INSTITUTE OF HEALTH ECONOMICS
ALBERTA CANADA

Activity-Based Funding: Glossary and References

Overview: A multitude of mechanisms are available to reimburse institutional providers ranging from budgets, which are set on a prospective basis and do not vary with activity levels, to activity-based payments, where providers are reimbursed based on their activity levels. **Fixed budgets** are effective at overall cost control but can discourage admission of high-cost patients or lower quality care. **Activity-based payments** incentivize greater activity but lack controls for overall health-care expenditure. No single payment mechanism can achieve all of the desired objectives of the health-care system and provides the rationale for mixed funding mechanisms. **Case mixed funding** is an approach that can encourage efficiency and cost minimization but also provides a financial incentive for hospitals to increase their activity. However, the evaluative evidence on the effect of casemix funding on hospital efficiency and quality is mixed. What the evidence does suggest is that outcomes are associated with the specific design of the funding mechanisms and highlights the importance of aligning financial incentives to promote both efficiency and quality. Below are a glossary of common terms and some key references associated with activity-based funding approaches.

Glossary of Terms

Activity Based Costing - The bottom-up approach to costing that identifies the activities required to provide a particular service, estimates the cost of those activities and finally aggregates those costs.

Bundled Payment - A single payment for all services related to a specific treatment or condition (for example, coronary artery bypass graft surgery), possibly spanning multiple providers in multiple settings.

Capitation Fee - A method of payment for health services in which the provider is paid a fixed, per capita amount (usually accompanied by some adjustments for patient characteristics and measurements for quality outcomes).

Casemix (hospital) - A method of quantifying hospital workload by describing the complexity and resource intensity of the services provided. This differs from a simple count of total patients treated or total bed days used.

Casemix (disease) - A relative frequency of patients classified into categories by disease, procedure, method of payment and other characteristics.

Case-Mix Groups (CMGs) - Maintained by the Canadian Institute for Health Information (CIHI), CMGs categorize patients into statistically and clinically homogeneous groups based on the collection of clinical and administrative data.

Cost Sharing - Requires the covered individual to pay part of the cost of care received. This can take a number of forms including co-insurance, co-payments and deductibles.

Cost Shifting - The process of billing some payers a higher amount than justified by costs so that other payers can be billed at a lower amount than justified by costs.

Cost Allocation - The process by which overhead costs are assigned (allocated) to patient services departments.

Diagnosis Related Groups (DRGs) - An inpatient or hospital classification system used to pay a hospital or other provider for their services and to categorize illness by diagnosis and treatment.
Dumping - The explicit avoidance of highly complex patients.
Economic Cost - Includes the direct and indirect costs of providing a service.
Efficiency – Technical - Maximising output produced for given inputs and within existing technology (or conversely, by using the minimum amount of input possible to produce a given level of output).
Efficiency – Allocative - Combining inputs and/or outputs in the best possible proportions given prevailing prices resulting in net monetary benefits.
Elective Treatment - A planned or nonemergency admission or procedure that has been arranged in advance. This differs from emergency treatment that is urgently required.
Evidence based Practice - Practice which incorporates the use of best available and appropriate evidence arising from research and other sources.
Fee for Service - A method of provider payment where providers receive a payment for each item of service provided.
Fixed System of Reimbursement - A payment system where the reimbursed amount does not change as activities increase or decrease.
Funding – Patient Focused (PFF) - A means of allocating funding as close as possible to the point of care between clinicians and patients, and that funding covers the whole patient care pathway. In addition, funding follows the patient from their usual place of residence to where the service is received.
Funding - Population-based (also called population needs-based funding) - A method of allocating health budgets to regions based on the size and characteristics of the population served. This would typically take into consideration factors such as population demographics, utilization profiles, inter-regional flow of service and the differential cost of providing service in various regions.
Funding – Service Based - Hospitals are reimbursed for the episode of care for which the patient is admitted and based on the type of service or procedure performed on the patient.
Full Time Equivalent - A measure of the number of individuals working in an organisation which takes into account the number of hours worked by both full and part time staff and expresses this in terms of the number of individuals working full time that it would take to carry out the same work.
Global Budget - A budget at the hospital level set in advance to cover the aggregate expenditures of a hospital over a given period (usually one year) to provide a set of services that have been broadly agreed on by the hospital and the purchaser.
Interdisciplinary or Multidisciplinary Approach - The term used to describe professionals from more than one discipline working together in a coordinated way.
Internal Market - An approach to using incentives to simulate market competition within publicly funded health systems. One of the early examples was the introduction of General Practice (GP) Fundholding in the United Kingdom in the early 1990s, which was intended to stimulate competition between GP practices for patients, between hospitals competing for purchased services from GPs, and within GP practices to save on prescribing budgets.

