

**Recommendations by the Risk Equalisation Technical  
Advisory Panel**

**to the Council for Medical Schemes**

**Methodology for the Determination  
of the Risk Equalisation Fund  
Contribution Table 2006  
[Base 2002, Use 2006]**

**RETAP Recommendations Report No. 7**

**Adopted at RETAP Meeting 26 January 2006**

# **Risk Equalisation Technical Advisory Panel (RETAP)**

Following the approval of the Social Health Insurance (SHI) policy by the National Department of Health, the Minister of Health appointed a Ministerial Task Team (MTT) on Social Health Insurance to support the implementation of the SHI system in South Africa over the next five years. The MTT is made up of officials from the Department of Health, the Department of Social Development and the Council for Medical Schemes. In January 2005 Cabinet approved the shadow implementation of the Risk Equalisation Fund (REF) and placed the responsibility for implementation with the Council for Medical Schemes. Dr Boshoff Steenekamp joined the Council for Medical Schemes in May 2005 to head the Risk Equalisation Fund. Cabinet approved the implementation of REF in July 2005.

The Risk Equalisation Technical Advisory Panel (RETAP) was established on 20 October 2004 as a consultative group used to assist in the development of technical requirements for implementation of the REF. RETAPs role flows from some of the key recommendations made by the original Formula Consultative Task Team (FCTT). In particular, the panel must focus its attention on the practical requirements for the implementation of the REF formula. Its recommendations should enable an action plan to be developed for implementing the formula, taking into account all the practical and technical issues that will arise in the implementation phase.

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# 1. Introduction and Purpose of Report

The document detailing the planned methodology for the Risk Equalisation Fund (REF) Contribution Table for 2006 was adopted by the Risk Equalisation Technical Advisory panel (RETAP) on 31 May 2005. It was the original intention to release the 2006 Table as close as technically possible to the future intended deadline of 31 July 2005. The first shadow returns by medical schemes to the REF were however only made in July 2005 and these were analysed and presented in a report to RETAP on 29 September 2005. RETAP had concerns about the quality of the first REF Grids submitted and a decision was taken at that meeting to delay the preparation of the REF Contribution Table for 2006 (REFCT 2006) until after the third quarter data had been received and analysed.

This report has been prepared by Heather McLeod, Pieter Grobler, Brett Mill and Boshoff Steenekamp. The document was discussed by a full meeting of RETAP on 26 January 2006. The report was unanimously adopted except for Section 7.2 on which further evidence is to be presented shortly. This report documents recommendations from RETAP to the Council for Medical Schemes which is responsible for the implementation of the REF.

## 2. Guiding Principles and Base Year

### 2.1 Definitions and Guiding Principles

The guiding principles established by the Formula Consultative Task Team and reviewed for the REF Contribution Table 2005 were used without any amendments.

### 2.2 Choice of Base Year for Shadow Year 2006

Recommendation (Z) in the 2005 report stated:

With the shadow period continuing until 2007 it would not be essential to revise the shape of the REF Contribution Table for 2006 although a full REF Study could be commissioned. Note that as 2004 saw rapid and large gyrations in medicine prices there would need to be a separate component commissioned to determine a reasonable expectation for medicine prices that might apply in 2006 as the raw data will not be reliable enough to use as the base.

The following factors were also taken into account in the decision about the base year to use for the REF Contribution Table 2006:

- The most important change to bring through in REFCT 2006 is the incorporation of REF Grid Count data from across as many schemes as possible. This affects the age profile and particularly the disease profile used in the calculation of the Industry Community Rate.
- A complete exercise of refitting the curve would need to begin with data extraction from the industry with effect from 1 April of any cycle.
- There was a great deal of uncertainty in the industry in 2004 about the precise definition of PMBs. The ICD10-coding of PMBs was published for comment in December 2004 and was finalised after further stakeholder comment in July 2005. A further amended version was released in December 2005.
- Compulsory ICD-10 coding of accounts sent to medical schemes was due for implementation from July 2005. The implementation by some groups of providers proved to be slower than originally anticipated.
- The quality of the 2004 data was very poor, particularly given the changes in medicine prices during that year and the uncertainty about the relationship of those prices to medicine prices in future.
- The quality of the data for the first six months of 2005 was no better.

- The costs of a complete refitting of the REF formula are high, both in terms of time and resources.
- Medical scheme trustees and their advisors are, in many cases, only getting to grips with the practicalities of the REF Contribution Table during 2005.
- There is a need to harmonise increases in the price of PMBs in the REF Contribution Table with the work being done for the NHRPL process.
- There was substantial uncertainty about the practicalities of the entry criteria for the REF Grids and several further pieces of work were completed with extensive stakeholder participation in 2005. The Data entry and verification criteria for REF were released on 22 November 2005 for application from January 2006.
- It was critical that the definition of PMBs and the entry criteria are finalised BEFORE data is extracted for a revised fitting of the REF formula.

The pricing team did have substantial concerns about the continued validity of the adjustments being used from raw price to full price for the PMBs. This would be exacerbated by extending the life of the raw data for a further year. However, it was felt that the lack of clarity on the PMB definition and the entry criteria made any new curve fitting using 2004 data of little use for the future. Accordingly, it was decided to continue to use the base year of 2002 for the REF Contribution Table for 2006. The table will thus be known as the REF Contribution Table [Base 2002, Use 2006].

Plans have been put in place to conduct a full review and fitting of the formula prior to the introduction of the live REF Contribution Table for 2007, as illustrated below.

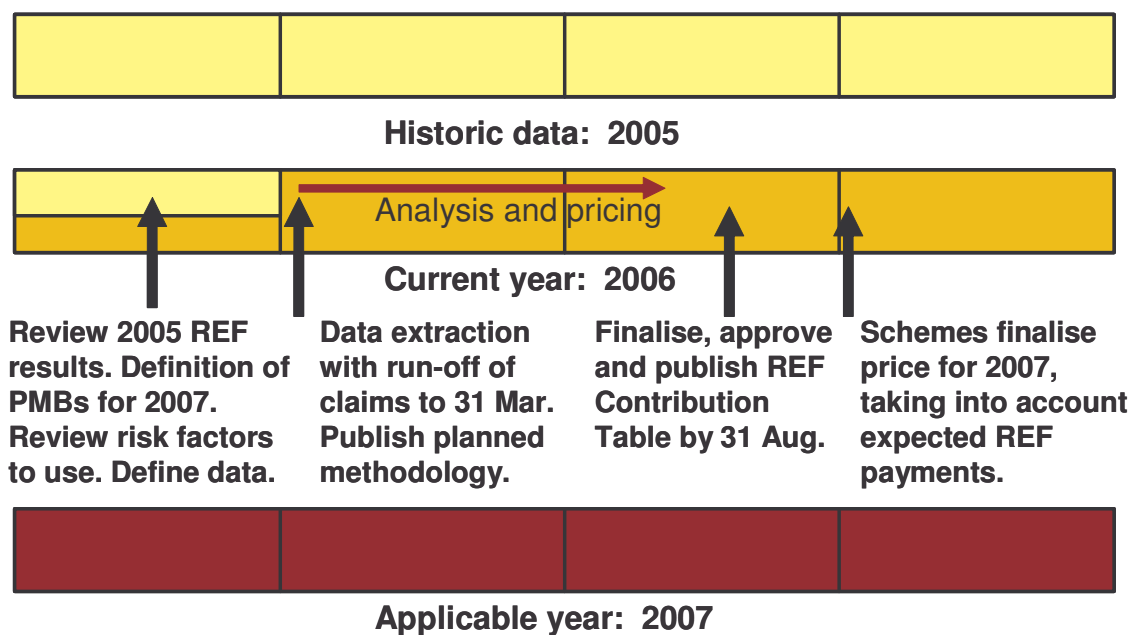


Figure 1: Cycle for Preparation of REF Contribution Table [Base 2005, Use 2007]

## **3. Package to be Equalised and Risk Factors**

### **3.1 Amendments to PMBs in Regulation**

There was only one legislative amendment to the definition of Prescribed Minimum Benefits since the development of the REFCT 2005. The work on a proposed Basic Benefit package has not proceeded to a stage where any modifications need to be made to the REF common package. Recommendations on a possible LIMS PMB package in terms of the Low Income Medical Scheme project under Dr Jonny Broomberg are also still in progress.

A change was made in the Gazette of 11 February 2005 in the wording of the published therapeutic algorithm for Multiple Sclerosis. Previously the treatment for the pathway “Frequent relapse, Secondary Progressive” was “Consider immuno-suppressive therapy e.g. methotrexate or cyclophosphamide or azathioprine”. The revised algorithm replaces the treatment with “Consider beta-interferon”.

Beta-interferon was specifically excluded when the average cost of treating Multiple Sclerosis was developed in 2004 and 2005. It is thus necessary to adapt the CDL component cost treating Multiple Sclerosis to include the much higher cost of beta-interferon.

### **3.2 Impact of Change in Coding of PMB-DTPs**

The 2005 report stated “It is thus imperative that a proper study be conducted of the impact of the new finalised Council for Medical Schemes cross-walk on the earlier studies on the price of PMBs and the REF Contribution Table for 2004. RETAP strongly recommends that the Council for Medical Schemes produce an assessment of the financial impact of the newly published PMB ICD-10 cross-walk, compared to the PMB 2001 Study and the REF 2002 Study.”

Detailed and substantive work on this issue was instead carried out by Dr Brian Ruff and the team at Discovery Health and presented at the Board of Healthcare Funders annual conference in 2005. The findings were made available to RETAP and we have considered the impact of these results for the pricing of the REF Contribution Table 2006.

Drs Brian Ruff and Sylvia Cornejo showed in June 2005 that the impact of the (then) draft changes in the ICD-10 coding list increased hospital costs by 10 to 11%. The argued for an

expansion of the ICD-10 code list which should expand the list by around 70 codes and that this implied a further 1.5% to 2% increase in costs.

The Discovery Health team showed that adding all related costs to the top PMB-linked clinical treatment groups added 63% to prices from the hospital data. They argued that it was necessary to put diagnostic and procedure codes in regulations and continue adding algorithms. They warned that without these mechanisms costs increases might well be greater than 50%. They also recommended that PMB-CDLs be split into severity bands.

More recent work on the ICD-10 code list as defined in December 2005 has not yet been completed but will also be made available to RETAP. The more recent study is expected to produce results of a similar magnitude. The impact of this on REF is discussed in Section 4.2

### **3.3 Risk Factors**

The envisaged study on the issue of including gender as a specific risk factor should be carried out as part of the study for the REFCT 2007 which is planned to occur between April and July of 2006.

There were no changes made to the risk factors used for the REF Contribution Table 2006:

- Age last birthday on 1 January, summarised into age bands Under 1, 1-4, 5-9, 10-14... 75-79, 80-84, 85+.;
- The 25 PMB-CDL conditions. Where a beneficiary has more than one CDL conditions, the scheme may choose the most expensive of the conditions for the placement of the beneficiary in the REF Grid Count.
- HIV/Aids provided the beneficiary is receiving or has received anti-retroviral therapy according to the PMB definition;
- A modifier for maternity, delivery of a single/multiple foetus either stillborn or alive following a pregnancy of at least 24 weeks duration;
- A modifier for the number of multiple CDL conditions. Allowance is made for 2, 3, and 4+ simultaneous CDL conditions.

### **3.4 Rules for Determining REF Grids**

The count of people in each cell is a function of the definition of the entry criteria and the criteria for validation of the data. These were only finalised and published on 22 November 2005 for use from 1 January 2006. Thus data in the REF Grids in 2005 was submitted not

using these entry and validation criteria. The REF Grid used in the determination of the Industry Community Rate for 2006 is discussed in Section 6.

