Combining DRGs and per diem payments in the private sector: the Equitable Payment Model

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Abstract

The many types of payment models used in the Australian private sector are reviewed. Their features are compared and contrasted to those desirable in an optimal private sector payment model. The EPM™ (Equitable Payment Model) is discussed and its consistency with the desirable features of an optimal private sector payment model outlined. These include being based on a robust classification system, nationally benchmarked length of stay (LOS) results, nationally benchmarked relative cost and encouraging continual improvement in efficiency to the benefit of both health funds and private hospitals. The advantages in the context of the private sector of EPM™ being a per diem model, albeit very different to current per diem models, are discussed. The advantages of EPM™ for hospitals and health funds are outlined.

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What is known about the topic?

Private health insurance funds and private hospitals are moving away from per diem methods of payment for acute care and most are now using DRG-based payments for the majority of acute episodes.

What does this study add?

This paper presents a funding model, developed for use by PHI funds, which uses DRG-based weights in combination with days of stay to determine the fee payable for common acute patient episodes. The model aims to share the benefits of reduced costs equitably between providers and payers for private hospital care, while removing perverse incentives.

What are the implications?

The model demonstrates that DRG weighting can be combined with per diem payments, and argues for transparency in the sharing of efficiency gains.

A VARIETY OF PAYMENT MODELS are currently used by health funds as the basis of fees paid to Australian private hospitals for acute care episodes (medical, surgical, and obstetric). These range from the per diem payment model widely used in the 1980s and 1990s to case-payment models to hybrid per diem–case-payment models. A new payment model created by the Australian Health Service Alliance (AHSA) that synthesises aspects of current per diem and diagnosis related group (DRG)-based payment models for payment of acute care episodes in the Australian private sector is presented in this article.

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The model is designed to be fair to both health funds and private hospitals and recognise their symbiosis. It is designed to pass the following 'gold standard' test of whether a model is fair to both hospitals and health funds — "Would a senior health administrator be equally happy with a payment model regardless of whether they were employed by a Private Health Insurance (PHI) fund or a private hospital?" For these reasons it has been given the title of EPM™ (Equitable Payment Model).

What features are highly desirable in a private sector payment model?

A private sector payment model should:

- Be driven by current clinical practice
- Use a well researched classification system that includes all elements of patient care
- Base payments on national private sector relative costs, thereby minimising incentives to 'cherry pick' profitable cases
- Promote efficiency and innovation

- Base changes in length of stay (LOS) payment rates on recent national private sector data
- Encourage hospitals to continually reduce LOS where clinically appropriate
- Reduce health fund payments for cases with declining costs commensurate with reductions in hospital costs
- Bundle charges to a high degree to simplify claims and processing
- Base claims on submission of complete and accurate clinical data using a small number of current mandatory fields in the Hospital Casemix Protocol (HCP)
- Facilitate meaningful benchmarking
- Simplify negotiations by facilitating concentration on a small number of key parameters
- Enable contracts to be relatively brief and simple in structure
- Be durable over time
- Improve trust between hospitals and health funds by meeting the 'gold standard' test.

The 'old' per diem payment model of the 1980s and 1990s

In the old per diem model, cases were divided into very broad clinical categories such as surgical, advanced surgical, medical and obstetric. These were underpinned by the principal Medicare Benefits Schedule (MBS) procedure codes for surgical cases and International Classification of Disease (ICD) codes for Victorian medical cases. The same per diem rate was paid for cases in each broad category up to one or more step down points, usually 7 or 14 days, and a reduced per diem rate applied thereafter. This covered normal accommodation and a variable number of other costs. Costs such as theatre, allied health and critical care were usually paid separately. The payment rates were not cost-related and generally increased by a fixed percentage annually.

The old model was not based on a robust classification system. For example, there were two surgical payment rates based on MBS benefit levels for the principal procedure. This system may not have reflected the relative costs for hospitals. It also ignored the cost of care not related to the principal procedure, and created two very heterogeneous groups. Thus, complicated intracranial neurosurgery and uncomplicated lens implantation cases were paid at the same daily rate and had the same step down point, as both were considered advanced surgery. Some funds refined the old per diem model by varying step down points for some subgroups of cases and encouraging most costs to be bundled into the per diem rate.

The step down points became increasingly unrelated to clinical practice. The median length of stay (MLOS) for most DRGs was well below the old per diem model step down points, but in a few complex DRGs the reverse was true.

The same per diem rate paid was paid in each classification group up to the step down point. Daily costs are generally at their highest early in an admission, then reduce as acuity decreases. As a result, hospitals had a financial incentive not to expedite the discharge of patients before the step down point because these latter days were the most profitable. This created a perverse incentive in relation to clinical efficiency.