Pay for Performance - The general strategy of promoting **quality improvement** by rewarding providers (physicians, clinics or hospitals) who meet certain performance expectations with respect to health care quality according to achievement on structure, process or outcomes of care.

Payment Progressivity - A payment is progressive if richer individuals pay more as a proportion of their income relative to poorer individuals.

Payment Regressivity - A payment is regressive if poorer individuals pay more as a proportion of their income relative to richer individuals.

Payment by Results (PbR) - A UK funding system (2004) for care provided to National Health Service patients in England that will pay hospitals on the basis of the work they do adjusted for case-mix. It will do this by paying a nationally set price or tariff for similar groups of patients (Health Resources Groups – HRGs) based on the national average cost of treating patients within a group.

Primary Care - An approach to care that includes a range of services designed to keep individuals well, from promotion of health and screening for disease to assessment, diagnosis, treatment and rehabilitation as well as personal social services. The services are usually directly accessible by individuals and are generally their first point of contact with the health service.

Reimbursement - Prospective - A payment system where the provider's payment rates or budgets are determined ex ante (before the event). Contrary to retrospective systems, there is no link with the individual costs of the provider.

Reimbursement - Retrospective - A system in which the provider's own costs are fully (or partially in certain systems) reimbursed ex post (after the event).

Resource Intensity Weights (RIWs) - A relative resource allocation methodology for estimating a facility's costs for both acute inpatient and ambulatory care.

Risk Adjustment - In the context of provider payment, the process whereby payments are adjusted for characteristics of the individual that are associated with need for health care (e.g. age, sex, chronic illness, etc.). This might be used to adjust capitation payments or in comparing utilization or health outcomes across health providers.

Risk Equalisation - The transfer of funds within an insurance market to compensate companies for less favourable risk profiles.

Salary - A method of provider payment where providers receive a fixed payment for a defined period of time (usually per annum).

Sustainability – Economic - Refers to the growth in healthcare spending as a proportion of national income.

Sustainability – Fiscal - Refers to the ability of public revenue to meet public expenditure on health care.

Variable System of Reimbursement - A payment system where variation in activities induces changes in payment.

IHE INSTITUTE OF HEALTH ECONOMICS ALBERTA CANADA

Some Selected References

- Audit Commission (2008a) *The Right Result? Payment by Results 2003-07.* London, Audit Commission.
- Böcking, W., Ahrens, U., Kirch, W. et al. (2005) First Results of the Introduction of DRGs in Germany and Overview of Experience from Other DRG Countries. *Journal of Public Health,* 13(3), 128-137.
- Boyle, S. (2007) Payment by Results in England. *Eurohealth,* 13(1), 12-16.
- Burgess, J. F., Jr. & Wilson, P. W. (1996) Hospital Ownership and Technical Inefficiency. *Management Science,* 42(1), 110-123.
- Busse, R., Nimptsch, U. & Mansky, T. (2009) Measuring, Monitoring, and Managing Quality in Germany's Hospitals. *Health Affairs,* 28(2), w294-w304.
- Centers for Medicare and Medicaid Services (2009a) Acute Care Hospital Inpatient Prospective Payment System. Available at: www.cms.gov/MLNProducts/downloads/AcutePaymtSysfctsht.pdf
- Centers for Medicare and Medicaid Services (2010b) Roadmap for Implementing Value Driven Healthcare in the Traditional Medicare Fee-for-Service Program. Available at: www.cms.gov/QualityInitiativesGenInfo/downloads/VBPRoadmap_OEA_1-16_508.pdf
- Chaix-Couturier, C., Durand-Zaleski, I., Jolly, D., et al. (2000) Effects of Financial Incentives on Medical Practice: Results from a Systematic Review of the Literature and Methodological Issues. *International Journal for Quality in Health Care,* 12(2), 133-142.
- Chern, J. Y. & Wan, T. T. (2000) The Impact of the Prospective Payment System on the Technical Efficiency of Hospitals. *Journal of Medical Systems,* 24(3), 159-172.
- de Brantes, F., Rosenthal, M. B. & Painter, M. (2009) Building a Bridge from Fragmentation to Accountability -- The Prometheus Payment Model. *New England Journal of Medicine,*361(11), 1033-1036.
- Department of Health (2010) Payment by Results Guidance for 2010-11. Available at: www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/@ps/documents/digitalasset/dh_112970.pdf
- Duckett, S. J. (2008) Design of Price Incentives for Adjunct Policy Goals in Formula Funding for Hospitals and Health Services. *BMC Health Services Research,* 8(72).
- Ellis, R. P. & Vidal-Fernández, M. (2007) Activity-Based Payments and Reforms of the English Hospital Payment System. *Health Economics, Policy and Law,* 2(4), 435-444.
- Ettelt, S. & Nolte, E. (2010) Funding Intensive Care - Approaches in Systems Using Diagnosis-Related Groups. Available at: www.rand.org/pubs/technical_reports/2010/RAND_TR792.pdf
- Ettelt, S., Thomson, S., Nolte, E., et al. (2006) *Reimbursing Highly Specialised Hospital Services: The Experience of Activity-Based Funding in Eight Countries.* London, London School of Hygiene and Tropical Medicine.
- Farrar, S., Yi, D., Sutton, M., et al. (2009) Has Payment by Results Affected the Way that English Hospitals Provide Care? Difference-in-Differences Analysis. *British Medical Journal,* 339(7720), 554-556.
- Forgione, D. A. & D'Annunzio, C. M. (1999) The Use of DRGs in Health Care Payment Systems Around the World. *Journal of Health Care Finance,* 26(2), 66-78.
- Forgione, D. A., Vermeer, T. E., Surysekar, K., et al. (2004) The Impact of DRG-Based Payment Systems on Quality of Health Care in OECD Countries. *Journal of Health Care Finance,* 31(1), 41-54.