The RETAP meeting of 31 May 2005 considered several diseases where the possibility of gaming the REF Grids was considered problematic and proposed several rules with regard to the REF Grids. These were then incorporated and expanded in the REF entry and verification criteria of November 2005. Section 3.9 of that report reads as follows:

### **Exclusion of Specific Diseases as Multiple Chronic conditions**

3.9.1 Note that, for REF Grid Count purposes, certain CDL diseases will not be considered if they do co-occur in the same patient. (However, if these conditions do co-occur, it must be reflected in the REF Grid Prevalence tables). Cases encountered with more than one of the conditions listed below are not eligible to be counted as multiple diseases. The conditions are arranged in descending cost order.

Schemes must assign the most expensive condition to these cases; these co-occurring conditions must not be counted as multiples in the disease count grids:

3.9.1.1 Only one of the following chronic respiratory diseases can be assigned to the same patient: Chronic Obstructive Pulmonary Disease, Asthma and Bronchiectasis.

3.9.1.2 Only one of the following cardiovascular diseases can be assigned to the same patient: Cardiomyopathy and Cardiac Failure, Coronary Artery Disease, Dysrhythmias; and Hypertension.

3.9.1.3 Only one of the following Gastro Intestinal conditions can be assigned to the same patient: Crohn's disease or Ulcerative Colitis.

3.9.1.4 Note that, in accordance with the Diabetes Mellitus table in section 6, Diabetes Mellitus Type 1 and Type 2 cannot co-occur.

These rules apply to the REF Grid Count which is used for payment purposes and for determining the Industry Community Rate. The feasibility of including the effect of these rules was considered in the determination of the REF Contribution Table 2006. All of these rules affect the number of people with multiple conditions but should have no direct effect on the CDL column count (which allows for the highest cost disease to be chosen). The rules do have an impact on the numbers in the CC2, CC3 and CC4 columns and this is discussed in Section 6.4. Effectively, the CC2 numbers increase, the CC3 numbers decrease and those in the CC4 column are substantially decreased.

At first one might expect that a reduction in multiple disease numbers might lead to a lower Industry Community Rate but this is not so. Initial tests on the changes in the multiple disease rules shows that the regression formula then reallocates the weightings across all the cells of the contribution table and that some diseases may get a higher payment allocated than before. The issue is complex because there is the possibility that this could trigger a change in the relative values between two columns and hence a beneficiary with the two diseases would need to be allocated to a different column in the REF Grid Count.

We believe it is spurious to attempt to make this change to the current shape of the REF Contribution Table, given the size of other adjustments that continue to be made (see Section 4) and using prevalence figures that date from the original 2002 study. We know that multiple chronic disease numbers are higher in the actual 2005 data than predicted, but the REF Grid Prevalence that is submitted monthly has insufficient information to be able to extract and revise the REF Grid Count using the new rules. Accordingly, we have not changed the basic shape of the REF Contribution Table for 2006 and will allow the issue to be resolved in the new study of the formula for the REF Contribution Table for 2007.

The RETAP meeting of 31 May 2005 directed the pricing team to look at two additional issues:

- **Cardiac failure and Cardiomyopathy:** the average costs for the two diseases to be made equal.

This was found to be feasible and is dealt with in Section 5.1.

- **Hypertension:** test whether costs for severe disease can be allocated to co-morbidities i.e. so that the column deals with Hypertension as a single disease. In addition, as there are still incentives to game this diagnosis, the REF might pay only 50% of that number. This form of response is in line with the recommendations from the International Review Panel that where uncertainty and the possibility of gaming exist in the definition for a chronic condition that the REF may reimburse a lower percentage of the observed costs.

The splitting of hypertension was not found to be feasible in this revision. This issue needs to be considered in the full pricing study carried out for the REFCT 2007.

## **4. Adjustments in the REF Contribution Table**

### **4.1 Adjustments for Target Population and Demographic Profile**

Note that the target population used does not affect the REF Contribution Table itself, but does have a substantial impact on the Industry REF Community Rate derived from the table and hence on the payments to or from the REF. This is considered in detail in Section 6.6. A major change in the anticipated target population may also impact the average costs used and for this reason the issue needs to be considered as part of the weighting table.

As at December 2005 the full SHI framework which incorporates income-based cross-subsidies has not yet been approved by Cabinet, although it is policy of the Department of Health. The LIMS process will also not report until February or March of 2006 and any changes then need to be considered by the Department of Health and appropriate legislation enacted. Accordingly it seems unlikely that there will be any substantial change in the membership of medical schemes during 2006.

RETAP therefore recommends that no adjustment is made for any change in target population in 2006. There is thus no need to make any change for the demographic profile of the target population relative to the original 2002 base data.

### **4.2 Adjustment from Raw to Full PMB Cost**

The 2005 report stated:

In time, as schemes fully adopt the ICD-10 coded PMBs, so the data obtained from the industry will reflect this definition of PMBs and an adjustment from raw to full cost of PMBs will become increasingly unnecessary. However an adjustment is still needed for the REF Contribution Table for 2005 and will be needed at least for 2006.

The adjustments used for REFCT 2004 and REFCT 2005 were derived initially for the PMB pricing study using 2001 data and adjusted from the study data to reflect the industry profile. This is an area where there is legitimate concern about the length of time that the adjustments have now been in use. Section 2.2 discussed the problems with ICD-10 coding that prohibited a new study on the 2004 data and Section 3.2 indicated the magnitude of the impact of changes in coding on the price of PMBs.

The adjustments from raw to full price are dependant on age and are shown in the table in Section 4.5. The adjustments are very large: from raw to full price adds 46.2% to the raw price for PMB-DTPs and 64.4% for PMB-CDLs. The adjustments include items that were not obtained in the raw data at the time, like the impact of chemotherapy costs and dialysis, both of which were costed separately. A large part of the adjustment was the addition of ambulatory costs for PMB-DTPs and diagnosis and medical management costs for PMB-CDLs. These costs were not directly available as ICD-10 coding was not done on consultations and the pricing was done before the introduction of the CDLs in legislation.

In the adjustments from raw to full price there was a very large margin for uncertainty in the definition of PMBs. This specific component was of the order of 23% for the PMB-DTP (varied by age) and was 30% for the PMB-CDLs.

Drs Brian Ruff and Sylvia Cornejo showed a 10 to 11% increase in PMB-DTP costs from the draft changes in the PMB ICD-10 codes. This would be well covered by the existing margins in the REF price. Of greater concern however was their warning that the increase in PMB-DTP costs could be more than 50% if there was no clarity on what was included as treatment under the PMBs. This is an on-going industry concern and needs firm attention from stakeholders acting together with the Council for Medical Schemes. Without this clarity, schemes continue to set their own boundaries for treatment.

For the REFCT 2006 we continue with the current adjustments and can be reasonably certain that they cover the clarification in definition of ICD-10 coding of PMBs at current industry practice. The definitional issues must remain high on the pricing agenda for REF studies in future years.

The new study of the REF formula planned for 2006 will use data from 2005. Although it is anticipated that some margin will still be needed to adjust from raw price to full price, this adjustment should become smaller in future years as the quality of diagnosis coding improves.

### **4.3 Adjustment for Inflation**

Effectively it is necessary to remove the estimate of inflation factors for 2004-2005 used in the 2005 table and replace them with actual inflation for the 2004-2005 period and then add an agreed estimate for inflation for 2005-2006.

As we are working off the original base data from the 2002 REF formula study, the adjustments continue to be made using information from the pricing actuaries at Discovery and Medscheme. This group will be broadened to include MHG and Old Mutual Health pricing actuaries once the new formula study is done on 2005 data. All RETAP members were invited to give input on the inflation estimates.

The PMB-DTP inflation for 2004-2005 is an average between the Discovery and Medscheme numbers and was found to be 12.05%. The PMB-CDL medicine inflation is much more complex as different schemes paid different dispensing fees which makes the results incomparable. The pricing team agreed to standardise on the R26/26% dispensing fee for 2004-2005 and use the direct experience of schemes with that structure which was an inflation rate of -11.9%.

The PMB-CDL diagnosis and treatment inflation for 2004-2005 was determined from changes in the NHRPL. GP consultations were increased by 32% and specialist consultations by 17.4% while other costs were increased by 5.2%. A weighted average of these increases on the scheme data was found to be 18.1%.

The 2005-2006 inflation is an estimate from the pricing actuaries about future inflation. The average PMB-DTP increase used in pricing is 6.5%. The PMB-CDL medicine inflation depends very much on what the medicine pricing committee come up with in terms of dispensing fees and international bench marking. While it is anticipate that there will be clarity in draft Regulation by early March 2006, the timing of actual changes will still be much later in the year. In the absence of any knowledge of the changes we propose to use a number related to CPIX of 4.9%. The PMB-CDL diagnosis and treatment inflation is taken from the NHRPL GP consultation figure of 10.85%.

The inflation adjustments used for the 2005 and 2006 tables are summarised below.

**Table 1: Inflation Adjustment for REF Contribution Table 2005**

<b>Year</b>	<b>PMB-DTP</b>	<b>PMB-CDL Medicines</b>	<b>PMB-CDL Diagnosis and Treatment</b>
<b>2002 – 2003</b>	11.30%	10.00%	Combined with Medicines
<b>2003 – 2004</b>	12.35%	-10.05%	7.50%
<b>2004 – 2005</b>	7.00%	0.00%	20.00%

**Table 2: Inflation Adjustment for REF Contribution Table 2006**

<b>Year</b>	<b>PMB-DTP</b>	<b>PMB-CDL Medicines</b>	<b>PMB-CDL Diagnosis and Treatment</b>
<b>2002 – 2003</b>	11.30%	10.00%	Combined with Medicines
<b>2003 – 2004</b>	12.35%	-10.05%	7.50%
<b>2004 – 2005</b>	12.05%	-11.09%	18.10%
<b>2005 – 2006</b>	6.50%	4.90%	10.85%
<b>Inflation factor from 2002 to 2006</b>	<b>1.4922</b>	<b>0.9228</b>	<b>1.5481</b>
		<b>1.0673</b>	

## **4.4 Adjustment for Efficiency**

Changes to this adjustment are balanced against the margin for uncertainty in the price of PMBs in the adjustment from raw to full prices. No change in the policy with respect to the level of efficiency is needed for 2006. The issue needs to be considered afresh in the study for the REFCT 2007 which will be based on 2005 data.

## **4.5 Summary of Factors Used in Adjustments**

The table below contains the factors for all the adjustments described in the previous sections. There are several policy overlay adjustments and adjustments to specific diseases which are discussed in Section 7. However, as these are made to particular conditions there is no single factor that can be included in the table below.

