U.S. HEALTH SYSTEM PERFORMANCE: A NATIONAL SCORECARD, 2006
TECHNICAL APPENDIX

With the goal of assessing and monitoring whole-system performance, the National Scorecard on U.S. Health Care System Performance presents findings across an array of indicators spanning health outcomes, quality, access, equity, and efficiency. This Technical Appendix provides additional information on the process for developing the final set of indicators, data used for each indicator, and new indicators created for the Scorecard or based on new or updated analyses. A chartpack that displays the nation’s performance and comparisons to benchmarks for each of the indicators is available at www.cmwf.org.

A. SCORECARD INDICATOR SELECTION AND REVIEW PROCESS

The Commonwealth Fund’s Commission on a High Performance System identified priority areas of public concern that build on the Institute of Medicine’s seminal work on quality, insurance, and equity and emphasize developing new indicators for affordability, efficiency, and care coordination. With guidance from the Commission and input from leading experts, a limited set of indicators reflecting key concepts in these priority areas were selected based on data availability from national or international sources with the potential for time trend analyses. This selection process included an extensive review of recent journal articles or studies and a range of indicators developed by AHRQ, NCQA, CMS, the National Quality Forum, and other governmental and professional organizations. The following criteria guided the indicator selection and development:

1) The indicator reflects a key area of public, patient, and policy concern where positive change would be seen as important and meaningful.

2) Indicators be valid and credible, drawn from quality and access indicators available from AHRQ, NCQA, CMS, and the National Quality Forum.

3) Avoid one-time studies. Select indicators where national data exists with the potential of time trends and comparison groups.

4) Give priority to indicators that are composites or “whole” system measures, multi-dimensional, and likely to be sensitive to system change.

5) Where possible, composites should include the percent of patients receiving all care recommended by clinical guidelines.

6) Give priority to databases that enable analysis by income, insurance, race/ethnicity, or regions of the country to assess disparities and variations in performance.

7) Develop indicators of affordability and efficiency to address cost and resource dimensions of performance.
Commission Review and Experts

On behalf of the Commission, five Commission members worked with the authors and senior Fund staff to review and select indicators and design the Scorecard. These include: Maureen Bisognano, Executive Vice President and CEO, Institute for Healthcare Improvement; Michael Chernew, Ph.D., Professor, Harvard University; George Halvorson, Chairman and CEO Kaiser Foundation Health Plan, Inc.; Sheila Leatherman, Research Professor, University of North Carolina; and Alan Weil, J.D., M.P.P., Executive Director, National Academy of State Health Policy. The full Commission reviewed the final recommended indicator list and Scorecard design. ¹

The authors worked with experts to develop indicators and provide new data analyses for the Scorecard. These included: Gerard Anderson, Ph.D., Johns Hopkins Bloomberg School of Public Health; Elliott Fisher, M.D., Dartmouth College; Katherine Hempstead, Ph.D., Rutgers University; Sir Brian Jarman, M.D., Imperial College, London, U.K; Ashish Jha, M.D., M.P.H. and Arnold Epstein, M.D., Harvard School of Public Health; and Vincent Mor, Ph.D., Brown University. Bisundev Mahato, on a team led by Sherry Glied, PhD., Columbia University Mailman School of Public Health provided the programming and data analysis of MEPS to create the composite adult preventive care, primary care source and affordability indicators.

Other experts also contributed their assistance and advice to develop the Scorecard. Douglas McCarthy, M.B.A, Issues Research, reviewed the indicator list for potential indicators of overuse/misuse with alerts to new HEDIS indicators. AHRQ convened an expert group to advise on creation of composites using the Prevention Quality Indicators (ambulatory care sensitive) list. Although the indicator is not yet available from Healthcare Cost and Utilization Project (HCUP) data at the state level, AHRQ plans to include the composite in future publications. The authors used the AHRQ method with Medicare data. The AHRQ CAHPS benchmarking database team, working with Dale Shaller, Shaller Consulting, provided the Hospital-CAHPS composites. Sarah Shih, part of NCQA’s Research and Analysis staff, provided the managed care physician-patient communication data. Joel Cantor, Director, Center for State Health Policy at Rutgers University worked with the authors to identify and develop state indicators. Cantor is leading an effort to produce a state Scorecard that will include a similar scope of indicators.

