest unit of accountability as
3 technically feasible

4 To promote shared accountability for patient outcomes and total costs across episodes,
5 the framework for efficiency measurement should address all levels within the health
6 care system including: individual patients/providers, provider organizations, and
7 communities. When feasible, and when data can be obtained that are accurate and
8 reliable, the smallest unit of accountability should be measured and reported.

9

10 Principle 4: Measures used to inform judgments on efficiency should respond to the need to
11 harmonize measurement across sites of care

12 For existing measures, efforts should be made to reconcile measurement
13 specifications/definitions among providers (i.e., physicians, nurses, etc.) and across
14 multiple settings (i.e., ambulatory, hospital, nursing homes, home health, community,
15 populations). Development of new measures should strive for harmonization and
16 include measures that cross settings of care.

17

18 Principle 5: Measures to inform judgments on efficiency should be used for benchmarking

19 When assessing efficiency of care either at the individual provider, group, or systems
20 level, performance should be compared to, or indexed against, an appropriate
21 benchmark. Benchmarks should reflect the current assessment of best attainable care—
22 both quality and costs—not simply average performance, wherever possible and tracked
23 over time.

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1 Principle 6: Public reporting of measures of efficiency should be meaningful and

2 understandable to consumers

3 Publicly reported data on efficiency – quality and cost of care – should be meaningful

4 and useful to consumers and other relevant stakeholders. It should also be presented in

5 a format that is understandable to consumers and other end users so they can easily

6 make informed judgments about both providers and treatments.

7

8 Principle 7: Inappropriate care can not be efficient.

9 Measures to inform judgments on efficiency should be capable of detecting misuse,

10 overuse, and underuse of care within the episode time frame. Inappropriate care

11 including failure to provide an evidence-based intervention to an eligible patient or

12 administering an intervention that is unwarranted can not be efficient.

13

14 Principle 8: The measurement framework should achieve its intended purpose and be

15 monitored for unintended consequences

16 A measurement framework designed to inform judgments on efficiency should facilitate

17 improving health and reducing the cost and burden of illness. As such, the framework

18 should be periodically (3-5 years) evaluated to ensure its effectiveness and continuously

19 monitored to safeguard against unintended consequences.

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1 Principle 9: Measures to inform judgments on efficiency should be an integral part of a
2 continuous learning system.

3 In addition to assessing individual providers, groups, and system performance,
4 efficiency measurement should also be designed for continuous learning to inform
5 clinical practice, measure development, policy, and the research agenda.

6

7 PATH FORWARD TOWARDS A COMPREHENSIVE MEASUREMENT SYSTEM

8 Many stakeholder groups have spent a considerable amount of time to identify the best
9 available measures, and have engaged in substantial and well-intentioned efforts to
10 collect data needed to populate the databases for these measures so as to turn them into
11 public reports on clinical aspects of the quality of care, and in some instances patient
12 perspectives on their care. Until recently, with the exception of a handful of innovators
13 in the field, too few attempts have been made to define and measure efficiency in ways
14 that combine measures of resource use with the other important dimensions of quality
15 including safety, timeliness, effectiveness, equity, and patient-centeredness. The work of
16 this Committee is meant to help advance the field by highlighting the need for a
17 measurement framework that recognizes the longitudinal nature of health care (i.e.,
18 episodes of care) and places emphasis on *both* quality and costs.

19

20 The Committee recognizes that there are many hurdles to measuring efficiency across
21 extended episodes of care. First, a more comprehensive measurement system needs to
22 evolve, one that is capable of assessing the clinical efficiency of care *as well as* monitoring
23 for unintended consequences, supporting continuous quality improvement, adequately

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1 adjusting for risk, and determining the appropriateness of care. However, lack of such
2 an ideal system should not prevent us from moving forward. Rather the framework can
3 serve as blueprint for what we are trying to achieve. The Committee recognizes that
4 achieving the goal of a comprehensive measurement system will require adopting a
5 phased approach to implementation.

6

7 Second, the Committee recognizes that many technical issues will need to be resolved
8 including:

- 9 ▪ How to ensure data integrity;
- 10 ▪ How data should be aggregated and at what level (i.e., national versus local);
- 11 ▪ How best to adjust for varying case/severity mix among different providers;
- 12 ▪ How to attribute care across multiple providers; and
- 13 ▪ How to develop new measures to fill gaps in the episode of care framework.