**Table 3: Factors for Adjustments to obtain the REF Contribution Table 2006**

	Factor to adjust demography of raw data	Factor to adjust from raw to full price PMB-DTPs	Factor to adjust from raw to full price PMB-CDLs	Factor to adjust to Target Population	Factor to adjust for inflation from 2002 to 2006	Factor to adjust for inflation from 2002 to 2006	Factor for Efficiency	Factor for policy overlay
Section of report	S 4.1	S 4.2	S 4.2	S4.1	S4.3	S4.3	S4.4	S5
Apply to	Raw data	Raw price DTP	Raw price CDL	Industry age profile	Raw price DTP	Raw price CDL	Raw Price	Changes made to particular conditions. Not as a global amount.
Age Bands				Illustrative only. Not implemented for 2006.				
Under 1	1.0000	1.2757	2.4901	1.4904	1.4922	1.0673	0.8000	1.0000
1-4	1.0000	1.4785	2.2194	1.4689	1.4922	1.0673	0.8000	1.0000
5-9	1.0000	1.5464	1.9830	1.4790	1.4922	1.0673	0.8000	1.0000
10-14	1.0000	1.5411	1.8563	1.4795	1.4922	1.0673	0.8000	1.0000
15-19	1.0000	1.4326	1.7571	1.4680	1.4922	1.0673	0.8000	1.0000
20-24	1.0000	1.4036	1.7142	1.6746	1.4922	1.0673	0.8000	1.0000
25-29	1.0000	1.3425	1.7327	1.5619	1.4922	1.0673	0.8000	1.0000
30-34	1.0000	1.3908	1.7739	1.4190	1.4922	1.0673	0.8000	1.0000
35-39	1.0000	1.4687	1.7451	1.4168	1.4922	1.0673	0.8000	1.0000
40-44	1.0000	1.5319	1.7115	1.4185	1.4922	1.0673	0.8000	1.0000
45-49	1.0000	1.5313	1.6816	1.4058	1.4922	1.0673	0.8000	1.0000
50-54	1.0000	1.5690	1.6314	1.4936	1.4922	1.0673	0.8000	1.0000
55-59	1.0000	1.5502	1.5951	1.3771	1.4922	1.0673	0.8000	1.0000
60-64	1.0000	1.5238	1.5711	1.3263	1.4922	1.0673	0.8000	1.0000
65-69	1.0000	1.4960	1.5538	1.2361	1.4922	1.0673	0.8000	1.0000
70-74	1.0000	1.4925	1.5409	1.1979	1.4922	1.0673	0.8000	1.0000
75-79	1.0000	1.4130	1.5428	1.3695	1.4922	1.0673	0.8000	1.0000
80-84	1.0000	1.4425	1.5607	1.3155	1.4922	1.0673	0.8000	1.0000
85+	1.0000	1.4512	1.5750	1.2200	1.4922	1.0673	0.8000	1.0000
Total	1.0000	1.4618	1.6442	1.4602	1.4922	1.0673	0.8000	1.0000

## 5. Policy Interventions and Specific Disease Costs

### 5.1 Treatment of Cardiac Failure and Cardiomyopathy

The change to the treatment costs for these two diseases arises out of concerns that the two are very similar clinically making the accurate allocation of an ICD-10 code difficult. If different costs are maintained for the two conditions it might lead to gaming of the REF Grids. RETAP thus directed the pricing team to provide an equivalent cost that could be applied to both diseases.

The base costs for the CHF and CMY columns in the 2002 REF study were weighted by the count numbers found in that study. The adjustments were then applied as discussed in Section 4. The table below shows the separate and common columns in 2006 terms.

**Table 4: Common Weighting for Cardiac Failure and Cardiomyopathy in 2006**

Age	Cardiac Failure CHF	Cardiomyopathy CMY	Common Weighting CHF and CMY
Under 1	1,825.38	2,057.27	1,856.41
1-4	1,350.65	1,582.54	1,381.68
5-9	1,318.83	1,550.72	1,349.86
10-14	1,317.99	1,549.88	1,349.02
15-19	1,325.59	1,557.48	1,356.62
20-24	1,344.70	1,576.59	1,375.73
25-29	1,363.99	1,595.88	1,395.02
30-34	1,374.01	1,605.90	1,405.04
35-39	1,388.25	1,620.14	1,419.28
40-44	1,397.12	1,629.01	1,428.15
45-49	1,415.38	1,647.27	1,446.41
50-54	1,448.58	1,680.47	1,479.61
55-59	1,489.51	1,721.40	1,520.54
60-64	1,596.71	1,828.60	1,627.74
65-69	1,676.99	1,908.88	1,708.02
70-74	1,773.57	2,005.46	1,804.60
75-79	1,800.82	2,032.71	1,831.85
80-84	1,807.45	2,039.34	1,838.48
85+	1,734.81	1,966.70	1,765.84

### 5.2 Treatment of Haemophilia

The base costing was revised for 2005 and reported in the report on the REF Contribution Table 2005 as follows:

On balance we recommend using the amount of R7,008 per patient per month for 2005. In line with decisions on other specifically costed diseases we recommend that an adjustment for efficiency of 90% be used, rather than 80% as with the rest of the PMBs. This produces an additional amount of R6,307.20 per beneficiary with haemophilia over and above the PMB-DTP shape for those with no chronic disease. The final table reflects the total amount which thus varies by age.

Inflation has been added to this amount, using the combined PMB-CDL inflation factor for 2005 to 2006 of 6.275%. This produces an amount of R6,702.98 per beneficiary per month with haemophilia over and above the PMB-DTP shape for those with no chronic disease.

### 5.3 Treatment of Multiple Sclerosis

The review of the average cost for treating Multiple Sclerosis had to be amended in the light of the change in the published therapeutic algorithm to include beta interferon (see Section 3.1). The table below shows the cost of typical drugs used under the new algorithm.

**Table 5: Drug Costs for Beta Interferon in Revised Therapeutic Algorithm for Multiple Sclerosis**

NAPPI Code	Product Name	Product Strength	Dosage Form	WHO Class Code	Retail Price
898891004	Rebif 44 0,5ml	88mcg/1mL	INJ	L03AB07	7,518.71
848166019	Avonex powder for injection	30mcg	INJ	L03AB07	8,207.00
890887006	Rebif 22 0,5ml	44mcg/1mL	INJ	L03AB07	1,687.33
890887007	Rebif 22 0,5ml	44mcg/1mL	INJ	L03AB07	6,749.30
700474003	Betaferon pre-filled syringe	9,6Miu	INJ	L03AB08	7,525.00
828351007	Betaferon	9,6Miu	INJ	L03AB08	8,031.22

The average costs of treating beneficiaries with multiple sclerosis were obtained from Medscheme and Discovery Health and then combined. It was found that the average cost of treating a person not on beta-interferon was R598 per month in 2005. The average cost of a person on beta-interferon was found to be R8,650 per month.

The proportion of people using beta-interferon was found to be higher in Discovery Health as the drug had long been available on their Comprehensive plans under certain clinical guidelines. Now that beta-interferon forms part of the PMB algorithm, the proportion of

beneficiaries in Medscheme using the drug is expected to rise from 2005 levels. Combining the evidence, the pricing team has used a weighting of 52.25% of beneficiaries with multiple sclerosis being on beta-interferon which gives a combined raw price of R4,805.17 per month.

In line with decisions on other specifically costed diseases an adjustment for efficiency of 90% has been used and inflation added using the combined PMB-CDL inflation factor for 2005 to 2006 of 6.275%. This produces an amount of R4,596.03 per beneficiary per month with multiple sclerosis over and above the PMB-DTP shape for those with no chronic disease. The final table reflects the total amount which thus varies by age.

The equivalent amount if beta-interferon had not been added in the PMB therapeutic algorithm would have been R1,087.33 in 2006. There has thus been a R3,508.70 per month increase, or 323% increase, in the cost per beneficiary with this disease.

## 5.4 HIV/AIDS Treatment Costs

The 2005 report stated:

The definition of the starting point for anti-retroviral therapy affects the data (on average cost) and the ... the prevalence at various stages in the epidemic. There can be no adjustment of the REF Contribution Table for 2005 but RETAP recommends that the PMB definition be evaluated and entry criteria agreed so that appropriate data can be extracted before the next adjustment to the REF Contribution Table for 2006. In the interim schemes are requested to provide evidence of the impact of the difference in the guidelines for evaluation by RETAP.

No further stakeholder data has been received on this issue.

Data from the BHF study of the costs of HIV/AIDS in medical schemes has been requested since July 2005 soon after the study was publicly released. While prevalence data has been made available, the average cost data has not yet been received. Without adequate evidence it is therefore not possible to make any changes other than inflation to the base cost for 2006.

The base costing for the CDL component was revised for 2005 and given in the report on the REF Contribution Table 2005 as follows:

A second estimate of the cost of anti-retroviral therapy was prepared by AfA from first principles. The best estimate for the current direct cost of treating HIV where on-going ART is required is **R935** per patient per month. This cost (includes) both ART and non-ART costs. ... (It) was agreed that this amount of R935 per patient per month should be used but with a 90% efficiency adjustment applied, in line with other

conditions costed from first principles (this produced an amount of R841.50). The PMB-DTP amounts for HIV are added to this to obtain an amount that varies by age.

Inflation has been added to this amount, using the combined PMB-CDL inflation factor for 2005 to 2006 of 6.275%. This produces an amount of R894.30 per beneficiary with HIV/AIDS over and above the PMB-DTP share for those with HIV/AIDS.

## 5.5 Maternity Modifier Protocols and Costs

A revised costing of maternity was done from first principles using the WHO guidelines and NHRPL prices for 2004, for use with the REFCT 2005. The same methodology has been used together with the NHRPL prices for 2006 for REFCT 2006. The table below shows the composition of the ante-natal costs and special costs.

**Table 6: Costing of Ante-Natal Costs for the Maternity Modifier using 2006 NHRPL**

Ante-Natal Costs	Code	Average Cost per unit	Weighting	Average Cost
<b>Visits</b>				<b>2,956.80</b>
	0190	184.80		
	0191	184.80	15	
<b>Pathology</b>				<b>219.95</b>
Haemoglobin	3762	13.20		
Blood grouping	3764	26.50		
Urine MC&S	3893	46.30		
VDR	composite	21.50		
	3951	26.50	0.5	
	3949	16.50	0.5	
Rubella	composite	99.25		
	3946	103.30	0.5	
	3948	95.20	0.5	
<b>Ultrasound</b>	3615,3617	303.00	2	<b>606.00</b>
<b>Pharmacy</b>				<b>477.66</b>
Complenatal 90 tabs	715700	220.14	0	
Fillibon	726257	61.35	7	
Folic acid	810967	61.56	0	
Vornifene	778265	47.48	0	
Maxalon	740500	48.21	1	
<b>Total Ante-Natal Costs</b>				<b>4,260.41</b>

The 2006 NHRPL has removed the ante-natal visit code which was cheaper than normal visits. We have replaced this with a normal visit code which is significantly more expensive.

**Table 7: Costing of Special Costs for the Maternity Modifier using 2006 NHRPL**

Special Costs	Code	Average Cost per unit	Weighting	Average Cost
Cardiotocography	2610			101.70
Amniocentesis				806.50
	2605	228.90		
	5026	236.30		
	4380	198.40		
	4381	73.50		
	4382	69.40		
Pelvimetry	3517			156.70
Fetal maturity (ultrasound)				606.00
	3615	303.00	1	
	3617	303.00	1	
Down Syndrome screen	4540			110.20
Foam test	4390			23.10
Glucose tolerance test	4061			158.40
Triple test				219.80
	4494	128.50	1	
	4522	91.30	1	
<b>Total Special costs - only valid in some cases</b>			<b>0.1</b>	<b>2,182.40</b>

The average costs per claim for vaginal deliveries and caesarean sections were observed in schemes in 2005. The increases were slightly lower than had been assumed in the REFCT 2005. The average costs were inflated from 2005 to 2006 using the expected PMB-DTP inflation of 6.5% and are shown in the table below.

**Table 8: The Maternity Modifier for the REF Contribution Table 2006**

Actual Average Costs per claim using 2005 prices, inflated to 2006	Normal vaginal delivery	Caesarean section
Hospital cost	8,580.61	14,347.24
Total Major Medical costs	11,139.24	18,357.02
<b>Average Costs per claim using 2006 NHRPL</b>		
Ante-Natal costs	4,260.41	4,260.41
Total before Special costs	15,399.65	22,617.43
Special costs	2,182.40	2,182.40
Weighted impact of Special costs	218.24	218.24
<b>Total cost (Major medical + ante-natal + weighted Special costs)</b>	<b>15,617.89</b>	<b>22,835.67</b>
NVD : c/s Weighting	50%	50%
<b>REF Maternity modifier for 2006</b>	<b>19,226.78</b>	

No stakeholder comment has been received on the weighting of vaginal delivery costs to caesarean section costs. The weighting in 2005 of 50% NVDs to 50% c/s has not been changed for the REFCT 2006 as no money is yet changing hands in the shadow period. The envisaged increase in the proportion for NVDs should only begin once the REF has been implemented. The maternity modifier for 2006 was determined to be R19,226.78 per delivery.