¹ Other Commissioners include James J. Mongan, M.D. (Chair), Christine K. Cassel, M.D., Patricia Gabow, M.D., Fernando A. Guerra, M.D., M.P.H., Robert M. Hayes, J.D., Glenn M. Hackbarth, J.D., Cleve L. Killingsworth, Gregory P. Poulsen, M.B.A., Dallas L. Salisbury, Sandra Shewry, Glenn D. Steele, Jr., M.D., Ph.D., Mary K. Wakefield, Ph.D., R.N., and Steve Wetzell.
B. UNIQUE INDICATORS AND COMPOSITES CREATED FOR SCORECARD

The following lists indicators and composites that are unique to the Scorecard or include new analyses specific to the Scorecard. Section C details provide source notes, dates, and descriptions.

- Adults under 65 limited in any activities because of physical, mental, or emotional problems
- Adults received all recommended screening and preventive care
- Hospitalized patients received recommended care for acute myocardial infarction, congestive heart failure, and pneumonia
- Adults (ages 19-64) with accessible primary care provider
- Nursing homes: hospital admissions and readmissions among residents
- Hospital-standardized mortality ratios
- Doctor-patient communication: always listened, explained, showed respect, spent enough time
- Patient-centered hospital care
- Population under 65 living in states where premiums for employer-sponsored health insurance are <15% of under-65 median household income
- Medicare hospital admissions for ACS conditions
- Medicare hospital 30-day readmission rates
- Medicare annual costs of care and mortality for acute myocardial infarction, hip fracture, colorectal cancer
- Medicare annual costs of care for chronic diseases: diabetes, congestive heart failure, and chronic obstructive pulmonary disease

C. INDICATOR SOURCE NOTES AND DEFINITIONS

Part I provides source notes for all indicators in the Exhibits. For each, the notes include: 1) the date for national and benchmark data; 2) database; and 3) citation for data drawn from published sources, online databases, or researchers who conducted new data analysis for the Scorecard.

Part II describes select indicators used in the report, including indicators specified and created for the Scorecard by the authors or already developed by researchers and sponsoring organizations of data sources. Indicator source notes marked with “**” are described.

Part I. Indicator Source Notes

Exhibit 1: Long, Healthy, and Productive Lives

1. Mortality amenable to health care**: 1998; Mortality data reported to World Health Organization (WHO); E. Nolte and M. McKee, “Measuring the Health of Nations: Analysis

* Indicators marked with an * are described in more detail in Part II.


4. Adults under 65 limited in any activities because of physical, mental, or emotional problems: 2004; Survey question in Behavioral Risk Factor Surveillance System (BRFSS, state-based survey of adults 18 and older sponsored by CDC and States); Analysis for Scorecard by Bisundev Mahato, Columbia University Mailman School of Public Health.

5. Children missed 11 or more school days due to illness or injury: 2003; National Survey of Children’s Health (state-based survey sponsored by the Maternal and Child Health Bureau of the Health Resources and Services Administration); Retrieved from the Data Resource Center for Child and Adolescent Health’s online interactive database at http://www.nschdata.org.

**Exhibit 2: Quality – Getting the Right Care and Coordinated Care**

1. Adults received recommended screening and preventive care*: 2002; Medical Expenditure Panel Survey (MEPS); Analysis for Scorecard by B. Mahato.

2. Children received recommended immunizations and preventive care:

3. Needed mental health care and received treatment:
   - Adults with serious mental illness who received treatment: 2003; National Survey on Drug Use and Health; AHRQ, *2005 Quality Report*, Table 1.83.

4. Chronic disease under control:
5. Hospitalized patients received recommended care for acute myocardial infarction, congestive heart failure, and pneumonia*: 2004; Hospital Quality Alliance national reporting system for ten indicators collected by the Center for Medicare and Medicaid Services (CMS). Data available on CMS Hospital Compare website at http://www.hospitalcompare.hhs.gov; Analysis for Scorecard by Ashish Jha, M.D., M.P.H., and Arnold Epstein, M.D., Harvard School of Public Health.

6. Adults (ages 19-64) with accessible primary care provider*: 2002; MEPS; Analysis for Scorecard by B. Mahato.


8. Care coordination at hospital discharge
   - Heart failure patients received written instructions at discharge: 2004; CMS Hospital Compare; Analysis for Scorecard by A. Jha and A. Epstein.
   - Follow-up within 30 days after hospitalization for mental health disorder: 2004; HEDIS; NCQA, HEDIS Audit Means, Percentiles and Ratios.