14

15 Third, the Committee realizes that changing performance measurement to an episode of
16 care approach as described within will be difficult, particularly since current
17 accountability and payment systems tend to focus on individual providers and distinct
18 sites of care.

19

20 Although a full discussion of these issues is beyond the scope of this report, the
21 Committee discussed these and other challenges, and also held a workshop to solicit
22 input on these issues from additional content experts in the field.³³ Based on these

³³ Note: A workshop summary is forthcoming.

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1 discussions the Committee agreed that the path forward towards implementation will
2 require efforts to integrate or coordinate local providers and their data, and will
3 necessitate the development of practical approaches to support the collaborative and
4 integrative work required to improve care across episodes that span multiple providers
5 and diverse sites of care. Achieving this goal will require establishing an organizational
6 context for the work. The Committee believes that this is likely to require fostering
7 shared accountability through the development of accountable care entities with the
8 capacity not only to support measurement but also to respond to findings and improve
9 care. The Committee recommends that such an organizational structure should have the
10 capacity to perform some or all of the following functions:

- 11 ▪ Tracking patients across episodes and measuring the quality and cost of care.
12 This includes patient outcomes, processes of care, total costs, and assessment of
13 patient’s preferences (i.e., shared decision-making);
- 14 ▪ Identifying providers involved in the chain of care at multiple levels: individual
15 provider, group practice, organization, and community;
- 16 ▪ Reporting publicly information at appropriate levels where the data are reliable
17 and useful;
- 18 ▪ Distributing and responding to incentives; and
- 19 ▪ Implementing new knowledge quickly as part of a continuous quality
20 improvement feedback loop.

21 This organizational structure could take many forms. For example it could be an
22 existing integrated delivery system such as Geisinger Health System featured earlier in

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1 Box 2. Other alternatives might include: multi-specialty group practices, local hospitals
2 and their associated medical staff, community coalitions, health plans serving as the
3 locus of accountability for a network of providers, or an “advanced medical home” with
4 the provider playing a coordinating role.³⁴ Although all of these potential organizing
5 units have strengths and weaknesses, and undoubtedly would face formidable barriers
6 in current markets, the Committee believes that some level of organizational
7 accountability will almost certainly be required, and that learning which organizational
8 forms are most successful (in what contexts) will require both pilot testing and careful
9 evaluation of alternative approaches.

10

11 The Committee’s next report will focus on approaches to implementation of the
12 measurement framework and will expand upon these issues. It will also lay out a
13 research agenda. These two reports should provide guidance on how to move forward
14 with measurement initiatives that provide meaningful insights into variations in
15 efficiency in order to identify opportunities to improve quality and reduce costs.

³⁴ 2006. Fisher, E. S. et.al. Creating Accountable Care Organizations: The Extended Hospital Medical Staff. *Health Affairs* Web exclusive December 5, 2006. <http://www.healthaffairs.org>

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1 APPENDIX A

2 PRIORITY SETTING PILOT PROJECT 3 STEERING COMMITTEE

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6

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11

12 **Nancy Foster**, Liaison to the Steering Committee for the Hospital Quality Alliance

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1 APPENDIX B

2 Table 1 presents data on the cost of care for Doctor 1. The cost measure here is “average
3 cost of care per diabetic episode;” for Doctor 1 it is \$1500. What this means, quite
4 simply, is that the average reimbursable expense (for services billed to an insurer) for
5 diabetes care delivered to Doctor 1’s panel over some time interval was \$1500. While
6 one might argue as to whether that truly captures the total cost of care for those
7 diabetics, that argument is about the validity of the measure (and not about the
8 underlying construct). So, for the moment, let us proceed.

9

10 Table 2 presents data for Doctor 2 as well as Doctor 1. We see, in Table 2, that the cost of
11 diabetes care (the average reimbursable expense for services billed for diabetes care) is
12 \$1250; significantly less than Doctor 1.

13

14 It would be accurate to state that Doctor 2 provides diabetes care (on average) at lower
15 cost than Doctor 1. It would also be meaningful. But the inferences one can make from
16 that statement are limited. It is a matter of fact—but provides insufficient basis for (for
17 example) a decision about which physician is more efficient.

18

19 Table 3 provides additional information about Drs. 1 and 2. The critical new
20 information about Drs. 1 and 2 relates to the quality of care that they provide—we see
21 that they have very different rates of success with respect to achieving an outcome
22 (achievement of HgbA1c target) relevant to (that is, an indicator for) health benefit.