The relationship between hospital costs and charges was weak. In some DRGs charges were over three times cost,[1] but in others cost exceeded charges. This created an incentive for hospitals to cherry pick cases that are perceived as highly profitable,[2] although there is no evidence at the industry level of hospitals avoiding cases perceived as particularly unprofitable.[3]

There were other problems with the old per diem model. It was not possible to benchmark relative hospital efficiency using its classification system, as hospitals frequently had quite different cases within the broad classification groups. Claims and HCP data were frequently inconsistent, impairing data analysis. Variable degrees of bundling of charges complicated claims processing for both hospitals and health funds.

Do current private sector case-payment models meet the criteria?

A number of payment models are currently used by private sector funders, but details are published infrequently.[4,5] These models are continually being modified and some funders have different models in different states. Consequently, the comments which follow should be regarded as generalisations necessarily based on incomplete, and sometimes anecdotal, information.

Some models are based on Australian Refined DRGs Version 4 (ARDRGv4), the latest DRG version with the necessary information to derive private sector payment parameters, which is an extensively researched classification system that considers all elements of patient care and is substantially influenced by clinical input. Some models are based on MBS item numbers. Others are based on MBS for day cases and ARDRGv4 for overnight cases, introducing potential inconsistency.

National private sector cost and LOS data based on MBS are not available. MBS cannot be used as the basis of payment for medical and other non-procedural cases as there are no relevant item numbers for such cases.

Consider the cost of hospitalisation when an uncomplicated cholecystectomy is performed on a healthy 35-year-old patient compared with when the same procedure is performed on an 80-year-old with diabetes and angina who suffers significant post-operative complications. MBS-based case payments would pay such cases identically. ARDRGv4 based payments would pay the cases differently. The former case would map into ARDRGv4 H04B (weight of 0.8648 and MLOS of 2 days), the latter into the more heavily weighted and highly paid ARDRGv4 H04A (weight of 1.4519 and MLOS of 4 days).

In most current private sector case models, payments are based on historical fees not benchmarked costs. These models retain incentives to cherry pick. The information available suggests LOS parameters are set on a mixture of hospital and state LOS parameters and charge bundling (that is, the extent to which all costs of an episode are included in a single payment) is also variable.

Some case-payment models have initially resulted in significant reductions in LOS and reduction in payments, primarily benefiting PHI funds. As LOS has reduced further, it has often proven difficult for funds to negotiate further reductions in payment even though hospital costs have further reduced. The inability of hospitals and funds to agree on appropriate reduction in payment as LOS has reduced is a very significant shortcoming in current private sector case-payment models. It has also impaired relationships between hospitals and health funds.

A further shortcoming arises from basing LOS parameters on hospital rather than national LOS data. Some funds asked hospitals with relatively short LOS to reduce LOS by the same amount as hospitals with a relatively long LOS, in effect penalising efficient hospitals. It is more appropriate to base LOS benchmarks on current national private sector norms. This is also consistent with the only available private sector clinical costing data, which are national, and are underpinned by national LOS data.

EPM™

The EPM™ incorporates the desirable features of a private sector payment model and includes elements of case-payment and per diem models.

Classification system

The model currently uses ARDRGv4, which is based on extensive clinical and statistical analysis, incorporates all aspects of clinical care, is widely used in Australia and is used as the basis of national private sector LOS and relative cost data. It is a highly appropriate basis for benchmarking hospitals, and will be replaced by ARDRGv5 when the necessary private sector LOS and clinical costing data becomes available.

Step down points

These are based on recent private sector LOS data and thus reflect clinical practice. The first

step down point (1st SD) reflects the point in the LOS distribution at which about 5% of cases have been discharged — the P5 point. Costs to this point are in effect standard costs. The second step down point is the MLOS. Calculation of these parameters was based on deidentified private sector unit record (UR) level data obtained from the Australian Institute of Health and Welfare (AIHW). When there are significant clinical and financial differences between same day and overnight cases in an ARDRGv4, the overnight case LOS distribution is used to derive the step down points.

ARDRGv4s with fewer than 30 private sector cases were excluded from this model because they are rare or non-existent in the private sector and it is impossible to derive appropriate weights and LOS parameters.

Relative weights

These are based on the National Hospital Cost Data Collection (NHCDC) – Private sector. This has been shown to be an appropriate basis for deriving such weights.[6] Up to five weights apply for each DRG. The parameters for ARDRGv4 G02B, major small and large bowel procedures without catastrophic comorbidities andcomplications are included as examples:

- A weight for same-day cases (1.1682). In the majority of ARDRGv4s this is similar to the one-night weight. In the many ARDRGv4s where same-day and overnight cases have significant clinical and financial differences, the same-day and one-night weights differ significantly.
- A weight for one-night cases (1.3484) which includes a substantial 'front end loading' of costs such as theatre and critical care not related to mechanical ventilation.
- The 1st per diem rate which applies after the first night and up to the 1st SD (0.1802 per day up to the 1st SD which is Day 2. Total weight if LOS = 2 is 1.5286)
- The 2nd per diem rate which applies after the 1st and up to the 2nd SD (0.1193 per day from Day 3 up to the 2nd SD which is Day 7. Total weight if LOS = 7 is 2.1251)
- The 3rd per diem rate which applies after the 2nd SD (0.1014 per day from Day 8 onward).