9. Nursing homes: hospital admissions and readmissions among residents: 2000; MEDPAR Medicare and Part A inpatient claims records linked to MDS nursing home; Analysis for Scorecard provided by Vincent Mor, Ph.D., Brown University. The analysis was supported by a grant by the National Institute of Aging (#AG20557, State Policies and Hospitalizations from Nursing Homes).


Exhibit 3: Quality – Safe Care and Patient-Centered, Timely Care

1. Patients reported medical, medication, or lab test error: 2005; Commonwealth Fund International Survey of Sicker Adults; C. Schoen et al., “Taking the Pulse.”

2. Unsafe drug use:

* Indicators marked with an * are described in more detail in Part II.

- Elderly used 1 of 33 inappropriate drugs: 2002; MEPS; AHRQ, *2005 Quality Report*, Table 2.38.

3. **Nursing home residents with pressure sores**: 2004; Nursing Home Minimum Data Set (MDS); AHRQ, *2005 Quality Report*, Tables 1.112, 1.118.

4. **Hospital-standardized mortality ratios**: 2000-2002; Medicare discharge data; Analysis for Scorecard by Sir Brian Jarman, Imperial College London, UK.

5. **Ability to see doctor when sick or need medical attention on same or next day**: 2005; Commonwealth Fund International Survey of Sicker Adults; C. Schoen et al., “Taking the Pulse.”

6. **Very/somewhat easy to get care after hours without going to the emergency room**: 2005; Commonwealth Fund International Survey of Sicker Adults; C. Schoen et al., “Taking the Pulse.”


8. **Adults with chronic conditions given self-management plan**: 2005; Commonwealth Fund International Survey of Sicker Adults; C. Schoen et al., “Taking the Pulse.”

9. **Patient-centered hospital care**: 2005; CAHPS Hospital Survey for 254 hospitals submitting data to National CAHPS Benchmarking Dataset.

### Exhibit 4: Access


2. **Adults with no access problem because of costs**: 2004; Commonwealth Fund International Survey of Adults’ Experiences with Primary Care; C. Schoen et al., “Primary Care and Health System Performance: Adults’ Experiences in Five Countries,” *Health Affairs* 4 (2004): w487-w502 (published online 28 October 2004; 10.1377/hlthaff.w4.487).

3. **Families spending <10% of income or <5% of income, if low income, on out-of-pocket medical costs and premiums**: 2001-2002; MEPS; M. Merlis et al., *Rising Out-Of-Pocket Spending for Medical Care: A Growing Strain on Family Budgets* (New York, NY: The Commonwealth Fund, 2006).

4. **Population under 65 living in states where premiums for employer-sponsored health insurance are <15% of under-65 median household income**: 2003 MEPS Insurance Component (IC) for average state private premiums and 2004-2005 Current Population Survey (CPS) for median state household income. Analysis of CPS for Scorecard by B. Mahato.

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* Indicators marked with an * are described in more detail in Part II.

Exhibit 5: Efficiency

1. Potential overuse or waste
   - Duplicate medical tests: doctor ordered test that had already been done: 2005; Commonwealth Fund International Survey of Sicker Adults; C. Schoen et al., “Taking the Pulse.”
   - Tests results or records not available at time of appointment: 2005; Commonwealth Fund International Survey of Sicker Adults; C. Schoen et al., “Taking the Pulse.”
   - Received imaging study for acute low back pain with no risk factors: 2004; HEDIS; NCQA, *HEDIS Audit Means, Percentiles and Ratios*.

2. Went to ER for condition that could have been treated by regular doctor: 2005; Commonwealth Fund International Survey of Sicker Adults; C. Schoen et al., “Taking the Pulse.”

3. Hospital admissions for ACS conditions:
   - National ACS admissions: congestive heart failure, diabetes, pediatric asthma: 2002; HCUP, Nationwide Inpatient Sample and State Inpatient Databases; AHRQ, *2005 Quality Report*, Tables 1.24b, 1.25b, 1.26b, 1.27b, 1.50b, 1.101b.
   - Medicare ACS admissions: 2003; Medicare Standard Analytical Files (SAF) 5% Inpatient Data; Analysis using all 14 AHRQ Prevention Quality Indicators (PQI) by Gerard Anderson, Ph.D., Johns Hopkins Bloomberg School of Public Health.

4. Medicare hospital 30-day readmission rates*: 2003; Medicare SAF 5% Inpatient Data; Analysis for Scorecard by G. Anderson

5. Medicare annual costs of care and mortality for acute myocardial infarction, hip fracture, colon cancer*: 2000-2002; Data from a 20% national sample of Medicare beneficiaries; Analysis for Scorecard by Elliott Fisher, M.D., M.P.H., Dartmouth College.