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1 From the definitions above, it is accurate to suggest that Dr. 1 provides higher quality
2 diabetes care³⁵ than Dr. 2 (just as it was accurate to suggest that Dr. 2 provides lower
3 cost care).

4
5 Does that mean that Dr. 1 is more efficient? From the definition of efficiency adopted by
6 the Committee presented in Box 3, our answer is “we don’t know.” Drs. 1 and 2 do not
7 achieve the same outcome (so we cannot use their relative costs to make an inference
8 about efficiency)—and they do not achieve the different outcomes that they achieve at
9 the same cost (so we cannot use their relative outcomes to judge efficiency).

10

11 Fortunately, we meet Dr. 3 in Table 4. Dr. 3 achieves the same outcome as Dr. 1—but
12 does so at lower cost. Dr. 3 provides care at the same “cost” as Dr. 2—but achieves a
13 better outcome. So Dr. 3 is clearly more efficient than Dr. 1 and Dr. 2. While we can
14 make no comment about Drs. 1 and 2, we have the data that we need to make an
15 important observation that is relevant to our understanding of the performance of all
16 doctors in the set.

17

18 What if Dr. 3’s outcomes were better than Dr. 1’s (say 90%)—or achieved at a lower cost
19 than Dr. 2’s (say \$1000 per episode)? It is no longer strictly true that Dr. 3 achieves
20 better outcomes than Dr. 1 at the same cost (or achieves the same outcomes as Dr. 2, at
21 lower cost). Are we unable to comment on efficiency, because there is no strict equality?

³⁵ We are fortunate to have, in the virtual world in which this paper has been drafted, perfect methods for risk adjustment. So readers should not be concerned that differences in outcomes here are related to anything other than quality of care.

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1 Of course not. If one physician achieves a better outcome at a lower cost than another,
2 that physician is clearly more efficient. This is the theory behind most current efforts to
3 assess efficiency – to array physicians on cost and quality axes, and to look for those in
4 the “northwest corner” (that is, those whose quality is above average and whose cost is
5 below average).

6
7 Table 5 provides important additional information about Drs. 1, 2 and 3. We are
8 reminded, by the data in table 5, that quality is multi-dimensional; that consumers value
9 the quality of their experience as well as the physiologic outcome associated with
10 medical encounters.

11
12 We see from table 5 that Drs. 1, 2, and 3 achieve different outcomes with respect to their
13 patients’ assessment of the quality of their communication skills. Inferences about
14 efficiency are no longer quite so clear. On the other hand, it may be possible to make
15 some statements about value.

16
17 Which physician offers care that represents highest value? Our answer: that depends.
18 In particular, it depends on the rate at which the potential receiver of services trades off
19 cost for one or the other outcome (clinical/physiologic or experiential); or the rate at
20 which the receiver trades off those outcomes themselves.

21
22 These, in turn, depend on individual preferences. The high income patient – or the
23 patient with deep insurance – who is committed to the control of his diabetes may

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1 gladly trade off the additional cost he faces, for the better outcomes Dr. 1 achieves. To
2 that patient, this (cost, quality) combination represents high value.

3

4 Not so, perhaps, to the patient who is less concerned about his diabetes, and/or who can
5 less well afford the cost differential. And not so, perhaps, the employer, who may face
6 the prospect of cutting back on the benefits her company can offer if that company has
7 to face the costs that attend Dr. 1's care. From this employer's perspective, Dr. 3 may
8 represent highest value— acceptable clinical outcomes at a lower cost. Or it may be Dr.
9 2, if that employer believes that a level of satisfaction of 60% would unacceptable (or at
10 least perceived very negatively) by employees and their families.

11

12 The point simply is this— the value each physician/each (cost, quality) combination
13 represents depends on the preferences of the individual/stakeholder making the
14 valuation. Different people in different settings (and conceivably at different times in
15 their lives) will value these combinations differently. Efficiency is objective; when
16 measured as the Committee suggests, all observers would agree on rank order. The
17 inputs (cost and quality) to value are objective; but the determination itself is not.

