Submission to the Independent Hospital Pricing Authority

In Relation to the

Consultation Paper on the Pricing Framework for Australian Public Hospital Services
2022–23

by

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9 July 2021

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Introduction

This submission discusses two sets of issues raised in IHPA's June 2021 *Consultation Paper*. The first is on the role of socioeconomic status (SES) in healthcare utilisation and costs. The second are issues surrounding the design of an evaluation scheme in relation to the pricing adjustments for quality and safety implemented by IHPA.

Summary of recommendations

(1). Low SES patients have more hospital utilisation and higher costs compared to non-disadvantaged patients. The impact of SES should be fully reflected in pricing and funding models.

(2). Under capitation based funding, significant funding shortfalls could result if differences in SES are not accounted in areas served by different hospitals.

(3). Low SES patients also have more adverse events than non-disadvantaged patients. In designing an evaluation, it is important to account for SES when risk adjusting measures of outcomes in relation to sentinel events, hospital acquired complications (HACs), and avoidable readmissions.

(4). IHPA needs to consider a blended payment model where some proportion of payment is by ABF (to deal with variation in volume) and some proportion uses capitation or bundled payment payment.

(5). We recommend IHPA conduct a feasibility study in the national measurement of low value care, and explore how this can be linked to funding models.

(6). In designing the evaluation of safety and quality reforms, we recommend that the unit of analysis should be at the hospital rather than admission or LHN level.

(7). The evaluation design should allow for the overlap in the post intervention periods for sentinel events (from July 2017) and HACs (from July 2018), and account for

anticipation effects.

(8). Measures of outcomes for evaluation should be risk adjusted. Key factors to account for in risk adjustment include SES and health behaviours such as smoking, exercise and diet where data permit.

(9). We recommend a difference-in-differences design for evaluation using national hospital data. The comparison group can consist of non-ABF hospitals, which include public hospitals under block funding and private hospitals. Regression analysis can be used to account for differences across the intervention and control groups, with further refinements using synthetic controls.

The Role of SES

In response to "6.2. Adjustments to the national efficient price," our recent published work using linked hospital and human services data from Victoria shows that SES is an important independent factor affecting costs and utilisation (Yong and Yang, 2021). SES disadvantaged patients were found to have higher costs and utilisation by as much as 20% more than non-disadvantaged patients, after adjusting for other factors. Failure to adjust for SES in the pricing formula will unduly penalise hospitals that serve greater number of low SES patients.

The form of SES adjustments also matters, e.g., whether they take the form of lump-sum based payments or admission-based loadings such as the current indigenous patient loadings. The latter can be problematic since hospitals serving higher proportions of low SES patients are likely to incur higher costs, not just directly on patients but also via indirect, non-patient specific costs such as hiring of trained personnel, e.g., translators, liaison officers, or social workers, or setting up specialised facilities, e.g., alcohol and drug abuse wards, to cater to specific disadvantaged patient groups. To the extent that these indirect costs are not fully reflected in the loadings-based system, hospitals in low

SES areas serving a large number of low SES patients could be underfunded.

Our findings also have implications for alternative funding models, especially on capitation-based funding models. For example, if funding for chronic diseases were to become capitation based but no account is taken of SES differences, hospitals in areas with more disadvantaged patients can face significant funding shortfalls. Our research shows that the difference in costs and utilisation between disadvantaged and non-disadvantaged patients can be significant even during the first year of the disease. This difference can create perverse effects in that hospitals located in low SES areas may become financially burdened such that they have to turn away disadvantaged patients or transfer these patients to other hospitals.

It is worth noting that our research only documents the differences during the first year of the chronic disease we studied (from the date it was first diagnosed). Given that costs and utilisation tend to increase as diseases progress, it is important to map the entire trajectory of cost and utilisation patterns over the course of the disease and compare the differences between SES disadvantaged and non-disadvantaged patients.

Our research also shows that low SES patients tend to have more adverse events than non-disadvantaged patients, including all-cause readmissions, hospital acquired complications (HACs) and potentially preventable admissions; the difference range from 27% to 99%. This suggests that differences in SES should be allowed for in considering the pricing and funding approaches in relation to avoidable and preventable hospitalisations. The findings also have implications for the evaluation of safety and quality reforms. It suggests that risk adjustment of outcomes should be an important element in the evaluation design and that patient SES should be taken into account. We further discuss this below.