* Indicators marked with an * are described in more detail in Part II.
Exhibit 6: Equity

All equity ratios used the percent of the group with the problem or at risk (e.g., percent who did not get preventive care, percent without a primary care source, or percent uninsured).


2. **Adults under 65 limited in any activities because of physical, mental, or emotional problems:** 2004; BRFSS; Analysis for Scorecard by B. Mahato.

3. **Children missed 11 or more school days due to illness or injury:** 2003; National Survey of Children’s Health; Retrieved from www.nschdata.org.


6. **Adults age 50 or older did not receive recommended screening and preventive care:** 2002; MEPS; Analysis for Scorecard by B. Mahato.


10. **Diabetics did not receive all three services:** HbA1c, retinal, and foot exams: 2002; MEPS; AHRQ, *2005 Quality Report*, Table 1.15.

11. **Patients reported medical, medication, or lab test error:** 2005; Commonwealth Fund International Survey of Sicker Adults; Analysis for Scorecard by authors.


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14. Waited 6 or more days to see doctor when sick or needed medical attention: 2005; Commonwealth Fund International Survey of Sicker Adults; Analysis for Scorecard by authors.

15. Doctor-patient communication: Doctor sometimes or never listened, explained, showed respect, spent enough time: 2002; MEPS; AHRQ, 2005 Quality Report, Table 4.1a.

16. Adults without accessible primary care provider: 2002; MEPS; Analysis for Scorecard by B. Mahato.


19. Went to ER for condition that could have been treated by regular doctor: 2005; Commonwealth Fund International Survey of Sicker Adults; Analysis for Scorecard by authors.

20. Duplicate medical tests: doctor ordered test that had already been done: 2005; Commonwealth Fund International Survey of Sicker Adults; Analysis for Scorecard by authors.

21. Tests results or records not available at time of appointment: 2005; Commonwealth Fund International Survey of Sicker Adults; Analysis for Scorecard by authors.

22. Adults under 65 with time uninsured during the year: 2002; MEPS; AHRQ, 2005 Disparities Report, Tables 181a, 181b, 181c.

23. Adults (ages 19-64) with access problems due to costs: 2005; Commonwealth Fund Biennial Health Insurance Survey; Analysis for Scorecard by authors.

24. Families spending >10% of income or >5% of income, if low income, on out-of-pocket medical costs and premiums: 2001-2002; MEPS; M. Merlis et al., Rising Out-Of-Pocket Spending.

25. Adults (ages 19-64) with medical bill problems or medical debt: 2005; Commonwealth Fund Biennial Health Insurance Survey; Analysis for Scorecard by authors.
Part II. Definitions for Select Indicators

1. Mortality amenable to health care

Data for deaths amenable to health care age-standardized across select countries are from a published study conducted by Ellen Nolte and Martin McKee. Using 1998 mortality data reported to the World Health Organization, Nolte and McKee calculated deaths before age 75 that resulted from conditions considered treatable and/or preventable with timely health care or public health policies. See following table for list of conditions and specific age ranges for conditions considered amenable to health care in the analysis. For ischemic heart disease (IHD), the mortality rate indicator includes half of all the total mortality rates based on evidence suggesting that up to half of premature mortality from IHD may be amenable to health care.