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1 Table 1:

Doctor	Average cost per diabetic episode		
1	\$1500		

2

3

4 Table 2

Doctor	Average cost per diabetic episode		
1	\$1500		
2	\$1250		Dr. 2 provides diabetes care at a lower cost than Dr. 1

5

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1 Table 3

Doctor	Average cost per diabetic episode	Percentage of patients at A1c target	
1	\$1500	80	
2	\$1250	60	Dr. 1 provides higher quality diabetes care than Dr. 2

2

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1 Table 4

Doctor	Average cost per diabetic episode	Percentage of patients at A1c target	
1	\$1500	80	
2	\$1250	60	
3	\$1250	80	Dr 3 is more "efficient" than Dr 1 (Dr 3 provides same quality at lower cost) and Dr 3 is more efficient than Dr 2 (Dr 3 provides higher quality at same cost)

2

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1 Table 5

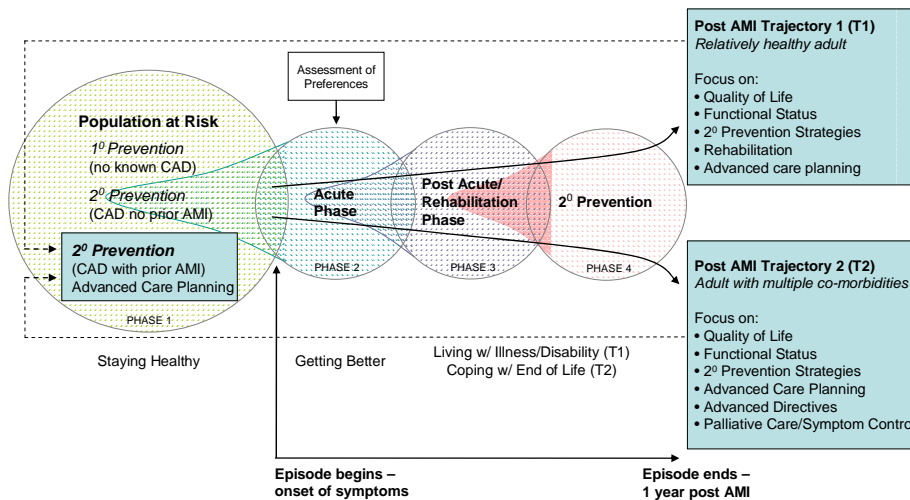
Doctor	Average cost per diabetic episode	Percentage of patients at A1c target	Percentage of patients “very satisfied” with communications
1	\$1500	80	90
2	\$1250	60	90
3	\$1250	80	60

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1 APPENDIX C

2

Context for Considering an AMI Episode



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3

4

5 The Committee's current efforts to define episodes of care and establish a performance

6 measurement framework must be understood in the context of a relatively simple goal:

7 to improve health and reduce the burden of illness while maximizing the value of

8 individual and societal resources allocated to health care. This goal implies a

9 responsibility to consider the definition of an episode within a broader context. In the

10 case of acute myocardial infarction (AMI), for example, a responsible evaluation of a

11 health care delivery system would include not only the efficiency with which each

12 patient with AMI received care, but also the frequency with which AMI occurred in the

13 community. Decisions about investments intended to improve health and reduce the

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1 burden of illness should take account not only of improved clinical services but also of
2 strategies that could effectively prevent the acute condition, in this case AMI.

3

4 The Committee's proposed conceptual framework for AMI, however, is constrained by
5 the realities of the current capabilities of performance measurement systems and our
6 capacity to implement episode-based measurement systems. Therefore they decided to
7 focus primarily on the relatively discreet definition of an AMI episode that begins with
8 the onset of chest pain and continues through the period that may be required for
9 recovery and stabilization – recognizing the importance of the period preceding the
10 AMI. As such, the Committee defined four distinct phases of the care of patients with
11 AMI that purposively correspond with the Foundation for Accountability's (FACCT)³⁶
12 domains of consumer needs: the population at risk, acute care, post-acute
13 care/rehabilitation, and secondary prevention. Thus, they focused most of their efforts
14 on the latter three phases of the episode because these represent the most direct,
15 concrete and easily measured component of AMI care. The Committee included the
16 population at risk in the figure because they did not want to lose sight of the importance
17 of looking "upstream" to understand and perhaps intervene to prevent AMI.

18

19 The Committee first recognized that individuals with AMIs tend to follow one of two
20 trajectories that have different outcomes and different ideal patterns of care – an
21 acknowledged simplification – but useful for both measurement and conceptual clarity.