Alternative funding models

In response to "10.2 Investigation of alternate funding models" and "Next steps for alternative funding models," our previous research suggests that the pursuit of alternative funding models should proceed with caution and careful independent evaluation of impact. Reviews of payment models for hospital funding models provide mixed effects (Zaresani and Scott, 2021).

The suggestions to use bundled payment and capitation are important. However, both of these funding models require very careful risk adjustment (see above on SES) to avoid perverse incentives. Any type of fixed payment such as capitation or bundled payments provides incentives for providers to provide less care rather than a high volume of care. Unless quality is also being measured, less care can potentially reduce health outcomes. IHPA needs to consider a blended payment model where some proportion of payment is by ABF (to deal with variation in volume) and some proportion uses capitation or bundled payment. Relying on capitation alone will result in less care being provided and though this may reduce costs it may also reduce health outcomes if health outcomes are not routinely measured.

Evaluation of quality and safety reforms

In response to "11.5. Evaluation of safety and quality reforms," IHPA has introduced a series of pricing adjustments in relation to quality and safety of admitted services in the past few years. Evaluation can focus on the impact of these payment adjustments on quality and safety, or the evaluation of specific interventions implemented by specific hospitals or LHNs that aim to improve quality and safety.

Adjustments for sentinel events, hospital acquired complications (HACs) and avoidable hospital readmissions were implemented in July 2017, July 2018 and July 2021, respectively. These payment reforms require evaluation, not only to understand whether they

have been effective and if refinements are necessary, but also whether they cause any unintended consequences. A well designed evaluation should take full advantage of the rich collection of data in IHPA's possession, and the possibility of linking data by patient ID across multiple datasets and years. We discuss below key considerations in relation to the design of an evaluation scheme.

Unit of analysis

The first step in designing an evaluation is to decide on the unit of analysis. In this case the analysis could be conducted at the admission, hospital or local hospital network (LHN) level. The key is the level at which decisions are made and practice is changed. Our literature review has shown that the extent to which a decision making unit (be it hospitals, clinical teams or individual clinicians) is impacted by the incentive scheme is an important consideration (Scott et al., 2018). In this regard, we think the hospital would be the appropriate unit since hospitals are likely to implement policies and procedures targeting reductions in adverse events in response to the reforms. One may even consider the clinical team or individual clinician as the unit of analysis, although current data availability may not support this.

Pre- and Post-intervention periods

Since the implementation dates of funding adjustments are known with certainty, establishing the pre- and post-intervention periods is straightforward. However, potential complications can arise because of two issues. First, the overlap in the post-intervention periods for sentinel events (from July 2017) and HACs (from July 2018). This means the effects on sentinel events were cleanly identified for only one year, between July 2017 and July 2018. Post July 2018, the effects on sentinel events and HACs were bundled together. For example, hospitals may implement policies and procedures that aim to reduce sentinel events, but may also have an impact on HACs. Separately identifying the

effects of the two schemes would require careful methodological design of the evaluation.

Second, because the dates of implementation were announced in advance, there could be anticipation effects. Hospitals may implement policies and procedures well before the implementation dates, such that the effects may occur during the pre-intervention periods. The anticipation effects are well known in the program evaluation literature and should be allowed for in the evaluation design (e.g., Bergemann et al., 2005). Note also that the anticipation effects will also complicate the overlap issue raised earlier, since the anticipation effect will add to the difficulty of disentangling the effects on sentinel events from those on HACs.

Outcomes

In defining the outcomes of interest, it maybe desirable to examine both intended and unintended outcomes. The intended outcomes in this case are the number, proportion and likelihood of sentinel events and HACs that occur in each hospital pre- and post-intervention. Also of interest are unintended consequences of the reforms, e.g., possibilities can include other adverse events not incentivised, reduced efficiency or increase costs, or hospitals avoiding complex patients.