<table>
<thead>
<tr>
<th>Cause of death considered amenable to health care</th>
<th>Age</th>
<th>9th revision</th>
<th>10th revision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intestinal infections</td>
<td>0-14</td>
<td>001-9</td>
<td>A00-9</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>0-74</td>
<td>010-8, 137</td>
<td>A15-9, B90</td>
</tr>
<tr>
<td>Other infections(diphtheria, tetanus, poliomyelitis)</td>
<td>0-74</td>
<td>032, 037, 045</td>
<td>A36, A35, A80</td>
</tr>
<tr>
<td>Whooping cough</td>
<td>0-14</td>
<td>033</td>
<td>A37</td>
</tr>
<tr>
<td>Septicaemia</td>
<td>0-74</td>
<td>038</td>
<td>A40-1</td>
</tr>
<tr>
<td>Measles</td>
<td>1-14</td>
<td>055</td>
<td>B05</td>
</tr>
<tr>
<td>Malignant neoplasm of colon and rectum</td>
<td>0-74</td>
<td>153-4</td>
<td>C18-21</td>
</tr>
<tr>
<td>Malignant neoplasm of skin</td>
<td>0-74</td>
<td>173</td>
<td>C44</td>
</tr>
<tr>
<td>Malignant neoplasm of breast</td>
<td>0-74</td>
<td>174</td>
<td>C50</td>
</tr>
<tr>
<td>Malignant neoplasm of cervix uteri</td>
<td>0-74</td>
<td>180</td>
<td>C53</td>
</tr>
<tr>
<td>Malignant neoplasm of cervix uteri and body of uterus</td>
<td>0-44</td>
<td>179, 182</td>
<td>C54, C55</td>
</tr>
<tr>
<td>Malignant neoplasm of testis</td>
<td>0-74</td>
<td>186</td>
<td>C62</td>
</tr>
<tr>
<td>Hodgkin’s disease</td>
<td>0-74</td>
<td>201</td>
<td>C81</td>
</tr>
<tr>
<td>Leukaemia</td>
<td>0-44</td>
<td>204-8</td>
<td>C91-5</td>
</tr>
<tr>
<td>Diseases of the thyroid</td>
<td>0-74</td>
<td>240-6</td>
<td>E00-7</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>0-49</td>
<td>250</td>
<td>E10-4</td>
</tr>
<tr>
<td>Epilepsy</td>
<td>0-74</td>
<td>345</td>
<td>G40-1</td>
</tr>
<tr>
<td>Chronic rheumatic heart disease</td>
<td>0-74</td>
<td>393-8</td>
<td>I05-9</td>
</tr>
<tr>
<td>Hypertensive disease</td>
<td>0-74</td>
<td>401-5</td>
<td>I10-3, I15</td>
</tr>
<tr>
<td>Cerebrovascular disease</td>
<td>0-74</td>
<td>430-8</td>
<td>I60-9</td>
</tr>
<tr>
<td>All respiratory diseases (excluding pneumonia and influenza)</td>
<td>1-14</td>
<td>460-79, 488-519</td>
<td>J00-9, J20-99</td>
</tr>
<tr>
<td>Influenza</td>
<td>0-74</td>
<td>487</td>
<td>J10-1</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>0-74</td>
<td>480-6</td>
<td>J12-8</td>
</tr>
<tr>
<td>Peptic ulcer</td>
<td>0-74</td>
<td>531-3</td>
<td>K25-7</td>
</tr>
<tr>
<td>Appendicitis</td>
<td>0-74</td>
<td>540-3</td>
<td>K35-8</td>
</tr>
<tr>
<td>Abdominal hernia</td>
<td>0-74</td>
<td>550-3</td>
<td>K40-6</td>
</tr>
<tr>
<td>Cholelithiasis and cholecystitis</td>
<td>0-74</td>
<td>574-5.1</td>
<td>K80-1</td>
</tr>
<tr>
<td>Nephritis and nephrosis</td>
<td>0-74</td>
<td>580-9</td>
<td>N00-7, N17-9, N25-7</td>
</tr>
<tr>
<td>Benign prostatic hyperplasia</td>
<td>0-74</td>
<td>600</td>
<td>N40</td>
</tr>
<tr>
<td>Maternal death</td>
<td>All</td>
<td>630-76</td>
<td>O00-99</td>
</tr>
<tr>
<td>Congenital cardiovascular anomalies</td>
<td>0-74</td>
<td>745-7</td>
<td>Q20-8</td>
</tr>
<tr>
<td>Perinatal deaths, all causes, excluding stillbirths</td>
<td>All</td>
<td>760-79</td>
<td>P00-96, A33</td>
</tr>
<tr>
<td>Misadventures to patients during surgical and medical care</td>
<td>All</td>
<td>E870-6, E878-9</td>
<td>Y60-9, Y83-4</td>
</tr>
<tr>
<td>Ischaemic heart disease: 50% of mortality rates included</td>
<td>0-74</td>
<td>410-4</td>
<td>I20-5</td>
</tr>
</tbody>
</table>
2. **Healthy life expectancy at age 60**

Life expectancy data are from the World Health Organization’s *2003 World Health Report*. The WHO developed Healthy Life Expectancy or Health Adjusted Life Expectancy (HALE) to go beyond longevity and mortality and provide an estimate of the effect of morbidity on people’s lives and population health. HALE shows the average number of years that a person can expect to live in "full health," taking into account years lived in poor health due to disease and/or injury. Formerly known as disability-adjusted life expectancy, HALE is based on life expectancy with an adjustment for time spent in poor health using country-specific population estimates of morbidity and disability.