## 6. REF Grid Count for Industry Community Rate

This is the first year in which it is feasible to use actual data submitted by medical schemes as opposed to using the expected counts from the original REF Study data of 2002. However, the analysis of the Q1, Q2 and Q3 data received from schemes so far has highlighted a number of concerns about data consistency and data quality. It is thus not simply a case of taking the total industry REF grids for use in determining the Industry Community Rate. It is still necessary at this stage to apply judgement to the REF Grids submitted and use some combination of actual grids and expected grids for determining the Industry Community Rate for 2006.

### 6.1 Choice of Schemes for Disease Patterns

As the REF Grids are submitted they are analysed and placed into decision categories to determine whether payment would have been made from the REF. The graph below shows the proportion of beneficiaries (using Statutory Return numbers) that lie in each category.

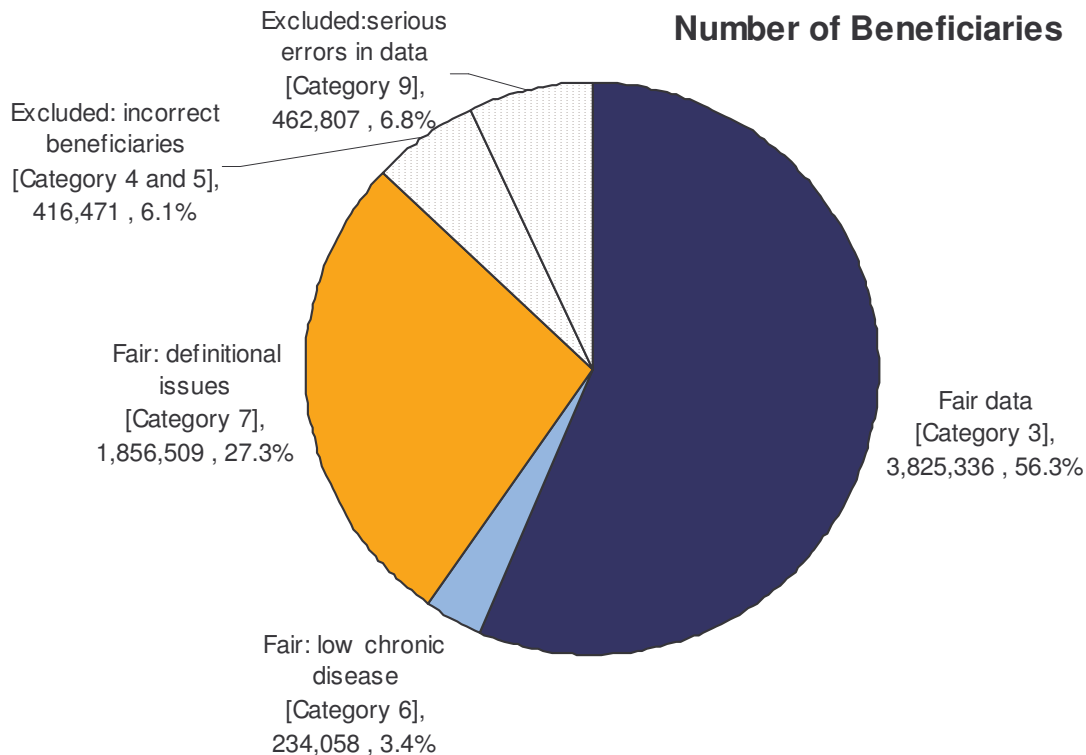


Figure 2: Decision Categories for REF Grids Submitted in September 2005.

The Category 4, 5 and 9 data has errors that are serious and the data is not usable for pricing purposes. The Category 7 data cases are the greatest concern for pricing. In these schemes the CDL and multiple disease data submitted appears high for this age profile. This seems to be a data definition issue rather than a real difference in risk factors. The problem appears linked to specific administrators and it is likely that the REF Grids from these schemes would show fewer chronic beneficiaries once the entry and verification criteria are correctly applied.

The Category 6 schemes have the opposite problem in that the CDL and/or multiple disease data submitted appears low for this age profile or is missing. This seems to be a data collection and reporting issue rather than a real difference in risk factors and in some cases is linked to the use of capitated primary care providers. It is expected that once data is properly received, the REF Grids would show more beneficiaries with chronic disease. Given that very few beneficiaries lie in Category 6 relative to Category 7, the two effects do not cancel out.

While it may be prudent and conservative to use the REF Grids submitted for Category 3, 6 and 7 schemes together, this would result in a higher Industry Community Rate than using Category 3 alone. Initial testing using REFCT 2005 showed a difference in the community rate of R7.39 due to the increase in the chronic disease counts. It is considered to be unfair to raise the community rate for all schemes to take account of what might be a temporary increase in chronic disease levels due to definitional issues in 27% of the schemes.

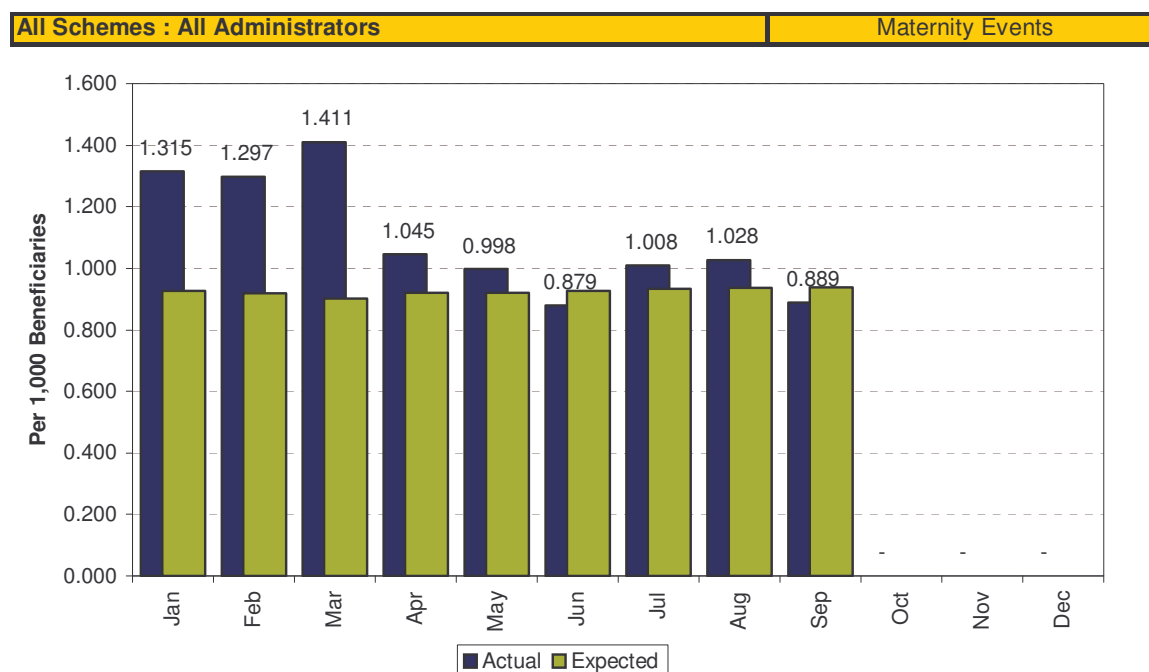
The assumed REF Grid for calculating the Industry Community Rate for 2006 was thus based on the chronic disease patterns found in the Category 3 schemes. The data from September 2005 covered 3.8 million beneficiaries or some 56% of medical scheme beneficiaries in registered schemes. The numbers with each chronic disease were converted to a rate per 1,000 in each age band for use in the assumed REF Grid (see Appendix C).

An issue that had to be considered in the work on the 2006 table was whether to allow for future changes in the number of people identified with CDL diseases. The issue arises if the Industry Community Rate is to apply for a full calendar year ahead. This is no longer the case as described in Section 7.2 and the problem thus falls away.

## **6.2 Expected Maternity Cases**

It was initially considered that it would be better to use the maternity cases submitted by all schemes rather than only the Category 3 schemes as discussed above. However, there were four schemes who did not submit any maternity cases in the Q3 data. This is typically where the REF data is supplied by a clearing house which does not have access to maternity claims.

The actual maternity rate in 2005 has been higher than expected in the REFCT2005, as shown in the graph below.



**Figure 3: Maternity Events per 1,000 Beneficiaries in REF Grids in 2005**

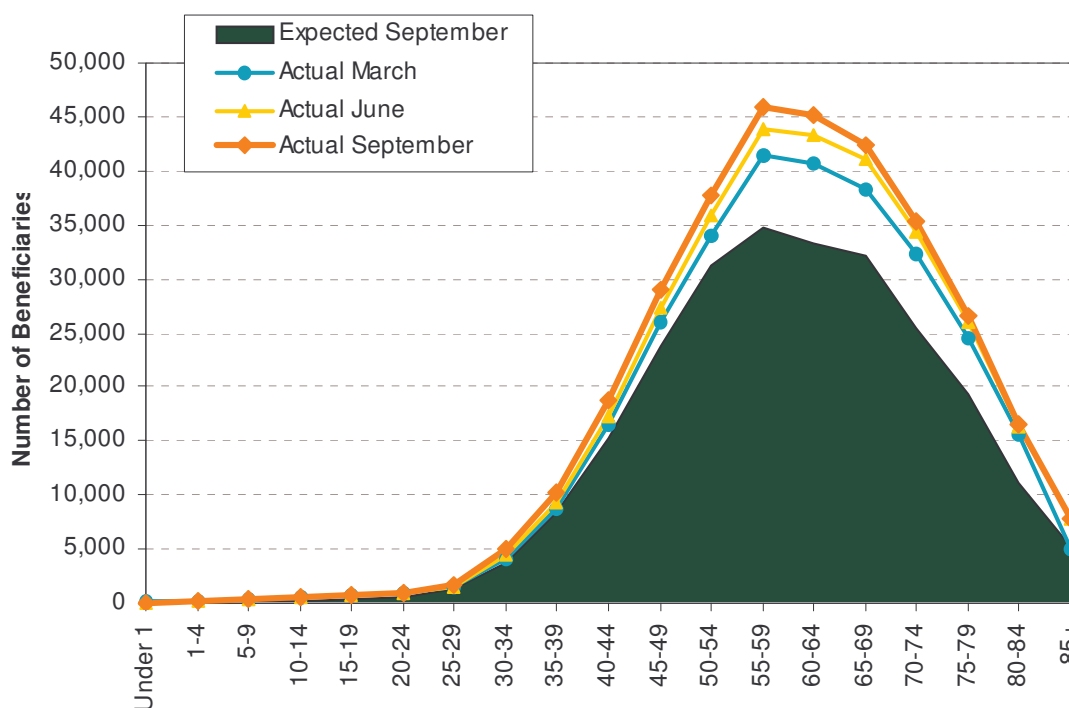
The very much higher rate in Q1 can be ignored because there were 13 schemes where the maternity events were not submitted on a monthly basis but on something closer to quarterly figures. That problem was resolved by the start of Q2. Schemes and hospitals anecdotally reported something of a “baby boom” during 2005. This is confirmed by the greater than expected rate of births in April, May, July and August in the graph above.