Another important consideration in relation to outcomes is whether to risk adjust and what to include in the risk adjustment process. We recommend that factors attributable to the decisions of patients and not hospitals (or clinicians) be risk adjusted to allow for risks that are beyond the control of hospitals so that hospitals with different patient casemix are placed on a relatively level playing field. Besides the usual demographic factors (age, gender, etc.), important factors to consider for risk adjustment should include SES (Yong and Yang, 2021) and health behaviours (e.g., smoking, exercise, diet, etc.). These factors are obviously important but are typically unavailable in administrative data such as those under IHPA's collection. We recommend that IHPA conducts supplementary studies to assess the importance of these factors using survey data in order

to gauge the extent of the biases arising from the missing information.

Evaluation methodologies

The simplest evaluation design is a before-after or interrupted time series design whereby the outcomes of interest of each unit are compared pre- and post intervention. The design unfortunately suffers from serious shortcomings, due to possible changing time trends and changes in the external environment. This approach is particularly problematic for measuring the medium- and long-term effects of the reforms.

A superior alternative to the before-after design is the difference-in-differences design, whereby the change in outcomes in the intervention group is contrasted with those in the comparison group to isolate the effects of the reforms (see, e.g., Blundell and Costa Dias, 2000). The focus is on the change in the differences between the two groups, as such it is able to 'net out' changes that may affect both groups such as changes in the external environment.

A difficulty in applying the difference-in-differences design in the present context is in finding comparison groups. Ideally we want to compare hospitals affected by the reforms with comparable hospitals that are not subjected to the reforms. However, this is difficult given that the reforms were introduced at the same time across Australia. One possibility is to establish the control group as hospitals not subjected to ABF, these can include public hospitals under block grants and all private hospitals. A regression approach can be used to control for differences, such as patient mix and size, across groups.

A further refinement is to create synthetic controls using the mix of public and private hospitals in the comparison group (Abadie and Gardeazabal, 2003; Abadie et al., 2010). The approach uses a data-driven procedure to create synthetic units based on a weighted combination of units in the comparison group. It is particularly attractive when units in the comparison group are heterogenous and differ from the intervention groups in

varying degrees across relevant aspects. For a comprehensive recent review and further technical details, see Abadie (2021). The approach has become popular in policy and practical applications (e.g., Pieters et al., 2017), and has even featured in the popular press such as the Wall Street Journal (Douglas, 2018).

In deploying the difference-in-differences design, with or without synthetic controls, two important conditions should be verified before inferring any results. These are the assumptions of parallel time trends across groups during the pre-intervention period and no composition changes within each group (see e.g., Yong et al., 2018).

Avoidable hospital admissions

In response to section "11.6. Avoidable and preventable hospitalisations," we think this is an important area to pursue. However, this requires a shift to alternative funding models or an investment in care of patients in primary care and aged care settings. It seems difficult to 'penalise' or 'reward' hospitals for activity in primary and community care settings that keep people out of hospital. It therefore requires funding reforms outside of the hospital sector, and so would require a much higher degree of co-operation between sectors.

It is important and in the national interest to enable the routine linkage of primary care, aged care, and hospital data to underpin future pricing models that include incentives to shift care to lower cost (i.e., out of hospital) settings. In particular, hospital data reported by States should include a field for the Medicare provider of the referring GP or non-GP specialist, or a unique code identifying the provider of home based aged care support, NDIS, or residential aged care provider. This would enable high quality data linkage across these sectors and should be a priority.

Though pay for performance has been delivered in terms of adjusting payments for safety and quality, the measurement of other quality/health outcome measures should

also be considered such as mortality rates and low value care. Prof. Adam Elshaug has successfully measured low value care in public and private hospitals in Australia (as well as in US Medicare). We also recommend that payments should be lower where low value care is provided. We recommend IHPA/ACSQHC conduct a feasibility study in the national measurement of low value care, and explore how this can be linked to funding models.

Conclusion

Socioeconomic status has an important independent effect on hospital utilisation and costs, over and above age, gender, and co-morbidities. Measures of SES should therefore be incorporated into hospital funding models.

New payment models need to be considered carefully. They may reduce volume of care and costs but could also reduce health outcomes. Careful evaluation is essential.

There are many ways that evaluation frameworks can be set up, but they should be using national hospital data at the patient level with extensive data linkage across sectors (to Medicare, Aged care, NDIS) and careful considerations should be given to the latest methodologies and study designs.

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