22 Individuals in Trajectory 1 (T1) are relatively healthy at the time of their initial MI and, if

³⁶ FACCT framework for quality measurement is based on what consumers identified as their needs across the lifespan: staying healthy; getting better; living with illness or disability; coping with end of life.

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1 care is effectively delivered, should expect to return to active, productive lives following
2 recovery from the MI. Those in Trajectory 2 (T2) have their MI superimposed on serious
3 underlying illness (i.e., multiple chronic conditions). For these patients, the AMI
4 represents an additional (and perhaps final) assault in their progression toward
5 increased frailty and death. In either case, however, the Committee believed it
6 important to identify distinct phases of care and most importantly to assess and adhere
7 to patient's preferences.

8

9 EPISODE PHASES

10 Phase 1: Population at Risk

11 Ideally, in evaluating the performance of a health care system at addressing the
12 problems of AMI, it would be important to consider the population at risk of AMI and to
13 capture the period preceding the event, when it is conceivable that the first heart attack
14 could have been prevented – either through appropriate primary prevention of AMI that
15 occurs in populations with no prior evidence of heart disease or through secondary
16 prevention for those with known coronary artery disease (CAD).

17

18 Phase 2: Acute Phase

19 The Acute MI Phase should begin with the onset of symptoms (although this will be
20 difficult to measure in most current approaches) and end at 30 days post-index hospital
21 discharge. The advantage of focusing on symptom onset lies in the opportunity it
22 affords to address system-level interventions including the adequacy of the emergency
23 medical response system and access to cardiac revascularization facilities in a

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1 community. Optimally, at the point of entry, the patient should be assessed as to which
2 trajectory – T1 or T2– they fall under (although at times this distinction may not be
3 clear-cut) so that appropriate treatment protocols can be followed. For patients who
4 clearly enter under T2, it is imperative that their advanced care plan be adhered to and
5 their preferences be respected. Regardless of trajectory, this phase should capture the
6 acute care provided to the patient from arrival at the emergency department, through
7 appropriate diagnosis, treatment, and stabilization. This would include both any initial
8 revascularization and the appropriate management of complications, and would extend
9 through the transition to rehabilitation and post AMI management.

10

11 Phase 3: Post Acute/Rehabilitation Phase

12 The Committee proposes that rehabilitation (Phase 3) be the focus of the episode of care
13 from the end of the Acute Phase (Phase2) through three months post-index hospital
14 discharge (while acknowledging that post acute care begins the day of admission and
15 may continue for an extended period). In Trajectory I, where the patient is relatively
16 healthy at the time of the AMI, the focus should be on gaining medical stability, and
17 returning to work and normal activities of daily living. Additionally advanced care
18 planning should be initiated. In Trajectory II, the focus should also be on achieving
19 medical stability through symptom control and returning to pre-MI activities of daily
20 living. Advanced care planning, if not already in place, should be implemented. For
21 patients who are coping with end of life the emphasis should be on sustaining the
22 highest quality of life possible along with palliative care that is respectful of the patient's
23 and their family's preferences.

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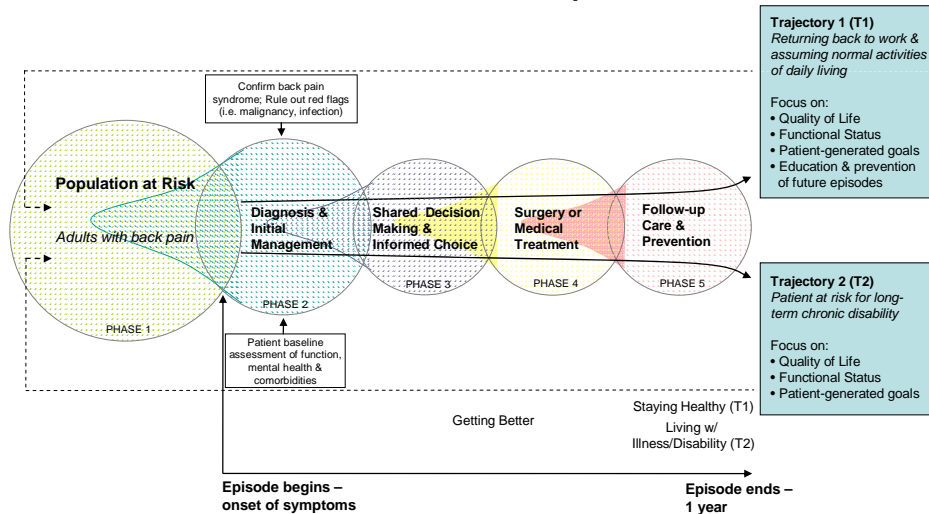
2 Phase 4: Secondary Prevention