The lower than expected June and September births are an interesting phenomenon in the data. The maternity cases are reported in arrear i.e. after they have happened. If the date of submission of REF Grid data is before all the accounts have arrived, then schemes will seemingly report lower maternity cases in the last month of every quarter. In the plans for the implementation of REF it is expected there will be a payment to and from schemes each month as well as a final reconciliation or “agterskot” payment once per quarter. This will allow for “catch-up” submissions like these maternity cases near the end of a quarter.

It is thus not advisable to use the REF Grids from September 2005 to judge the level of maternity cases. A decision was taken to use the average of the Q3 figures. The Category 3, 6 and 7 data surprisingly produced a slightly lower result than the Category 3 schemes but there were problems in the submission of data in some of the Category 6 and 7 schemes. Accordingly, the assumed REF Grid uses the average maternity cases submitted in Q3 for the Category 3 schemes only. This is slightly higher than for REFCT2005, implying a continuation of elevated maternity cases into 2006.

## 6.3 Multiple Chronic Disease

The graph below shows that the number of beneficiaries with multiple chronic diseases has been escalating over the first three quarters of 2005. Much of this is due to the Category 7 schemes where it is considered that there are definitional issues which increase the numbers reported. The category 6 schemes had difficulty initially finding chronic beneficiaries and their improvement over the year has also led to this overall increase.



**Figure 4: Number of Beneficiaries with Multiple Chronic Conditions in REF Grids Submitted by Category 3, 6 and 7 Schemes in 2005**

Substantial progress was made in 2005 on the definitions of the entry and verification criteria to be used by medical schemes. These have now been agreed for implementation as from 1 January 2006. It will thus be May 2006 before the first Grids submitted under the new rules are received and analysed.

As with the choice of schemes for chronic conditions, it was decided to use only the Category 3 schemes. These have rates of multiple chronic conditions much closer to those originally found in the 2002 REF Study.

## 6.4 New Multiple Chronic Disease REF Grid Rules

An analysis was performed of the change in the rules for four groups of diseases (see Section 3.4 for details). A simple analysis of the impact of each of the rules is given in Appendix A.

The issue is however complex to analyse as the loss of a two-pair set of diseases (like Diabetes Type 1 and Diabetes Type 2) does not necessarily mean that the CC2 (two multiple conditions) column will decrease. Some of these people may have had three, four or five multiple diseases and when the rule is applied, the person migrates downwards in the listing of multiple conditions to a lower level. Some people are also affected by more than one of the rule changes which makes for even greater complexity.

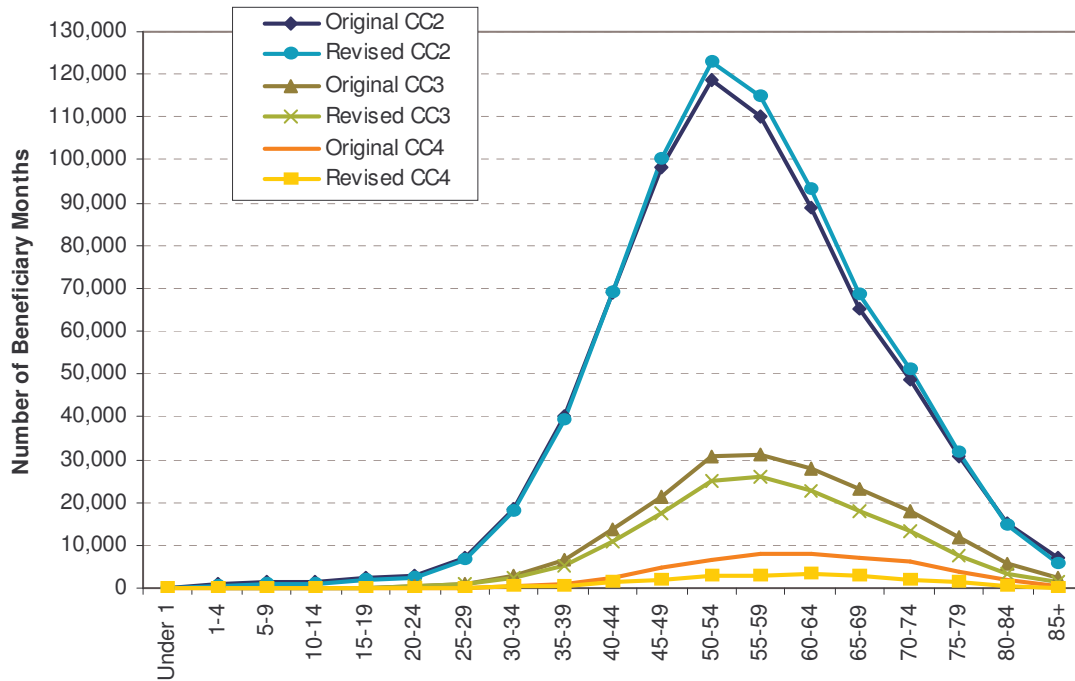
It was found that the only viable methodology was to use the original 2002 REF study prevalence and insert the new rules in each line of that database. The revised CC2, CC3 and CC4+ groups (two, three and four or more multiple conditions) were then determined. The old and new figures, based on the 2002 REF Study data, are shown below.

**Table 9: Impact of New Rules for Multiple Chronic Conditions**

Beneficiary months of Exposure	CC2	CC3	CC4+	CC4	CC5	CC6	CC7	CC8	All Multiple Chronic
Original CC	726,263	197,684	50,652	41,493	7,715	1,239	162	43	974,599
Removed	53,343	68,162	35,543	27,461	6,674	1,215	150	43	157,048
Added	69,941	25,668	4,793	4,362	407	24	-	-	100,402
Revised CC	742,861	155,190	19,902	18,394	1,448	48	12	-	917,953
<b>Percentage of Original</b>	<b>102.3%</b>	<b>78.5%</b>	<b>39.3%</b>	<b>44.3%</b>	<b>18.8%</b>	<b>3.9%</b>	<b>7.4%</b>	<b>0.0%</b>	<b>94.2%</b>

It turns out the CC2 increases by 2.3% while CC3 decreases to 78.5% of the original exposure. CC4+ is substantially decreased to only 39.3% of the original exposure, due more than 80% decreases in CC5, CC6 and CC7 and the removal of any exposure in CC8.

This table is also showing that the people most affected are those with the most diseases. These are typically higher ages and the graph below confirms that the CC3 and CC4 (containing four or more conditions) lines show a reduction in exposure at older ages. Some of this exposure at older ages is added to the new CC2 line.



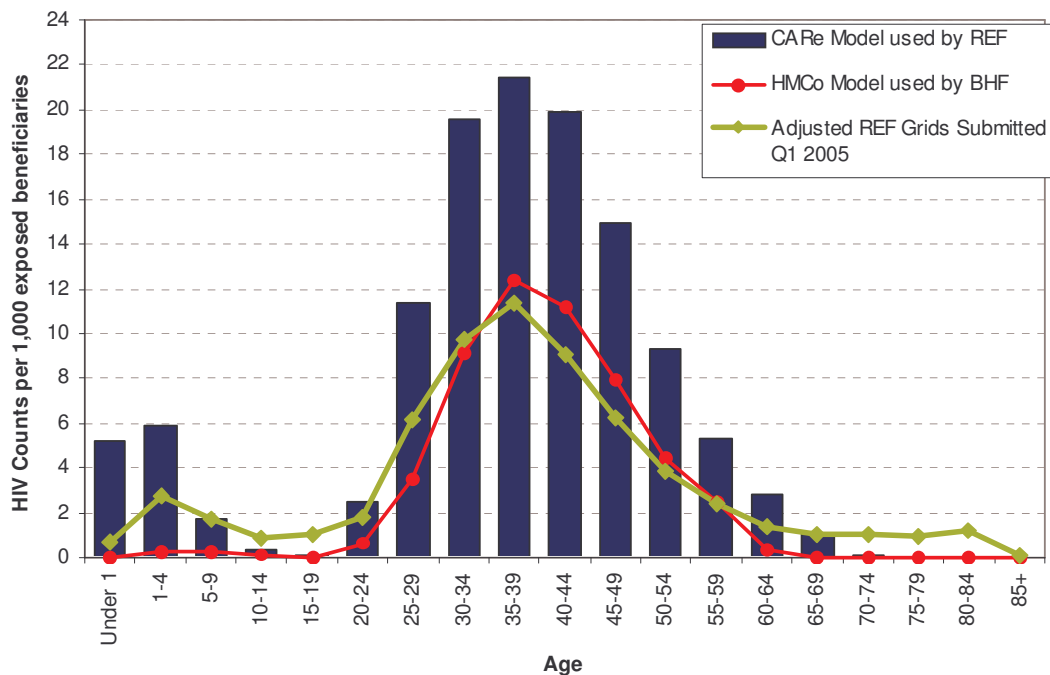
**Figure 5: Impact of New Multiple Condition Rules on Exposure by Age**

In Section 3.4 it was discussed that a change would not be made to the contribution table at this stage, given the complexity of the re-fitting of the formula. We also do not have the same level of data in 2005 on schemes submitting REF Grids in order to assess the recent experience. Accordingly, the predicted changes have not been carried through to the assumed REF Grid that was used to price REFCT 2006. This issue will be fully taken into account in the study for the REFCT 2007.

## 6.5 Progression of the HIV/AIDS Epidemic

Leigh Johnson of the Centre for Actuarial Research (CARE) had provided estimates for REFCT 2005 of the progression of the HIV/AIDS epidemic for each year from 2002 to 2010.

The BHF engaged Health Monitor Company to build a model of HIV/AIDS in medical schemes. Details of the prevalence used in the model for those on anti-retroviral therapy was compared to the CARE estimates and to the actual REF grids submitted in Q1, as shown in the graph below.



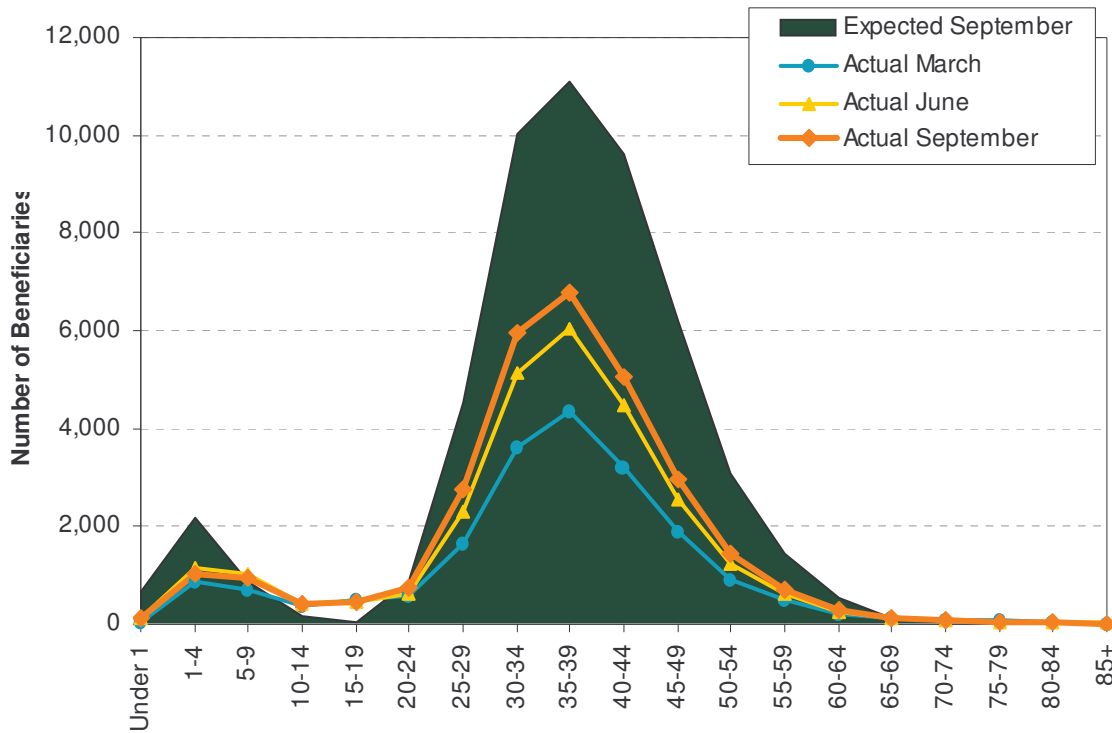
**Figure 6: HIV Counts per 1,000 Beneficiaries in each Age Band in Q1 2005**

While the peak of the BHF model and the Q1 Grids were somewhat similar, the BHF model severely underestimates childhood HIV and cases from age 60 onwards. The CARe model underestimates in the teenage years and over age 70. Leigh Johnson acknowledges that this is due to an assumption about sexual activity late in life which will need to be amended.