In ARDRGv4s with very tight LOS distribution about a low MLOS (same day or 1 night), the 1st SD and 2nd SD may be identical and only the one daily rate (the 3rd) applies. Similarly, if the 1st SD equals an LOS of 1 day, there will be no 1st per diem rate.

Costs not bundled into relative weights

Virtually all costs are bundled. The major exceptions are prostheses and unpredictable high cost intensive care. Prostheses prices are negotiated with suppliers not hospitals, hence it is inappropriate to bundle them into prices negotiated with hospitals. Most critical care is predictable, for example admission to a Coronary Care Unit (CCU) after acute myocardial infarction, and this cost is included in the NHCDC data and is therefore able to be bundled. The exception is those cases where very high level intensive care occurs. The HCP field hours of mechanical ventilation (HMV) is a robust marker of such care. It is not appropriate to bundle the cost of HMV because in most ARDRGv4s it occurs infrequently, and in the few ARDRGv4s where it occurs frequently its duration is highly variable.

MV days are excluded from the calculations of step-down days. MV days are uncapped for hospitals with Level 2 or Level 3 ICUs as defined by the ICU classification guidelines of the Joint Faculty of Intensive Care Medicine.[7] Other hospitals are limited to one day of MV (regardless of by how much the HMV exceed 6), reflecting the cost of short-term MV while transfer is arranged for those patients likely to need more. The same daily MV weight is paid for all DRGs, reflecting the high cost of MV, substantially independent of the underlying ARDRGv4.

Financial effect of LOS reduction

Under EPM™ there is a reduction in payment for each day LOS reduces, but this reflects costs saved. This is fairer than the old per diem model where LOS reduction often reduced

payment by an amount greater than costs saved and created an incentive not to expedite patient discharge. It also avoids the problem encountered under pure case-payment models, where there is an incentive to expedite discharge but in practice the reduction in costs has tended to benefit only hospitals, due to the difficulty of quantifying and negotiating a share of these cost savings. Unlike the public sector, where the state can unilaterally ensure it benefits from such cost reductions, PHI funds and private hospitals have a very different balance of negotiating power.

Relative cost weights derivation

Relative cost weight derivation involves calculating the underlying costs for the weight parameters then dividing such costs by a fixed dollar amount to derive relative weights. The first step is to determine the cost for each ARDRGv4 at the MLOS. The cost at the MLOS is then distributed to determine the various daily weights and the 1-night weight. This involves a process of working backwards from the MLOS and is summarised as follows:

- The P5 (1st SD) and MLOS (2nd SD) are derived.
- A 'plateau' daily cost is calculated by dividing the total of the ward and hotel cost buckets by the average length of stay (ALOS) in the NHCDC. This is the second per diem rate.
- The third per diem rate is the second per diem rate less 15%. This is a compromise judged to avoid setting either too high a rate (leading to incentives to prolong LOS) or too low a rate (not fairly compensating the cost of clinically necessary care).
- The cost at the NHCDC ALOS is modified by excluding the emergency, pathology, imaging and prostheses cost buckets. In those few DRGs where MV is common, the MV components of the critical care cost bucket are also excluded. This is the cost relevant to EPM™.
- The MLOS cost for those costs relevant to EPM™ is calculated by subtracting the plateau daily cost multiplied by the difference between the ALOS and MLOS from the EPM™ relevant costs.
- The first per diem rate includes additional cost buckets such as supplies, on costs and depreciation. The average per diem cost arising from these cost buckets is calculated by dividing this cost by the LOS up to the 1st SD. These are added to the second per diem rate to calculate the first per diem rate.
- The first night cost is calculated by subtracting the second per diem rate multiplied by [MLOS minus the 1st SD] plus the first per diem rate multiplied by [1st SD minus 1] from the average cost at the AHSA MLOS. This is used to set the one night rate and includes all theatre, special suite and non-MV critical care.
- The same-day rate for those DRGs when there are no significant clinical and/or financial differences between same-day and one-night cases equals the one-night rate less the 1st per diem rate.
- The same-day rate for those cases where there are significant differences between same-day and one-night cases generally reflects the average cost of a third-of-a-day stay at the first per diem rate plus any theatre/special suite costs.

