

IR-DRG Payment Parameters

Methodology Guidelines (Version 1.0)

DRG Implementation – Phase II of Shadow Billing

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1. Introduction

The Dubai Health Authority (DHA) has adopted the International Refined-Diagnosis Related Groups (IR-DRGs) for inpatient hospital payment. DHA's primary goal for health insurance payment models and regulations is to ensure the sustainability of the Dubai health system by providing incentives for improved efficiency and quality in the Dubai healthcare system

IR-DRGs bundle or combine inpatient hospital services into a single group for each inpatient stay. The hospital services included in each IR-DRG bundle represent the typical services provided across all hospitals for inpatients with similar reasons for admission (principal diagnosis or complex procedure). Each inpatient hospital stay is assigned to one and only one IR-DRG based on the patient's age, sex, diagnoses, procedures provided to the patient, and sometimes other factors.

IR-DRG payments are intended to cover a wide variety of services provided to patients with an inpatient hospital stay such as physician care, nursing care, technician services, therapies, radiology, laboratory, pharmaceuticals, room, and meals. By grouping inpatient hospital stays, IR-DRGs provide a way of measuring the casemix, or relative severity of illness, and the cost of different types of inpatient stays provided by a hospital. IR-DRGs enable hospitals to be paid more if they treat sicker patients (that is, a more severely ill casemix of patients).

This document describes the derivation of the IR-DRG payment parameters for the inpatient payment system for Dubai hospitals during the shadow billing period. It includes five major parameters with a brief description of each parameter and how will it affect the calculation of IR-DRG payment. At the most basic level the IR-DRG payment is a multiplication of two factors: the base rate and a relative weight. The base rate is an amount representing the average payment per inpatient admission for all hospitals in the base year. At his basic level, there is one base rate for all hospitals. Relative weights are unique values assigned to each IR-DRG to reflect the average level of hospital resources used to treat an average patient in a particular IR-DRG, relative to the average level of hospital resources used to treat all patients. Thus, the basic formula for IR-DRG payment can be written as:

$$\text{IR-DRG Payment} = \text{Base Rate} * \text{Relative Weight} \quad [1]$$

2. Overview of the Parameters of the Dubai IR-DRG Payment System

IR-DRG payment systems use a series of parameters for calculating the specific payments to be made to hospitals for each inpatient stay. Each of these parameters must be considered for the Dubai IR-DRG payment system in order to implement IR-DRGs for payment to Dubai hospitals. There are five main parameters defined for the Dubai DRG payment system:

- Base rate
- Relative weights
- Outlier payments
- Negotiation band
- Transfer payments

Analysis Data

The dataset that is being used to establish the Dubai IR-DRG parameters for inpatient shadow billing includes 2.5 years of Dubai inpatient claims data from the eClaim Link system: 2015, 2016 and the first six months of 2017. Inpatient encounters include:

- Encounter Type 3 (Inpatient Bed + No emergency room); and
- Encounter Type 4 (Inpatient Bed + Emergency room).

Inpatient encounters include those where the length of stay (LOS), defined as the discharge date minus the admission date is greater than 0, or where the LOS is 0 and the beneficiary is discharged dead.

2.1 Base Rate

The base rate represents the IR-DRG payment for the overall “average” hospital inpatient admission in Dubai. The base rate payment value is then adjusted by the IR-DRG relative weights, negotiation band, outlier payments (when applicable), and transfer payments (when applicable) to calculate the final IR-DRG payment for a hospital for a particular inpatient stay. The base rate is set equal to the total payments for inpatient cases divided by the total case-mix adjusted number of inpatient cases for all hospitals. Budget neutrality is ensured to allow outlier payments (discussed below) in the system. Budget neutrality means that, holding the number of admissions, casemix, and other factors constant, hospitals can expect to be paid more during a particular year only because of allowed cost inflation. To achieve budget neutrality, the IR-DRG inlier payment rates (Base Rate * Relative Weight) are adjusted downwards by the target percentage of total payments that are outlier payments (TPOP) in the market to account for the outlier payments. As a result, the base rate is calculated by using the following formula:

$$\text{Base Rate} = \frac{\text{Total Payments for all Cases}}{\text{CaseMix Adjusted Number of Cases}} * (1 - \text{TPOP}) \quad [2]$$

and the IR-DRG payment formula becomes:

$$\begin{aligned} \text{IR-DRG Payment} &= \text{Base Rate} * (1 - \text{TPOP}) * \text{Relative Weight} & [3] \\ &= \text{Base Rate}_1 * \text{Relative Weight} \end{aligned}$$

Update Factor

In subsequent years, the base rate is updated using an update factor representing cost inflation in input costs for hospitals during the upcoming year.

2.2 Relative Weights (RWs)

The relative weights (RWs) adjust the base rate for the relative costliness of the hospital services needed for an inpatient hospital stay as measured by the IR-DRGs. Each IR-DRG is assigned a unique RW to identify its relative costliness and the payment adjustment needed for that hospital inpatient service. Relative weights are calculated by 3M, applying their standard methodologies. The relative weights are intended to account for cost variations between IR-DRGs that represent different types of patients and treatments (differences in casemix). Changes in relative charges reflect changes in the relative costs of providing care. The more costly IR-DRGs, those for the more severely ill or more complex patients, are assigned higher relative weights and thus receive higher payments

Relative Weight Calculation

The Dubai eClaimLink claims data were used to calculate DHA relative weights as IR-DRG-specific average charges divided by average charges for all Dubai inpatient hospital claims. These Dubai specific weights are then blended with an “international norm” to account for IR-DRGs not used by hospitals in Dubai, or with low numbers of patients in Dubai, the variability of charges given different payment schemes, potential changes in coding by hospitals, and observed non-monotonicity of relative weights between related IR-DRGs (with different sub-classed of severity of illness) within the same base IR-DRGs in Dubai. When available, the IR-DRG relative weights established by the Health Authority of Abu Dhabi (HAAD) were used for the “international norm”. If not available, the US relative weights were used.

The blending process included three steps. First, a blended distribution of cases within related IR-DRGs is created to account for changes in coding. This blending compares the IR-DRG distribution of cases within these related IR-DRGs in Dubai to the “international norm”. If the distribution varies between the two, 3M calculates a blended distribution that is 50% of the Dubai proportion plus 50% of the “international norm” proportion for each IR-DRG. This new blended proportion is multiplied by the number of IR-DRG cases in Dubai to create the blended distribution. Second, Dubai weights were blended with the “international norm” weights to correct for issues of non-monotonicity across related IR-DRGs. In the third, and final step, the methodology used ensured that the same relative payment (sum of RWs*base rate) is provided for the sum of the current Dubai cases in the three potential sub-classes of the base IR-DRG.

It is important to note that the calculation of the RWs is a null-sum exercise at the base DRG level, therefore, any adjustment from international norms (i.e. Abu Dhabi and US) is evened out at the base DRG.

2.3 Outlier Payments

Outlier payments are extra payments to a hospital, in addition to the regular or “inlier” IR-DRG payment, for an inpatient hospital stay that incurs unusually high costs for the hospital. These are defined to be rare occurrences. The purpose of outlier payments in the IR-DRG payment system is to provide risk sharing for very costly cases. This enables the hospitals to be paid an extra amount, in addition to the regular IR-DRG payment, for treating patients who have very high costs during their inpatient stays in the hospital.

An outlier payment for an inpatient case is made to a hospital if and only if the cost of the case exceeds a predetermined cost threshold amount that is added to the regular IR-DRG payment to identify the very high cost cases that qualify for the extra outlier payment. The amount of the extra outlier payment that is made to the hospital (in addition to the regular IR-DRG inlier payment in equation 3) is a percentage of the additional cost for that case that is above the threshold amount that is called the marginal.