In the Q1 analysis we knew that 34 schemes had submitted no HIV data. There is also a sense that HIV is still under-reported in schemes and thus a decision was taken at the RETAP meeting in September 2005 to continue to work with the CARe estimates, but to blend in the actual REF Grids as well.

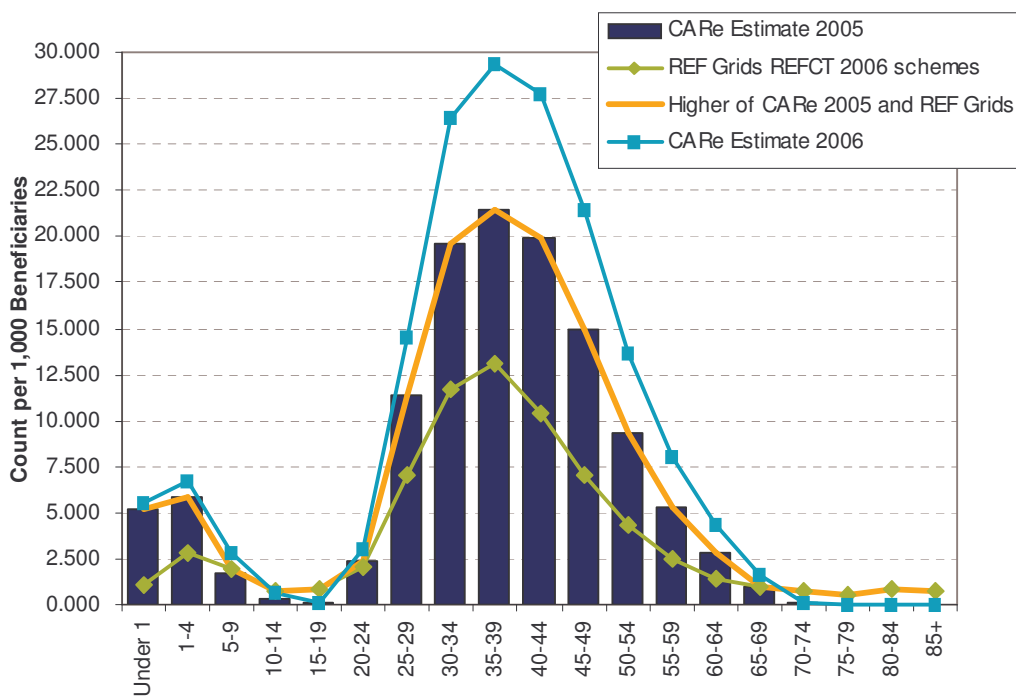
The Q3 data showed substantial improvement with only 13 schemes not submitting HIV cases. Only two small administrators submitted no HIV data for their schemes. Other non-submission is by single scheme administrators or self-administered schemes. For large administrators, non-submission seems to occur at a scheme level for confidentiality reasons rather than be a problem of administrator ability. The total cases reported in September 2005 was 31,297.

The graph below shows the progression of the HIV cases over the year, compared to the expected figures for September 2005 using the CARe estimates. While there has been a substantial increase in the number of cases reported from 24,546 in January 2005 to 31,297 September 2005, the overall rate per 1,000 is still lower than estimated for 2005. Even considering the missing data the best estimate is 31,778 cases in September 2005.



**Figure 7: Number of Beneficiaries in HIV Column of REF Grids Submitted by Category 3, 6 and 7 Schemes in 2005**

This is illustrated in the graph below, superimposing the CARE estimates for 2006 as well. It was decided to use the higher of the REF Grids submitted and the CARE estimate for 2005. The CARE estimate for 2006 is a long way from the current levels reported in the industry and it was considered to be too conservative to use the 2006 estimates at this time. This issue will be carefully watched as each quarter's data arrives in the shadow year 2006.



**Figure 8: Choice of Estimate for 2006 for Progression of the HIV/AIDS Epidemic**

## 6.6 Age Profile of Target Population

One of the more puzzling issues in the nine sets of REF Grids submitted in 2005 has been the difficulty in determining the exact age profile of the medical scheme population.

The first age profiles for medical schemes were submitted to the Registrar as part of the Statutory Returns in 2000. The initial data was very poor with some schemes submitting all people as age over 75 and other schemes only being able to put people in groups of ten rather than five years. Over the last six years of submission, the quality of that age data has dramatically improved and the set of age data had become stable enough to use in projections.

When the first REF Grids arrived for January to March 2005, they were compared to the Statutory Returns. Many discrepancies were found in both the age and gender profiles submitted for the same date (end March 2005). In discussions with the four largest administrators it was found that they each used different systems to extract REF Grid information and Statutory Return information. Until then, the two sets had not been compared. Having raised the issue in Q1, it was anticipated that there would be a substantial improvement in Q2 and Q3. While Q2 showed a substantial improvement, Q3 numbers for some schemes began again to diverge.

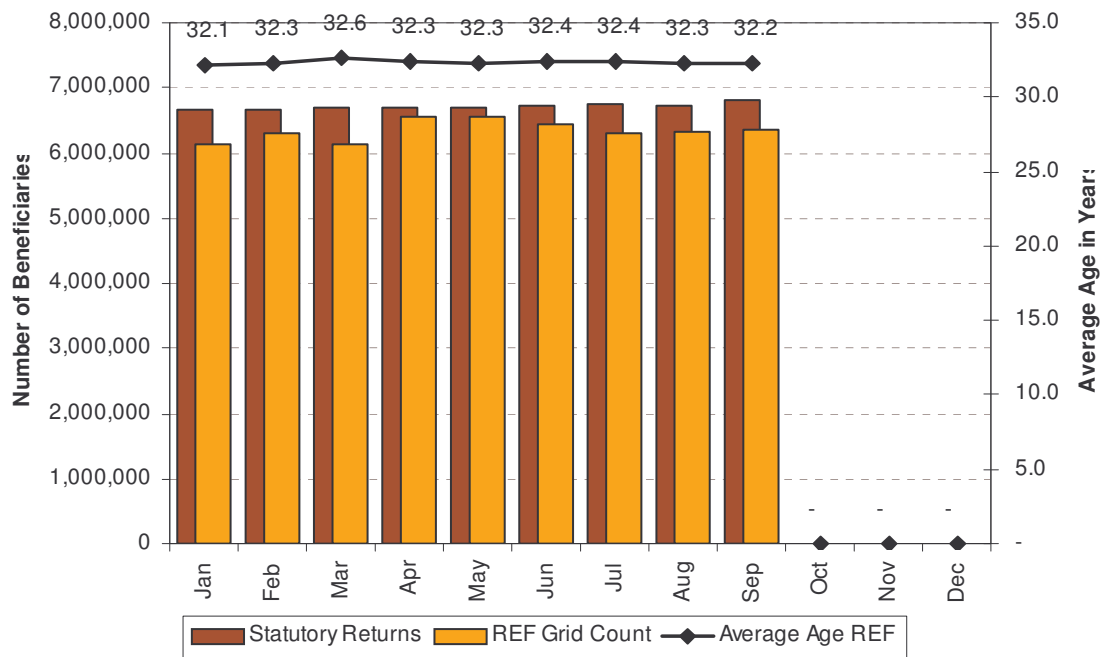
At the heart of the issue is a difference in the definitions used in the two sets of data. A REF Grid beneficiary must satisfy the following rule:

A beneficiary is counted for the REF Grid if a full monthly contribution is received for that person in respect of that month.

The financial systems that are typically used to submit data for the Statutory Returns may have people who joined a scheme but where the member will only begin payment in the following month. Also, particularly in open schemes, where the member has not paid contributions the family may be held in suspension for some months before membership is cancelled. We can therefore expect some “slippage” between the REF Grids and the Statutory Return in term of total beneficiary numbers.

Another phenomenon in the REF Grids has been that there have been more beneficiaries classified as “Under 1 year” and fewer as “1 to 4 years” than expected. The REF payment for an “Under 1” is substantially higher than the “1 to 4 years” category. A similar situation is seen at the tail end of the graph where there are fewer “85+” year olds and more “80-84 years”. Again, the REF payment is higher for the latter category.

It has been argued in the pricing team that the REF Grid age profile is the better one to use. This is mostly true for schemes that submit data, but the problem arises that not all schemes have been submitting data every month. Some schemes have also left out part of an option or other odd mistakes. The graph below illustrates the relationship between the Statutory Return numbers and the REF Grid numbers for all registered schemes.



**Figure 9: Beneficiaries Reported in REF Grids and Statutory Returns in 2005**

The age profiles using the Statutory Returns and the REF Grids give different answers when determining the community rate. Using the REFCT 2005 for testing initially, the Statutory Return age profile gave a community rate R2.77 lower than the REF Grid age profile. Given the greater certainty at present that all schemes did submit Statutory Return data, and given the size of the other margins in the assumptions, we have decided to use the Statutory Return age profile for September 2005.

It has been shown previously that if the promised low income beneficiaries do begin to join schemes that the age profile should become younger. On the other hand, in a voluntary environment, the younger lives are expected to continue to bleed slowly from the system. The fact that the Industry Community Rate will be calculated monthly in future (see Section 7.2) means that the age profile no longer needs to be projected for a period ahead.

## 7. The REF Contribution Table 2006

There were no changes to the layout of the table. The REF Contribution Table 2006 is given in Appendix B and the REF Grid used in the calculation of the Industry Community Rate is given in Appendix C. The tables in these appendices, related price tables and the changes from 2005 to 2006 are available as a spreadsheet on the Risk Equalisation section of the website of the Council for Medical Schemes at <http://www.medicalschemes.com>

### 7.1 Industry REF Community Rate 2006

The Industry REF Community Rate is determined by applying the estimate of the industry REF Grid to the REF Contribution Table. The estimated Industry REF Community Rate for 2006 is **R236.65** per beneficiary per month. The Industry REF Community Rate for 2005 was R193.90 pbpm. The sources of the change in community rate are analysed in the table below.

**Table 10: Analysis of Changes in Industry REF Community Rate from 2005 to 2006**

		Monthly amount	Percentage Increase	Monthly amount	Percentage Increase
<b>Industry REF Community Rate 2005</b>		<b>193.90</b>			
Age profile changes	Effect of revised industry age profile	7.47	3.9%		
Price changes	Effect of inflation and revised costings other than Multiple Sclerosis	17.09	8.8%	16.74	8.6%
	Effect of including Beta Interferon in Multiple Sclerosis therapeutic algorithm			0.35	0.2%
Assumed REF Grid Count for 2006 compared to 2005	Effect of lower NON	18.17	9.4%	-3.62	-1.9%
	Effect of higher chronic disease counts			10.53	5.4%
	Effect of expected progression of HIV/AIDS epidemic			0.26	0.1%
	Effect of higher multiple chronic disease			8.57	4.4%
	Effect of higher maternity cases			2.43	1.3%
Rounding	Rounded to higher five cents	0.02	0.0%		
<b>All changes from 2005 to 2006</b>		<b>42.75</b>	<b>22.0%</b>		
<b>Industry REF Community Rate 2006</b>		<b>236.65</b>			

The estimated Industry Community Rate is provided for indication only in 2006. As discussed in Section 7.2, the actual Industry Community Rate for each payment period will be determined according to the REF Grids that are approved for shadow payments.

