



## Private Health Revenue Modelling

### Background

Every private hospital has a Hospital Purchaser-Provider Agreement (HPPA) with each private health insurance fund, based on complex funding models with intricate provisions. These funding models are either episodic, per diem or a mix of both. HPPA negotiations have a crucial bearing on a private hospital's financial performance and ongoing viability as most of their revenue comes from treating insured patients<sup>1</sup>.



### Challenge

Cabrini Health needed to understand their revenue and profitability to gain an edge in Hospital Purchaser-Provider Agreement (HPPA) price negotiations with private health insurance funds.

In addition, when corporate takeovers and mergers occurred in private health fund ownership, Cabrini Health needed to be able to adapt quickly to the new conditions.

### Solution

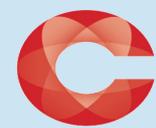
#### 1. Modelling HPPA contracts

Dr David Phillips and Mr Ainsley Corteling from Cabrini's Business Intelligence Unit worked closely with PowerHealth Solutions (PHS) to analyse the HPPA contracts — breaking down the provisions into decision logic that could be understood and modelled. They found that once the drivers for each funding component were identified, it became much easier to build the custom models.

Around 57% of overnight separations at Cabrini are episodically funded, with the revenue being based on the coded DRG (AR-DRG version 4.2) for the episode. Medibank Private, BUPA and MBF were the main funds that use episode funding for overnight separations, and each fund also had an add-on for ICU stays if certain criteria were met. 79% of sameday stays were either completely episodically funded or had a component of package funding.

Using PPM Rulesets, seven separate revenue models were developed, each with a different mix of episodic and per diem funding.

1. "More than three quarters of private hospital patients have private hospital insurance, with some of the rest receiving treatment as either war veterans or under some form of compensation arrangement." Private hospitals in Australia, Productivity Commission Research Paper, 1999.



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www.cabrini.com.au

Cabrini Health is a not-for-profit Catholic healthcare service inspired by Mother Cabrini and owned by the Missionary Sisters of the Sacred Heart of Jesus. Cabrini is a pioneer in Australian private healthcare, with a track record of significant investment in education, research and health promotion.

#### Size

- 5 campuses
- 832 beds
- 1,220 specialist doctors
- 5 radiotherapy campuses
- 4,056 staff
- 80,500 episodes per year

Fund	Funding Model
MBP	DRG episode funding
BUPA	Mix of DRG episode funding and per diem payment
MBF	Per diem plus CMBS-based payment. Now merged into BUPA.
ARHG	Per diem with stepdowns plus CMBS-based payment.
DVA	Per diem plus CMBS-based payment.
HCF	Per diem plus CMBS-based payment.
AHSA	Per diem with stepdowns plus CMBS-based payment.

## 2. Testing Revenue Models

PHS tested the models against Cabrini Health billing data<sup>2</sup> until they reached 75% accuracy, at which point they were handed over to Cabrini Health for more detailed Beta testing.

The Beta testing revealed further complexities and idiosyncrasies in the billing process, which were missing from the revenue models. When these additional complexities were coded in, the models came close enough to reality with an accuracy of 95%. Once 95% accuracy was achieved, the models were signed off.

During testing, MBF was taken over by BUPA and Cabrini Health was able to model MBF activity through the BUPA model.

## Result

### 1. Forecasting

#### Predicting Health Fund Revenue

PPM Rulesets provided Cabrini Health with 95% accurate revenue forecasting, allowing them to predict their future revenue, and manage their business around this knowledge.

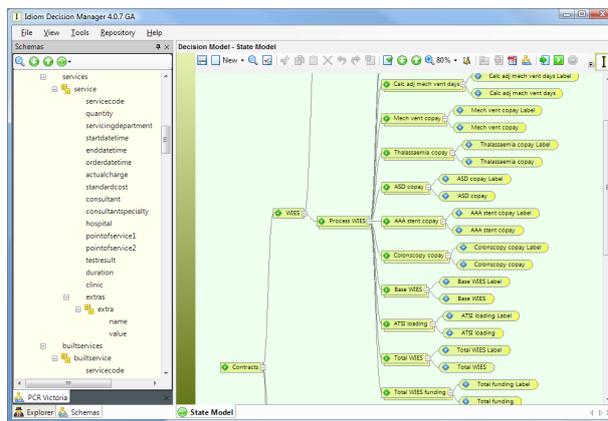
#### Quantifying Health Fund Provisions

PPM Rulesets enabled Cabrini Health to quantify private health fund provision options and price changes in order to bargain shrewdly at the annual pricing reviews and negotiate favourable prices for HPPA contract renewals. While it is a not-for-profit healthcare service, Cabrini Health works hard to ensure optimum financial health and to not operate at a loss.

### 2. Quality Assurance

PPM Rulesets is now an essential internal auditing tool for Cabrini Health's administration processes. They routinely use it for:

- Correcting invoices — swiftly identifying incorrect coded invoices for encounters that have had DRG changes, and resubmitting the corrections within the permitted resubmission timeframe
- Checking billing processes — identifying flaws in their billing processes that can impact on their revenue, for example where incorrect sameday medical fees were applied instead of full chemotherapy fees
- Verifying price changes — checking that rate changes in the billing process had been applied correctly.



PPM Rulesets

2. Data used came from acute hospitals at Malvern and Brighton. Prahran Hospital (providing palliative care) and Hope-toun Service (providing rehabilitation) were not included.

## Bonus Outcomes

The testing process compared modelled revenues against actual revenues. When the models were at the requisite accuracy, Cabrini Health found it useful to reverse the process and compare the actual revenues to the modelled revenues.

By using PPM Rulesets as an auditing tool, they uncovered several hidden flaws in their billing process, outlined below.

### Mid-encounter DRG Changes

Each health fund allows a specific timeframe during which an account can be resubmitted. When DRG changes occurred, some were not being picked up before the resubmission deadline — leading to potential loss of revenue. By setting up a dummy PPM Rulesets database, Cabrini Health calculated daily revenue from recent discharges following auditing and review for swift identification of incorrectly coded invoices for timely resubmission.

### Incorrectly Coded Invoices

Cabrini Health also found chemotherapy invoices that were routinely coded incorrectly with the sameday medical fee instead of the full chemotherapy fee. They tracked the problem down to the Day Oncology forms being incorrectly filled in by nurses, who did not enter all the CMBS codes for chemotherapy.

Cabrini Health reviewed their ward data capture processes and took steps to ensure that nursing staff understood the correct information capture required.

### Pricing Changes

The test period covered pricing changes due to annual reviews as well as HPPA renewal negotiations. Once the new rates had been implemented in the Patient Administration System billing processes, Cabrini Health used PPM Rulesets to double-check that rate changes had been applied correctly.



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## To find out more

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