3 The Committee recommends that Secondary Prevention (Phase 4) be the focus of the
4 episode of care from the end of rehabilitation (Phase 3) through one-year post-index
5 hospital discharge (once again acknowledging that this phase begins at hospital
6 admission and continues through rehabilitation) as this cohort of patients is at higher
7 risk of an occurrence of another heart attack. Key interventions include lipid
8 management, high blood pressure control, and appropriate medications along with
9 counseling in regards to smoking cessation, diet, and physical activity.

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1 APPENDIX D

Context for Considering a Low Back Pain Episode



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2

3 For "preference sensitive decisions" such as spine care, treatment decisions are almost
4 always made around pain and function. This is in contrast to "effective care decisions"
5 relevant to, for example, acute myocardial infarction (heart attack) which is a specific
6 diagnosis with well defined diagnostic and treatment strategies. Therefore, an episode
7 for low back pain must be conceptualized differently, which has implications for
8 measuring the efficiency (quality and cost) of care as well as for reimbursement.

9

10 EPISODE PHASES

11 Phase 1: Population at Risk

12 The population at risk for this phase is characterized by adults with low back pain.

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1 We begin by defining low back pain as “mechanical low back or leg pain” to designate
2 an anatomical or functional abnormality without an underlying malignant, neoplastic,
3 or inflammatory disease—representing 97% of cases.^{37 38}

4 5 Phase 2: Diagnosis and Initial Management

6 In the context of this episode of care, low back pain begins with the onset of symptoms.
7 Providing an exact anatomical diagnosis for low back pain is often challenging as the
8 majority of patients can not be neatly categorized. Therefore, this ambiguity heightens
9 the importance of a detailed but focused medical history and physical exam that can: (a)
10 rule out “red flags” such as malignancy, infection, trauma, or cauda equine; (b) establish
11 the presence of co-morbidities (i.e., depression) that can influence patient outcomes;³⁹
12 (c) determine a prior history of back pain also indicative of future outcomes; and (d)
13 assess neurological manifestations that may necessitate additional diagnostic studies or
14 a surgical option.⁴⁰

15
16 Additionally, an essential piece of information to collect during this phase is a self-
17 assessment of the patient’s health status (i.e., SF36 or SF12). This should be done not
18 only to inform the provider during initial evaluation and management, but importantly
19 to obtain baseline data on the patient’s physical functioning, degree of pain, and mental

³⁷ Diagnoses in this category include: lumbar strain or sprain; degenerative processes of disks and facets; herniated disc; spinal stenosis; osteoporotic compression fracture; spondylolisthesis; traumatic fracture; congenital diseases; spondylosis; internal disc disruption; and presumed instability.

³⁸2001. Deyo, R.A. & Weinstein, J.N. Low Back Pain. *New England Journal of Medicine*. Vol.: 344;363-370.

³⁹ Assessment of co-morbidities also becomes important for risk adjusting for performance measurement.

⁴⁰ Ibid ref 36

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1 health status from which outcomes during the follow-up phase of this episode (Phase 5)
2 can be benchmarked, and overall judgments in regards to the efficiency of treatment
3 interventions can be made.

4

5 Often the information gathered above is sufficient to begin formulating a treatment plan,
6 with input from the patient, as described next in Phase 3, and does not, in most cases,
7 require diagnostic imaging to be done—as overuse of these tools may induce demand
8 for unnecessary interventions (i.e., surgery, injections, and further diagnostic testing
9 such as discography, x-rays) as a result of incidental abnormalities detected on the scan
10 which can potentially lead to higher morbidity and costs downstream.⁴¹ Proceeding
11 with this episode, once “mechanical low back pain” is confirmed, we continue to Phase
12 3.