**Exhibit 2: Quality**

1. **Adults received all recommended screening and preventive care**

Developed by the authors for the Scorecard, this new indicator estimates the percent of adults receiving recommended screening and preventive care using data from the Medical Expenditure Panel Survey (MEPS) on respondents’ age and sex and answers to preventive care questions. The “all preventive care” indicator provides a national estimate of the percent of adults 18 or older who received all screening or preventive care services within the time intervals appropriate for their age and sex as recommended by the U.S. Preventive Services Task Force. The seven services and time intervals used in the analysis include: blood pressure screening within 2 years; cholesterol screening within 5 years; Pap test within 3 years for women age 18 and older; mammography within 2 years for women age 40 and older; fecal occult blood testing (FOBT) within 2 years or colonoscopy/sigmoidoscopy ever for adults age 50 and older (either test); and influenza vaccination within past year for adults 65 or older or adults under 65 at risk due to chronic health conditions. Data analyses were conducted by Bisundev Mahato at Columbia University Mailman School of Public Health.

2. **Hospitalized patients received recommended care for acute myocardial infarction, congestive heart failure, and pneumonia**

This composite indicator is the proportion of cases where a hospital provided the recommended processes of care for patients with acute myocardial infarction, heart failure, and pneumonia. The hospital quality indicators come from the Hospital Quality Alliance (HQA) data collected by CMS, and include the original set of ten quality indicators selected for Medicare payment updates. Composites and data analyses of hospital, regional, and state variations were developed for the Scorecard and conducted by Ashish Jha and Arnold Epstein at Harvard School of Public Health. The analysis created an overall composite measure based on the average of ten quality of care measures included for each of the three conditions. For each indicator, the guideline specifies patients who should receive the care. The composite includes five clinical services for acute myocardial infarction: aspirin within 24 hours before or after arrival at the hospital and at discharge; beta-blocker within 24 hours after arrival and at discharge; and angiotensin-converting enzyme (ACE) inhibitor for left ventricular systolic dysfunction. Two for congestive heart failure: assessment of left ventricular function and the use of an ACE inhibitor for left ventricular dysfunction. And three for pneumonia: timing of initial antibiotic therapy; pneumococcal vaccination; and assessment of oxygenation. Composite scores were calculated for each condition separately by dividing the number of instances in which the hospital performed a required action by the
number of instances in which actions should have been performed for all indicators associated with a particular condition. For example, a composite score for acute myocardial infarction (AMI) of 80 percent means that for all of the AMI measures, a hospital failed to provide appropriate care 20 percent of the times it had the opportunity to do so. To ensure statistically stable estimates, analyses were limited to those hospitals where, for at least one measure included in the condition, the number of patients was greater than or equal to 30. Both the clinical definitions of the quality measures and the methodology for computing summary scores follow the methodology set forth by the Joint Commission on Accreditation of Healthcare Organizations.

3. **Adults with accessible primary care provider**

Developed by the authors for the Scorecard, this new indicator estimates the percent of adults with an accessible primary care provider using MEPS data on respondents’ usual sources of care. This indicator was created based on a series of questions that asked whether respondents have a usual source of care, and if yes, whether they see this provider for preventive care (such as general checks ups, examinations, and immunizations), new health problems, ongoing health problems, and referrals to other health professionals when needed. Respondents were also asked how difficult it is for them to get to the provider. Those who indicated “not too difficult” or “not at all difficult” were used to create the accessible primary care provider variable. The indicator is the percent of adults who report easy access to a provider who serves as their primary care provider for preventive care, ongoing care, new problems and referrals based on patient reports. Data analyses were conducted by Bisundev Mahato at Columbia University Mailman School of Public Health.

4. **Children with a medical home**

This indicator is provided as a measure in the online database of the 2003 National Survey of Children’s Health, and was developed to determine whether a child’s medical care met the standards of a “medical home” as defined by the American Academy of Pediatrics (AAP). According to standards endorsed by the AAP, a medical home consists of primary care that is accessible, continuous, comprehensive, family-centered, coordinated, compassionate and culturally effective. Specific questions used to create the indicator included: whether the child has a least one personal doctor or nurse who knows him/her well; whether this personal doctor or nurse usually or always spends enough time with the family, explains things so the parent can understand, and provides interpreter services when needed; whether this personal doctor or nurse usually or always provides telephone advice or urgent care when the child needs it; whether the child has little or no problem gaining access to specialty care, services, and/or equipment when it is needed; whether the personal doctor or nurse followed up by talking with the family about the child’s specialist visit and/or use of special services or equipment; and whether the child had a preventive visit in the past year.