The first major change is that of the age profile which increases the community rate by R7.74 or 3.9%. The original REF Contribution Table was based on 2002 data and used in 2004. The age profile used was the Statutory Returns for 2002. While there has been a slight aging of the medical scheme population since 2002, changes to the age profile were not brought through in the REFCT 2005. We know that when the medical scheme population begins to grow with the inclusion of lower income members and mandatory membership that the age profile is predicted to fall substantially. However as neither of these possibilities are likely in 2006, we have decided to catch up in one adjustment the change in age profile between 2002 and 2005. It is not expected that the adjustment would need to be this large again.

The price changes for the period 2004 to 2005 have given an increase in the community rate of R17.09 or 8.8%. When considering this against the inflation tables in Section 4.3, remember to first remove the estimate in the REFCT 2005 for the period 2004 to 2005 before adding the actual inflation for that period and then the estimate for 2005 to 2006. Hospital cost inflation and therefore PMB-DTP inflation was higher in the 2004 to 2005 period at 12.05% than the originally predicted 7.00%.

Note that because medicine inflation has been very low (and sometimes negative) in recent years the values in the REFCT 2006 do not adjust equally at all ages. At teenage and early adult ages the value of hospital events is low and thus the decline in medicine prices can decrease the amount to be paid from REF relative to the previous table. This effect can be examined in the spreadsheet that contains the REFCT 2006.

The introduction of beta-interferon in the multiple sclerosis algorithm increases the amount paid for that disease almost four-fold. In REFCT 2005, an amount of R0.12 was needed for multiple sclerosis while in REFCT 2006 that increases to R0.47, an increase of R0.35 as shown in the table. What is not shown directly is that the greater than expected numbers of people with multiple sclerosis increase this cost further to R0.72. In the table, this further increase is included in the overall chronic disease adjustment of R10.53.

There is only a very small effect for the evolution of the HIV epidemic. That is because the estimates used in REFCT 2005 have not yet been fully realised and the decision was taken to continue to use a prevalence estimate based largely on the CARE 2005 figures. Should the expected cases be reported, then there should be an increase in this element of some R2 a year if the CARE estimates are used in future.

An amount of R19.10 is included to cover the effects of both more chronic disease and more multiple chronic disease. This was achieved using data from the Category 3 schemes (see Sections 6.1 and 6.3). It is less likely that the introduction of the strict entry and verification criteria will reduce this amount. However, early tests suggest the effect is not always predictable and the 2006 shadow returns will be keenly awaited. The full REF formula pricing study due to be carried out in 2006 on 2005 data will provide an opportunity to derive the REFCT 2007 using the entry and verification criteria on the raw data.

A small part of the change is the decision to round the Industry REF Community Rate to the higher 5 cents. It is not appropriate to round to the nearer 5 cents as this could sometimes result in the REF budget for payouts exceeding (by a very small amount) the amounts due to be paid in. The use of 5 cents rather than 1 cent is for practical ease of use and conforms to general pricing practice.

## **7.2 Monthly Industry Community Rate from 2006**

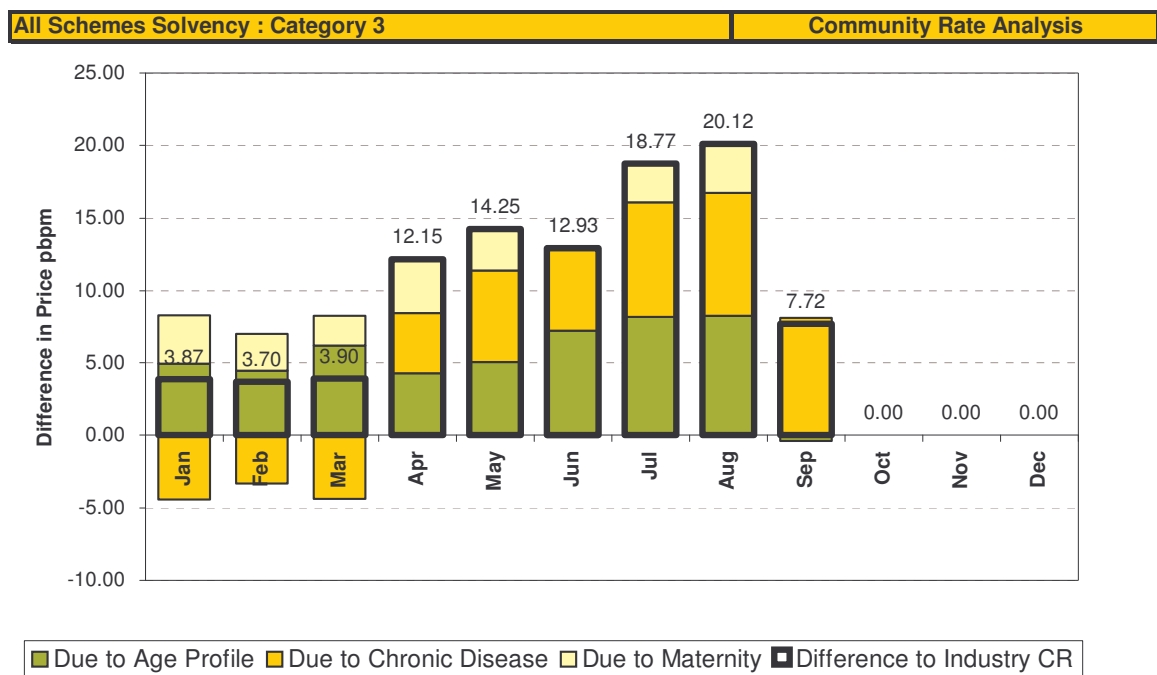
A key recommendation in the work by the Formula Consultative Task Team in 2003 was that there should be an annual Industry Community Rate published at the end of July each year, for application for the whole of the next calendar year. It was felt that the industry needed certainty in the amount of the community rate in order to include the impact of REF in the scheme contribution tables.

After observing the effective community rate for the first nine months of 2005 and after extensive analysis of the impact on REF solvency by Heather McLeod, Boshoff Steenekamp and Alex van den Heever, we find that it is not possible to maintain a single Industry Community Rate for the full calendar year. To do so would require REF to put a margin into the community rate in order to be certain of having sufficient reserves to handle the fluctuations in the community rate which have been observed. The building up of extensive solvency reserves within REF (i.e. outside the schemes) is not advisable and it would also be most detrimental to those schemes who are net payors to REF.

Accordingly, it is recommended that the schemes themselves deal with the fluctuations in the Industry Community Rate and that the REF is a “zero-sum-game” in each period. In other words, each month the Industry Community Rate will be determined in order to just clear the payments due to schemes. The rounding of the monthly community rate will be to the higher one cent in order to ensure that sufficient income is received in order to cover the amounts due to be paid out.

It is also envisaged that there would be a fourth payment each quarter, to deal with changes that are notified to REF after the first cut-off dates for each month in that quarter. The fourth payment would also include amounts due under resolved disputes with individual schemes. The principle for calculation of the “agterskot” or remaining payment would be the same: set the community rate so that the REF is a “zero-sum-game”. This balancing community rate would be determined four times a year and is expected to be very much smaller but fluctuate much more than the monthly community rate. This balancing community rate will also be rounded to the higher one cent. The build-up of the rounded amounts will be included in the calculation and returned to schemes in the last balancing payment for the calendar year.

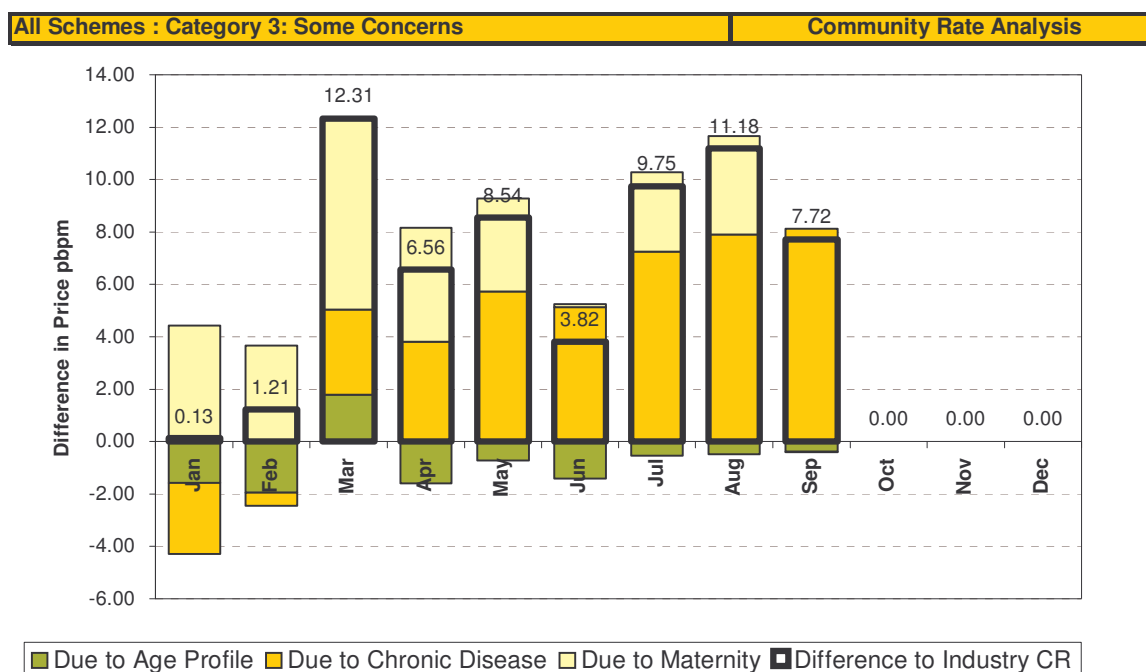
The graph below shows how the change in the community rate compared to that expected (R193.90) fluctuates from month-to-month for the Category 3 schemes identified in each month of 2005. The change in the community rate is shown in figures and is graphically broken down into three components: that from the change in age profile, that from changes in the reporting of chronic disease (including multiple disease) and that from maternity cases.



**Figure 10: Change in Community Rate Relative to Industry Community Rate in 2005 for Schemes in Category 3 each month**

The graph above shows clearly that these schemes reported more chronic disease after the first quarter of the year. The age profile effect is still not stable by Q3 and the September 2005 result seems unusual. The maternity effect changes from month to month. This is the best data submitted to REF and the results for other categories of schemes are much more volatile than shown above.

Another way to look at the same phenomenon is to take the schemes identified as Category 3 in September 2005 and then to run the comparison using the same list of schemes for the whole period. This is shown below. In this set the maternity effect is more volatile and the increase in chronic disease over the period is more marked.



**Figure 11: Change in Community Rate Relative to Industry Community Rate in 2005 for Category 3 Schemes chosen in September 2005**

Experience with analysis like this over the last three sets of submissions has made it very clear that it is not possible for REF to set a single community rate in advance and hold that community rate for the entire calendar year, as was initially envisaged. During the shadow period three community rates will be published:

- The community rate at which all REF Grids submitted would be cleared.
- The community rate for which fair data is available i.e. at which the Category 3, 6, or 7 (or better) schemes would be cleared.
- The most likely community rate i.e. the rate at which the Category 3 (or better) schemes would be cleared.

The publication of this range of results for each month from January 2005 onwards should give scheme pricing actuaries and trustees more of a sense of the fluctuations to expect in the monthly Industry Community Rate.