13

14 Phase 3: Shared Decision-making and Informed Choice

15 During this phase the patient is offered a variety of decision support aids (i.e., written
16 materials, videos, web-based programs, one-on-one consultations) that lay out evidence-
17 based treatment options, including risks and benefits, for their condition. For example,
18 undergoing surgery or opting for medical treatment (i.e., physical therapy, medications)
19 for low back pain. The patient then engages in a discussion with their provider to make
20 an “informed choice” about which treatment path they wish to take that is based upon
21 knowing their preferences and values. Thus, key elements of an “informed choice”
22 process include using tools that objectively inform patients of their alternatives—while

⁴¹ 2003. Jarvik, J., et. al. Rapid MRI versus Radiographs for Patients with Low Back Pain: A Randomized Controlled Trial. *JAMA*. Vol. 289; No 21: pp. 2801-2818.

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1 elucidating their preferences and values – and incorporating both the patient’s and
2 provider’s perspectives in the decision-making process.⁴²

3

4 Phase 4: Surgery or Medical Treatment

5 During this phase the patient’s favored treatment for this preference sensitive decision is
6 initiated in accordance with evidence-based or consensus-based protocols. The patient’s
7 expectations of the treatment outcomes should ideally be consistent with the evidence-
8 base (or best available knowledge) that was shared with them during the structured
9 “informed choice” process that took place in Phase 3.

10

11 Phase 5: Follow-up care and Prevention

12 During this phase the patient is evaluated at 3-6 months post-treatment including
13 reassessment of their health status which is compared against their baseline score
14 obtained in Phase 2. Feedback pertaining to overall satisfaction/experience with care
15 should also be captured.

16

17

⁴² 2007. Weinstein, J.N. , Clay, K., & Morgan, T. Informed Patient Choice: Patient-Centered Valuing of Surgical Risks and Benefits. *Health Affairs*. Vol.26; No.3: 726-730.

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1 PULL OUT BOX 1

2 The 100,000 Lives Campaign – spearheaded by the Institute for Healthcare
3 Improvement – engaged over 3,000 hospitals in an 18-month project during which an
4 estimated 122,000 deaths were avoided by improving the quality and efficiency of care.
5 Health care organizations were encouraged to implement up to six interventions
6 including: (1) deploying rapid response teams in in-patient settings at the first sign of
7 patient decline; (2) delivering a core evidence-base bundle of clinical services to patients
8 who experience a heart attack; (3) reconciling medications throughout care to avert
9 adverse drug events; (4) preventing central line infections; (5) preventing surgical site
10 infections; and (6) preventing Ventilator-Associated Pneumonia (VAP).⁴³
11
12 Virginia Mason Medical Center (VMMC) provides another illustrative case study.
13 VMMC employs tenets derived from Toyota’s “Lean Production System” where
14 processes of care are mapped out in step-by-step detail to look for opportunities to
15 eliminate waste. One area targeted was decreasing the incidence of Ventilator-
16 Associated Pneumonia (VAP) and its related complications. VMMC subsequently
17 implemented “VAP care bundles”, consisting of 4 relatively simple interventions, such
18 as elevating the head of the bed. As a result of these actions, VAP decreased from 40
19 patients per year in 2000 to 5 per year in 2006 with an estimated savings to the
20 institution of \$1.7 million.⁴⁴

⁴³ 2006. Berwick DM, Calkins DR, McCannon CJ, Hackbarth AD. The 100,000 Lives Campaign: Setting a goal and a deadline for improving health care quality. *JAMA*. Vol.295; No. 3: pp.324-327.

⁴⁴ 2007. Bush, R. Reducing Waste in US Health Care Systems. *JAMA*. Vol.297; No.8: pp.871-874.

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1 PULL OUT BOX 2

2 The Geisinger Health System (GHS) in central Pennsylvania has a new pilot program
3 underway that offers a “90-day guarantee” on the heart bypass surgeries they perform.⁴⁵
4 The program, named ProvenCare, is a 40-step system designed to ensure best practices
5 are followed during both pre- and post-operative care. Since the inception of the
6 program in February 2006 – through eliminating variation across physicians and
7 facilities – preliminary findings suggest patients have spent fewer days in the hospital,
8 have been less likely to be readmitted for surgery related complications, and return to
9 their homes after discharge as opposed to making an intermediary stop at a nursing
10 home. To overcome the pitfalls of the current fee-for-service financing system, that
11 actually rewards more procedures and trips back to the hospital, GHS’s network of
12 hospitals charge insurers a flat fee for the surgery and half the amount of the cost of care
13 related to the surgery three months after discharge based on historical data. No charges
14 are incurred for follow-up treatment beyond this amount. Thus, the incentive exists to
15 administer high quality care as efficiently as possible so as to avoid preventable
16 readmissions and to stay within the capitated allowance.