5. **Hospital-standardized mortality ratios**

Developed by Sir Brian Jarman at the Imperial College in the United Kingdom, hospital standardized mortality ratios (HSMR) compare actual hospital mortality rates to expected rates given patient and community risk factors affecting mortality. The methodology calculates the number of deaths that would be expected in each hospital based on average
national hospital death rates for Medicare stratified by age, sex, race, admission source, admission type and length of stay for each of the diagnoses leading to 80% of all deaths in acute care hospitals. Expected rates use overall Medicare 2000 rates as the standard. Jarman further adjusts the standardized ratio using a regression analysis to account for community and other factors related to hospital mortality including: poverty levels, physician resources in the community, and share of patients discharged to nursing homes, the proportion of patients dying in hospital, the hospital admission rate, levels of illness in the area and measures of the quality of care in the community around the hospital. The resulting HSMR, adjusted by standardization and regression analysis, is a ratio of observed to expected deaths, with the national average ratio set equal to 100. An individual hospital ratio equal to 100 suggests that there is no difference between the hospital’s mortality rate and expected rates based on average national rates in 2000. A ratio greater than 100 indicates that the hospital’s mortality rate is higher expected, pointing to potential safety and quality concerns. Rates significantly below 100 indicate superior performance, providing benchmarks for improvement.

Exhibit 3: Access

1. Adults (ages 19-64) insured all year, not underinsured
   The definition of the “underinsured” is based on out-of-pocket costs relative to income using a method published in Health Affairs from an analysis of the 2003 Commonwealth Fund Biennial Health Insurance Survey. The analysis used respondents’ estimates of out-of-pocket medical expense, plan deductibles, and income to compare cost exposure to family income. Survey respondents were classified as underinsured if they were insured all year but reported at least one of three indicators: (1) medical expenses amounted to 10 percent of income or more; (2) among low-income adults (below 200 percent of poverty level), medical expenses amounted to at least 5 percent of income; and (3) health plan deductibles equaled or exceeded 5 percent of income. The measure is based on those respondents who were insured all year, and did not report any of the above underinsured indicators.

2. Adults with access problems because of costs
   Data on percentage of adults who went without care because of costs in the past year are from analyses of the 2004 Commonwealth Fund International Health Policy Survey of Adults’ Experiences with Primary Care. The indicator was based on survey respondents answering “yes” to any of the three questions about access to health care during the past 12 months: 1) Was there a time when you had a medical problem but did not visit the doctor because of the medical care costs of the doctor’s visit? 2) Was there a time when you skipped a medical test, treatment, or follow-up that was recommended by a doctor because of cost? or 3) Was there a time when you did not fill a prescription for medicine or skipped doses of your medicine because of the cost?
3. Percent of families spending >10% of household income or >5% of income, if low income, on out-of-pocket medical costs and insurance premiums

Data on the percentage of families with high out-of-pocket medical costs and premiums relative to income are from an analysis of MEPS conducted by Mark Merlis. Out-of-pocket medical costs include deductibles, coinsurance or copayments, and payments for services not covered by insurance. Premiums are also factored in for families with private insurance, including premiums for nongroup coverage and any required employee contribution for group coverage. Two different thresholds were used to define the sets of families with high out-of-pocket costs plus premiums: 1) expenses during a year equaled 10 percent or more of family income; or 2) the family had income below 200 percent of the federal poverty level and expenses equaled 5 percent or more of family income.

4. Population in states with employer premiums as specific share of household median income

Developed by the authors for the Scorecard, this indicator compares total private sector premiums to household incomes to provide a gauge of “affordability” that can be tracked over time at the national and state level. The indicator is based on premium and household income data by state using two data sources: 1) MEPS data on premium rates for single and family coverage for private employers; and 2) Current Population Survey estimates of median household incomes for single and family households all under age 65. The indicator is based on the distribution of premiums as a percent of median incomes across states. As of 2004, the median percent of income for employer coverage was approximately 15 percent of income across states; for families, this ranged from 12 to 20 percent of household income in the top and bottom 10 percent of states. Using this as the baseline threshold, the indicator estimates the percent of the under-65 population living in states where premiums as a percent of median incomes is currently at or below 15 percent of median household incomes for the under-65 population. Setting 15 percent as the baseline threshold will allow the Scorecard to assess premium relative to income trends over time.