In the absence of detailed hospital cost reporting allowing the determination of claim level costs, the costs for a case must be imputed. The imputation is based on two components: a predetermined cost for each service and the total number of services billed on the hospital’s claim. In Abu Dhabi, the cost list is set at the basic price for each service. In Dubai, the cost list has been established based on the inpatient claims data from January 2015 to June 2017. For each service code that was billed more than ten times in Dubai during that period, the cost is set at the 25th percentile of payments (which is on average 2.04 times larger than the basic price in Abu Dhabi). For the remaining service codes that were billed less than ten times in Dubai, the cost is set at 2.04 times the Abu Dhabi basic price. The cost for drugs is set at the value on the Ministry of Health Price List. Activity codes not billed in Dubai more than 10 times and also not on the HAAD price list have a cost of 0.

The threshold amount was determined, iteratively, based on claim payments, the target TPOP of 3%, and the marginal of 60%. When this cost threshold is exceeded, then an extra payment is made to the hospital at 60% of the amount by which the hospital’s costs exceed the outlier threshold of cost for that IR-DRG. Including an outlier payment in the IR-DRG payment system further changes the IR-DRG payment formula to:

$$\text{IR-DRG Payment} = (\text{Base Rate}_1 * \text{Relative Weight}) + \text{Outlier Payment (if applicable)} \quad [4]$$

2.4 Negotiation Band

This is the range (band) within which health insurance companies and individual hospitals are permitted to negotiate the base rate. To allow for negotiation the base rate is normalized. For the Dubai IR-DRG system the negotiating band is 1 to 3.5, that is slightly wider than the negotiating band in Abu Dhabi that is 1 to 3. After applying the negotiation band, the final formula for IR-DRG payment is:

$$\text{IR-DRG Payment} = (\text{Base Rate}_2 * \text{Relative Weight} * (\text{Negotiation Band Value}) + \text{Outlier Payment (if applicable)}) \quad [5]$$

Negotiations are not permitted on any other IR-DRG payment parameters in Dubai.

2.5 Transfer Payments

Hospitals sometimes transfer patients, particularly those that are more severely ill or high-cost, to other hospitals (including to DHA hospitals). This may sometimes be done for medical reasons, but it may also sometimes be done for financial reasons under IR-DRG payment if the case is expected to be high cost for the hospital.

As a result, in Dubai payment to hospitals transferring patients to other hospitals will be per diem (per day) payment rates, consistent with the methods used in Abu Dhabi and in the U.S. Medicare system. The transfer payments will be a graduated per diem payment so that the first hospital day will be paid the full per diem rate while subsequent hospital days will be paid 50% of the per diem rate. The per diem rate was calculated using an IR-DRG inlier payment that was calculated using the median base rate and average length of stay. The maximum payment for any case for a patient transferred to another hospital will be the regular IR-DRG inlier payment calculated with the median base rate for the IR-DRG for that hospital case. Transfers of inpatients within a hospital system, where both the transferring hospital and the receiving hospital are owned by the same company, will not receive a separate transfer payment; only the IR-DRG payment will be made.

As in Abu Dhabi, the receiving hospitals for transfer patients in Dubai will receive the regular IR-DRG payment.

3. Summary of Payment Parameters

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| Base Rate | <ul style="list-style-type: none">• Minimum Base Rate = AED 7,501• Median Base Rate = AED 16,877• Maximum Base Rate = AED 26,254 |
| Relative Weights | <ul style="list-style-type: none">• Blended Dubai & Abu Dhabi |
| Negotiation Band | <ul style="list-style-type: none">• 1 to 3.5 |
| Outlier Payment | <ul style="list-style-type: none">• Percentage of Total Payments That Are Outlier Payments (TPOP) = 3%• Marginal = 60%• Cost Proxy = 25th Percentile of Activity Code Payments• Outlier Cost Threshold (AED) = AED 36,877 |
| Transfer Payment | <ul style="list-style-type: none">• Transfer Payment = Graduated Per Diem for Transferring Hospital |