⁴⁵ New York Times May 17, 2007

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1 PULL OUT BOX 3

2 The four terms and accompanying definitions presented below are distinct but
3 interrelated constructs⁴⁶. The Committee recommends that measurement within
4 these constructs not be pursued individually or in isolation, but rather as an essential
5 subcomponent of a larger set of measures needed to adequately assess efficiency
6 overall.

7 ■ “Cost of care”⁴⁷ is a measurement construct characterizing the resources used to
8 deliver a service or set of services. Costs can usually be decomposed into
9 “price” (the cost of a unit of a particular resource) and “volume” (the number of
10 units of a resource used). Measurement of costs requires specifying the patient
11 population, time period and perspective from which costs are being assessed
12 (e.g. provider costs versus payer costs). An example of a measure of “cost” is
13 “average health plan expenditures for the care of diabetic patients in a given
14 year” (ideally, adjusted for risk). Synonyms – or terms that capture closely
15 related concepts – include “resource use,” “average cost,” and “total cost.”⁴⁸

16
17 ■ “Quality of care” is a measurement construct of pure benefit. It is as the Institute
18 of Medicine has recommended multidimensional and is characterized by care

⁴⁶ These 4 terms are adopted from the work of the *AQA Principles of Efficiency Measures*
<http://www.aqaalliance.org/files/PrinciplesofEfficiencyMeasurementApril2006.doc>

⁴⁷ Commonly referred to in the marketplace as “efficiency.”

⁴⁸ In the absence of standardized unit prices, measures of resource utilization, a measurement construct that reflects the use of the health care system in a defined period of time (i.e., hospital 30-day readmission rates; length of stay during the last 6 months of life), can be used to gain insights about costs.

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1 that is safe, timely, effective, efficient, equitable, and patient-centered.⁴⁹ An
2 example of a measure of “quality” is “average incremental quality adjusted life
3 years added per diabetic;” at present, a more realistic measure (which might
4 serve as an indicator for such a measure) might be “the proportion of diabetics
5 with hemoglobin A1c (HgbA1c) less than 7.” Importantly, as patients and
6 society value outcomes in domains other than clinical effectiveness – that is,
7 derive benefit from services that drive toward outcomes other than health
8 outcomes – measures such as “the proportion of patients who rate their
9 physician’s communications skills as excellent,” and “the proportion of patients
10 who report that the care they received was culturally appropriate,” are equally
11 valid measures of quality.

12
13 ■ “Efficiency of care”⁵⁰ is a measurement construct of cost of care or resource
14 utilization associated with a specified level of quality of care. It is a measure of
15 the relationship of the cost of care associated with a specific level of performance
16 measured with respect to the other five IOM aims of quality. Efficiency might be
17 thought of as a ratio, with quality as the numerator and cost as the denominator.
18 As such, efficiency is directly proportional to quality, and inversely proportional
19 to cost.

20

⁴⁹ 2001. IOM. *Crossing the Quality Chasm: A New Health System for the 21st Century*. Washington, DC: National Academy Press. <http://www.nap.edu>

⁵⁰ Also referred to as “economic efficiency.”

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- 1 ▪ “Value of care” is a measurement construct of specified stakeholder’s (such as
2 an individual patient’s, consumer organization’s, payor’s, provider’s,
3 government’s, or society’s) preference-weighted assessment of a particular
4 combination of quality and cost of care performance. Thus, value – like
5 efficiency with which it is often confused – depends on both cost and quality.
6 But, unlike efficiency, value depends on personal utility – and therefore on
7 individual preferences. This is the key differentiating point.

8

9 The Committee also supports the definition of waste derived from the Institute of
10 Medicine (IOM)⁵¹:

- 11 ▪ “Waste” as defined by the Institute of Medicine is viewed as the opposite of
12 efficiency – the use of resources without benefit to the patients a health care
13 system is intended to help. Types of waste include: waste of equipment,
14 supplies, ideas, and energy. The IOM identifies two ways to improve efficiency
15 and thus avoid waste: (1) reduce quality waste, and (2) reduce administrative or
16 production costs.

17

⁵¹ 2001. IOM. *Crossing the Quality Chasm: A New Health System for the 21st Century*. Washington, DC: National Academy Press. <http://www.nap.edu>