5. Adults (ages 19-64) with medical bill problems or medical debt

Data on the prevalence of medical bill problems or accrued medical debt are from analyses of the 2005 Commonwealth Fund Biennial Health Insurance Survey. The indicator was based on survey respondents answering “yes” to any of the four questions about their ability to pay their medical bills or debt during the past 12 months: 1) *Were there times you had problems paying or were unable to pay for medical bills?* 2) *Were you ever contacted by a collection agency about owing money for medical bills?* 3) *Have you had to change your way of life significantly in order to pay medical bills?* and 4) *Do you currently have any medical bills you are paying off over time?* If they had been contacted by a collection agency, respondents were asked if their bill got sent because of a billing mistake or because they were unable to pay the bill. Those who said they were contacted by a collection agency because of a billing mistake were excluded from the total.
Exhibit 5: Efficiency

1. Medicare hospital 30-day readmission rates

Data on hospital readmission rates within 30 days are from an analysis of the 2003 Medicare SAF 5% Inpatient Data conducted for the Scorecard by Gerard Anderson of Johns Hopkins Bloomberg School of Public Health. The hospital claims data files contain primary and secondary diagnosis, procedure codes, reimbursement amounts, dates of admission and discharge, and specific institutions providing service and geographic identifiers. The 30 day readmission analysis identified those beneficiaries with initial admissions due to one of 31 conditions (see list below) who were readmitted within 30 days following discharge for the initial admission. These readmission rates were used to calculate the percent of all admissions within the initial group that were readmitted within 30 days and the reimbursement costs associated with the readmission. The rates displayed in the indicator chart sort states by 30 readmission rates with readmission costs as a percent of total costs for the initial selected admissions. The average share of reimbursement attributed to readmissions is shown for state quartiles ranked by highest to lowest rate of readmissions. The savings estimates for reducing readmission rates used the median and top ten percentile regional rates and average cost of the readmission in each region to compute the national total savings at the lower readmission rates, based on the 5% sample of beneficiaries.

31 Select Conditions for Hospital 30-Day Readmission Analysis

1. Abnormal Heartbeat
2. Chronic Obstructive Pulmonary Disease COPD
3. Congestive Heart Failure CHF
4. Diabetes with Amputation
5. Diabetes - Medical Management
6. Kidney Failure
7. Kidney and Urinary Tract Infections
8. Pneumonia - Aspiration
9. Pneumonia - Infectious
10. Respiratory Failure with Mechanical Ventilation
11. Respiratory Failure without Mechanical Ventilation
12. Stomach and Intestinal Bleeding
13. Stroke - Hemorrhagic
14. Stroke - Non-Hemorrhagic
15. Abdominal Aortic Aneurysm Repair
16. Gallbladder Removal - Laparoscopic
17. Gallbladder Removal - Open
18. Hip Fracture - Surgical Repair
19. Hysterectomy - Vaginal
20. Removal of Blockage of Neck Vessels
21. DRG096 -- Bronchitis & Asthma, Complicated
22. DRG097 -- Bronchitis & Asthma, Uncomplicated
23. DRG141 -- Hypotension & Fainting, Complicated
24. DRG143 -- Chest Pain
25. DRG202 -- Cirrhosis & Alcoholic Hepatitis
26. DRG204 -- Noncancerous Pancreatic Disorders
27. DRG205 -- Liver Disease except Cancer, Cirrhosis, Alcoholic Hepatitis, Complicated
28. DRG243 -- Medical Back Problems
29. DRG415 -- Surgery for Infectious or Parasitic Disease
30. DRG418 -- Infection after Surgery or Trauma
31. DRG478 -- Vascular Operations except Heart, Complicated
2. Medicare annual costs of care and mortality for acute myocardial infarction, hip fracture, colon cancer*:

Developed by Elliott Fisher at Dartmouth College for the Scorecard, this composite quality/cost indicator builds on earlier seminal studies following patients with heart attacks, hip fractures and colectomies over five years. In this analysis, Medicare data for patients hospitalized between 2000 and 2002 for heart attacks, hip fracture and colon cancer were used to rank all U.S. Hospital Referral Regions in terms of the quality of care (based upon risk-adjusted one year mortality rates) and relative resource use (risk-adjusted spending on hospital and physician services using standardized national prices). Regions in the top performance quartile on both quality (lowest risk adjusted mortality) and costs (lowest resource use) were defined as the high performance benchmark. Data for 2003 were then used to estimate the potential savings in both lives and spending from improved performance.

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