- Gemmill, M. (2006) Pay-for-Performance in the US: What lessons for Europe? *Eurohealth,* 13(4), 21-23.
- Glickman, S. W., Ou, F.-S., DeLong, E. R., et al. E. D. (2007) Pay for Performance, Quality of Care, and Outcomes in Acute Myocardial Infarction. *Journal of the American Medical Association,* 297(21), 2373-2380.
- Goldfield, N. (2010) The Evolution of Diagnosis-Related Groups (DRGs): From its Beginnings in Case-Mix and Resource Use Theory, to its Implementation for Payment and now for its Resource Allocation in the Acute Hospital Sector Current Utilization for Quality within and outside the Hospital. *Quality Management in Health Care,* 19(1), 3-16.
- Goldfield, N., Averill, R., Fuller, R., et al. (2008) A Response to the Prometheus Proposal - Well Intended but Impossible to Implement. *American Journal of Medical Quality,* 23(2), 85-89.
- Grossbart, S. R. (2006) What's the Return? Assessing the Effect of "Pay-for-Performance" Initiatives on the Quality of Care Delivery. *Medical Care Research and Review,* 63(S1), 29S-48S.
- Hensen, P., Beissert, S., Bruckner-Tuderman, L., et al. (2008). Introduction of Diagnosis Related Groups in Germany: Evaluation of Impact on In-Patient Care in a Dermatological Setting. *European Journal of Public Health,* 18(1), 85-91.
- Herr, A. (2008) Cost and Technical Efficiency of German Hospitals: Does Ownership Matter? *Health Economics,* 17(9), 1057-1071.
- Hollingsworth, B. (2008) The Measurement of Efficiency and Productivity of Health Care Delivery. *Health Economics,* 17(10), 1107-1128.
- Jackson, T. (2001) Using Computerised Patient-Level Costing Data for Setting DRG Weights: the Victorian (Australia) Cost Weight Studies. *Health Policy,* 56(2), 149-163.
- Kahn, K. L., Keeler, E. B., Sherwood, M. J., et al. (1990) Comparing Outcomes of Care Before and After Implementation of the DRG-Based Prospective Payment System. *Journal of the American Medical Association,* 264(15), 1984-1988.
- Kastberg, G. & Siverbo, S. (2007) Activity-Based Financing of Health Care - Experiences from Sweden. *International Journal of Health Planning and Management,* 22(1), 25-44.
- Klazinga, N. (2008) The Health System in the Netherlands. *Eurohealth,* 14(1), 8-10.
- Langenbrunner, J., Orosz, E., Kutzin, J., et al. (2005) Purchasing and Paying Providers. In Figueras, J., Robinson, R. & Jakubowski, E. (Eds.) *Purchasing to Improve Health Systems Performance.* Berkshire, Open University Press.
- Leister, J. E. & Stausberg, J. (2005) Comparison of Cost Accounting Methods from Different DRG Systems and their Effect on Health Care Quality. *Health Policy,* 74(1), 46-55.
- Lindenauer, P. K., Remus, D., Roman, S., et al. (2007) Public Reporting and Pay for Performance in Hospital Quality Improvement. *New England Journal of Medicine,* 356(5), 486-496.
- Ljunggren, B. & Sjödén, P. O. (2003) Patient-Reported Quality of Life before, Compared with after a DRG Intervention. *International Journal for Quality in Health Care,* 15(5), 433-440.
- Mannion, R., Marini, G. & Street, A. (2008) Implementing Payment by Results in the English NHS: Changing Incentives and the Role of Information. *Journal of Health Organization and Management,* 22(1), 79-88.
- Marchildon, G. P. (2005) *Health Systems in Transition: Canada.* Copenhagen, World Health Organization on behalf of the European Observatory on Health Systems and Policies.
- Maynard, A. & Bloor, K. (2010) Will Financial Incentives and Penalties Improve Hospital Care? *British Medical Journal,* 340(-), c88.