Payment based on EPM™ units

The various components of care outlined above are converted to EPM™ units, and the total units are calculated to derive payment levels for individual cases. The unbundled costs are added, using actual prostheses costs and any EPM™ units related to mechanical ventilation (number of MV days by the MV EPM™ weight; in the special case where all days are MV a modified calculation is used).

The calculation of the dollar amount to be paid per EPM™ unit is derived initially by converting the relevant cases treated under the current contract to EPM™ units, and then dividing the total charges for those cases by the number of EPM™ units. This establishes a base EPM™ unit dollar rate, which would have ensured hospital revenue neutrality if EPM™

had been in place under the current contract. Negotiations then occur on changes to the base rate for the new contract period, similar to those which currently occur.

DRGs as the basis of per diem payment

AHSA is unaware of any similar per diem payment system, based on ARDRGv4 and industry benchmarked LOS and relative costs, having been implemented in the Australian private sector. EPM™ challenges the view that DRGs can only be used for case-based payment models. Classification systems and payment systems are distinct. Any classification system can be used with any payment system, and payment based on benchmarked cost and LOS need not be restricted to case-payment models.

In EPM™ DRG and per diem payments are integrated. In a sense this is a variation on the hybrid case-payment and per diem systems that are widely used in Australia. While most cases are paid on the basis of a single payment for each DRG, in practice additional per diem payments are made for cases with unusually long LOS. In some models payments are also reduced in proportion to the number of days below a particular LOS. As far as AHSA is aware all 'case payment' models in Australia contain at least one of these features, in effect creating a hybrid case-payment/per diem model.

Discussion

Advantages for hospitals

Under EPM™, hospitals make maximum profit at the MLOS, not the generally higher LOS in older per diem model step down. Any reduction in LOS reduces costs and revenues equitably. As a result, hospitals have an incentive to reduce LOS without nett financial loss. The perverse financial incentive not to expedite discharge under the old per diem model is removed. EPM™ does not require hospitals to reduce LOS dramatically, and a more gradual reduction in LOS does not disadvantage a hospital, unlike the situation that often arose when case payments were introduced.

The high degree of bundling and use of existing HCP data items simplifies account production and improves its accuracy. It also has the potential to remove the duplication involved in compilation of claim and HCP data, and is consistent with any move to automated claims processing.

The model allocates costs and revenues in a way which minimises the risk that cases in some broad clinical disciplines will be unprofitable (assuming an appropriate minimum case volume). This markedly reduces the incentive to cherry pick that currently exists in most models.

Some current contracts are very long and complex. EPM™ facilitates their simplification. Negotiations are simplified in that one key parameter is the basis of negotiations. Critical care patients are appropriately remunerated. Any clinically inappropriate payment step downs for patients receiving prolonged mechanical ventilation are removed and critical care certificates abolished.

Advantages for health funds

There is a saving in costs as LOS declines. This is likely to vary from hospital to hospital depending on whether their LOS is high or low compared with private sector benchmarks when EPM™ is introduced.

More efficient claims processing and higher data quality will reduce errors in claims payment and the cost of resolving such errors. There is the potential to remove the duplication of claims processing and HCP compilation with consequent savings. This is also consistent with a high degree of automation of claims processing.

The payment of critical care cases is simpler and more appropriate. There is a much reduced risk of payment model structure leading to cherry picking.

Negotiations are simplified once EPM™ has been introduced as they are primarily based on the dollar rate to be paid per EPM™ unit. EPM™ contracts will be broadly similar across

all hospitals except for the dollar rate paid per EPM™ unit and the categorisation of some DRGs. EPM™ creates a basis for volume discounts and/or tendering, and improves the ability to benchmark payment rates.

Disadvantages

Change creates resistance, but demonstrating the benefits of such change will assist in reducing such resistance. IT systems will require modification and there will be an associated cost. There will be a cost associated with staff training.

Implementation

The initial phase of EPM™ implementation has been deliberately restricted to a small number of hospitals. Provided no unexpected problems are found, it is anticipated that EPM™ will become the standard payment model in AHSA contracts in relation to acute caretype cases. To date no major problems have been discovered although a significant number of IT tasks required completion to meet PHI fund and hospital requirements.

Conclusion

EPM™ is a new payment system for acute care cases in the Australian private sector that has numerous desirable technical features including payments based on benchmarked cost and clinical practice data using a robust classification system. Its use creates incentives for greater private hospital clinical efficiency which benefits both health funds and hospitals. Above all it is designed to create a payment system that is fair to both hospitals and health funds.

Competing interests

The author is employed by the Australian Health Service Alliance, an organisation that is involved in negotiating payment contracts with hospitals on behalf of private health funds. The author devised EPM™ during the course of his employment as Medical Director of AHSA.

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