- McNutt, R., Johnson, T. J., Odwazny, R., et al. (2010) Change in MS-DRG Assignment and Hospital Reimbursement as a Result of Centers for Medicare & Medicaid Changes in Payment for Hospital-Acquired Conditions: Is It Coding or Quality? *Quality Management in Health Care,* 19(1), 17-24.
- Routledge. Mechanic, R. & Altman, S. (2009) Payment Reform Options: Episode Payment Is A Good Place To Start. *Health Affairs,* 28(2), W262-W271.
- Mehrotra, A., Damberg, C. L., Sorbero, M. E., et al. (2009) Pay for Performance in the Hospital Setting: What is the State of the Evidence? *American Journal of Medical Quality, 24*(1), 19-28.
- Miller, H. (2009) From Volume To Value: Better Ways To Pay For Health Care. *Health Affairs,* 28(5), 1418-1428.
- RAND (2010) Analysis of Bundled Payment. Available at: www.randcompare.org/analysis-ofoptions/analysis-of-bundled-payment
- Rogers, W. H., Draper, D., Kahn, K. L., et al. (1990) Quality of Care Before and After Implementation of the DRG-Based Prospective Payment System: A Summary of Effects. *Journal of the American Medical Association,* 264(15), 1989-1994.
- Rosenberg, M. A. & Browne, M. J. (2001) The Impact of the Inpatient Prospective Payment System and Diagnosis-Related Groups: A Survey of the Literature. *North American Actuarial Journal,* 5(4), 84-94.
- Rosenthal, M. B. (2007) Nonpayment for Performance? Medicare's New Reimbursement Rule. *New England Journal of Medicine,* 357(16), 1573-1575.
- Ryan, A. (2009) Hospital-Based Pay-for-Performance in the United States. *Health Economics,* 18(10), 1109-1113.
- Schreyögg, J., Stargardt, T., Tiemann, O., et al. (2006) Methods to Determine Reimbursement Rates for Diagnosis Related Groups (DRG): A Comparison of Nine European Countries. *Health Care Management Science,* 9(3), 215-223.
- Schreyögg, J., Tiemann, O. & Busse, R. (2005b) The DRG Reimbursement System in Germany. *Euro Observer,* 7(4), 4-6.
- Shen, Y. C. (2003) The Effect of Financial Pressure on the Quality of Care in Hospitals. *Journal of Health Economics,* 22(2), 243-269.
- Siciliani, L. (2006) Selection of Treatment under Prospective Payment Systems in the Hospital Sector. *Journal of Health Economics,* 25(3), 479-499.
- Silverman, E. & Skinner, J. (2004) Medicare Upcoding and Hospital Ownership. *Journal of Health Economics,* 23(2), 369-389.
- Simoens, S. & Hurst, J. (2006) The Supply of Physician Services in OECD Countries. *OECD Health Working Papers No. 21.* Available at: www.oecd.org/dataoecd/27/22/35987490.pdf
- Steinbusch, P. J., Oostenbrink, J. B., Zuurbier, J. J., et al. (2007) The Risk of Upcoding in Casemix Systems: A Comparative Study. *Health Policy,* 81(2-3), 289-299.
- Street, A. & Maynard, A. (2007) Activity Based Financing in England: The Need for Continual Refinement of Payment by Results. *Health Economics, Policy and Law,* 2(04), 419-427.
- Street, A., Vitikainen, K., Bjorvatn, A., et al. 2007) *Introducing Activity-Based Financing: A Review of Experience in Australia, Denmark, Norway and Sweden.* CHE Research Paper 30. York, University of York.