This section was not accepted by all stakeholders at the RETAP meeting on 26 January. There was concern expressed that schemes might find it difficult to cope with a monthly

industry community rate rather than the annual rate envisaged in the initial work on a formula in 2003. A small task group will urgently explore some of the other possible formulations suggested in the meeting for this section. They need to report back to RETAP with evidence of how an annual rate would need to be set, how reserves would be built up and managed and an appropriate formulation that meets the requirements of the Public Finance Management Act.

### **7.3 Application of the REF Contribution Table 2006**

Each scheme applies the REF Contribution Table to its own universe of beneficiaries in each option to determine the option's REF Community Rate. The difference between the Industry REF Community Rate and the option's REF Community Rate is then the amount per beneficiary notionally paid to or received from the REF in terms of risk equalisation:

- If the Industry REF Community Rate is higher than that of the option, the option notionally pays the difference to the Risk Equalisation Fund.
- If the Industry REF Community Rate is lower than that of the option, the option notionally receives the difference from the Risk Equalisation Fund.
- The effect across all options is combined and a net payment to or from the scheme is determined. Schemes however need to account for REF payments and receipts separately for each option in their financial statements.

Note that the explanation of payment flow has been determined in the absence of any flow to the REF in the form of a per capita universal subsidy or an income-based contribution. This is the form in which the shadow year 2006 will operate. Once a per capita subsidy framework is implemented, there should be a one-way flow from the REF to all medical schemes.

The effective use of the REF Contribution Table [Base 2002, Use 2006] at an individual beneficiary level is illustrated below:

- The REF Contribution Table gives a rate of R99.79 per month for a beneficiary aged between 40 and 45 who has no chronic conditions and has not been a maternity case. The Industry REF Community Rate is R236.65 which implies that a net payment of R136.86 per month is payable to the REF in respect of this beneficiary.
- The REF Contribution Table gives a rate of R1, 038.67 per month for a beneficiary aged between 40 and 45 who has Type 1 diabetes, suffers from no other chronic condition and has not been a maternity case. The Industry REF Community Rate is R236.65 which implies that a net contribution of R802.02 per month is payable to the scheme in respect of this beneficiary.

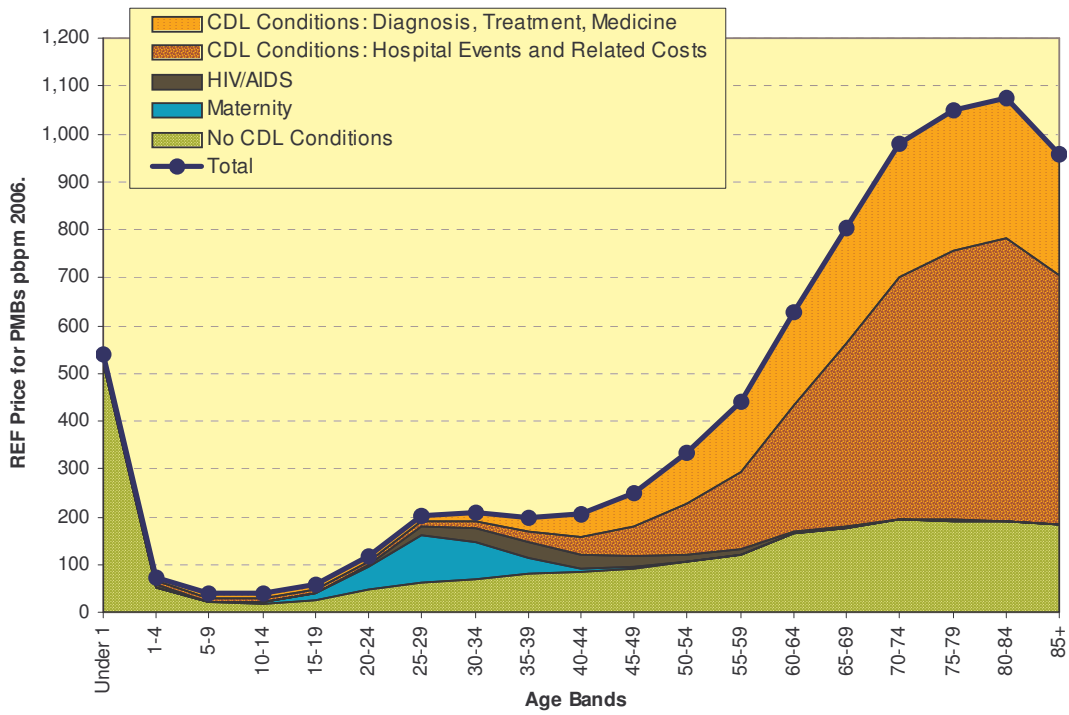
- The REF Contribution Table gives a rate of R1, 402.47 per month for a beneficiary aged between 40 and 45 who has asthma and Type 1 diabetes and has not been a maternity case. (The higher cost disease is used, i.e. that for Type 1 diabetes, plus the modifier for two diseases). The Industry REF Community Rate is R236.65 which implies that a net contribution of R1, 165.82 per month is payable to the scheme in respect of this beneficiary.

In the shadow period of operation, each medical scheme will notionally pay to the REF the Industry REF Community Rate in respect of each beneficiary in each option in the scheme.

Each scheme collects data on each option in a defined format which mirrors the REF Contribution Table, known as the REF Grid Count. The Council for Medical Schemes multiplies the cell from the REF Grid Count by the amount in the same cell of the REF Contribution Table. This is summed across all cells in the table to obtain the amount notionally payable to the option from the REF.

## **7.4 Implicit Price using REF Contribution Table 2006**

The Contribution Table is essentially a table of average cost, whereas the REF Grid is essentially the occurrence of beneficiaries in each cell of the table. When the two are combined we get the implicit price per beneficiary per month for each cell of the table, as shown graphically in Section 7.4 below. The data is available in the spreadsheet containing the REF Contribution Table 2006 which is available from <http://www.medicalschemes.com>



**Figure 12: Price per Beneficiary per Month for Components of the PMB Package implied by REF Contribution Table 2006**

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## Appendix A: REF Grid Combinations Removed

The table below uses prevalence from the 2002 REF Study, together with the REF Grid combination rules which apply from 1 January 2006.

	Beneficiary Months	Percentage
Total exposure in 2002 PMB-DTP Study	32,018,315	
People with one or more chronic disease	3,218,391	10.1%
<b>Diabetes Combinations</b>		
DM1 and/or DM2	422,756	
<b>Diabetes combination removed</b>	<b>30,299</b>	<b>7.2%</b>
DM1 or DM2	392,457	
<b>Gastro-intestinal Combinations</b>		
CSD and/or IBD	18,196	
<b>Gastro-intestinal combination removed</b>	<b>339</b>	<b>1.9%</b>
CSD or IBD	17,857	
<b>Respiratory Combinations</b>		
COP and/or AST and/or BCE	576,718	
COP and AST	6,461	
COP and BCE	84	
AST and BCE	221	
COP and AST and BCE	23	
<b>Respiratory combinations Removed</b>	<b>6,789</b>	<b>1.2%</b>
COP or AST or BCE	569,929	
<b>Cardiac Combinations</b>		
Any combinations of CMY, CHF, IHD, DYS, HYP	1,902,842	
CMY and CHF	378	
CMY and IHD	425	
CMY and DYS	367	
CMY and HYP	1,691	
CHF and IHD	3,985	
CHF and DYS	2,544	
CHF and HYP	21,331	
IHD and DYS	2,974	
IHD and HYP	58,974	
DYS and HYP	19,936	
CMY and CHF and IHD	58	
CMY and CHF and DYS	96	
CMY and IHD and DYS	37	
CMY and CHF and HYP	162	
CMY and IHD and HYP	334	
CMY and DYS and HYP	130	
CHF and IHD and HYP	3,077	
CHF and IHD and DYS	364	
CHF and DYS and HYP	2,438	
IHD and DYS and HYP	2,467	
CMY and CHF and IHD and DYS	24	
CMY and CHF and IHD and HYP	36	
CMY and CHF and DYS and HYP	24	
CHF and IHD and DYS and HYP	374	
CMY and CHF and IHD and DYS and HYP	21	
CMY and IHD and DYS and HYP	24	
<b>Cardiac combinations removed</b>	<b>122,271</b>	<b>6.4%</b>
CMY or CHF or IHD or DYS or HYP	1,780,571	

# Appendix B: REF Contribution Table for 2006

Obtainable in electronic form as a spreadsheet from <http://www.medicalschemes.com>

REF Contribution Table [Base 2002, Use 2006]		Expected Industry REF Community Rate										236.65						The actual Industry Community Rate for each payment period is determined according to the REF Grids that are approved for shadow payments.
Per Beneficiary Per Month																		
Age Bands	No CDL Diseases NON	Chronic Disease List (CDL) Conditions																
		ADS	AST	BCE	BMD	CHF	CMY	COP	CRF	CSD	DBI	DM1	DM2	DYS	EPL	GLC		
Column	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
Under 1	528.05	746.91	911.91	741.33	1,482.34	1,856.41	1,856.41	1,384.33	6,620.41	2,274.93	1,627.86	1,466.93	738.09	1,038.59	1,377.67	708.13		
1-4	53.32	272.18	437.18	266.60	1,007.61	1,381.68	1,381.68	909.60	6,145.68	1,800.20	1,153.13	992.20	263.36	563.86	902.94	233.40		
5-9	21.50	240.36	405.36	234.78	975.79	1,349.86	1,349.86	877.78	6,113.86	1,768.38	1,121.31	960.38	231.54	532.04	871.12	201.58		
10-14	20.66	239.52	404.52	233.94	974.95	1,349.02	1,349.02	876.94	6,113.02	1,767.54	1,120.47	959.54	230.70	531.20	870.28	200.74		
15-19	28.26	247.12	412.12	241.54	982.55	1,356.62	1,356.62	884.54	6,120.62	1,775.14	1,128.07	967.14	238.30	538.80	877.88	208.34		
20-24	47.37	266.23	431.23	260.65	1,001.66	1,375.73	1,375.73	903.65	6,139.73	1,794.25	1,147.18	986.25	257.41	557.91	896.99	227.45		
25-29	66.66	285.52	450.52	279.94	1,020.95	1,395.02	1,395.02	922.94	6,159.02	1,813.54	1,166.47	1,005.54	276.70	577.20	916.28	246.74		
30-34	76.68	295.54	460.54	289.96	1,030.97	1,405.04	1,405.04	932.96	6,169.04	1,823.56	1,176.49	1,015.56	286.72	587.22	926.30	256.76		
35-39	90.92	309.78	474.78	304.20	1,045.21	1,419.28	1,419.28	947.20	6,183.28	1,837.80	1,190.73	1,029.80	300.96	601.46	940.54	271.00		
40-44	99.79	318.65	483.65	313.07	1,054.08	1,428.15	1,428.15	956.07	6,192.15	1,846.67	1,199.60	1,038.67	309.83	610.33	949.41	279.87		
45-49	118.05	336.91	501.91	331.33	1,072.34	1,446.41	1,446.41	974.33	6,210.41	1,864.93	1,217.86	1,056.93	328.09	628.59	967.67	298.13		
50-54	151.25	370.11	535.11	364.53	1,105.54	1,479.61	1,479.61	1,007.53	6,243.61	1,898.13	1,251.06	1,090.13	361.29	661.79	1,000.87	331.33		
55-59	192.18	411.04	576.04	405.46	1,146.47	1,520.54	1,520.54	1,048.46	6,284.54	1,939.06	1,291.99	1,131.06	402.22	702.72	1,041.80	372.26		
60-64	299.38	518.24	683.24	512.66	1,253.67	1,627.74	1,627.74	1,155.66	6,391.74	2,046.26	1,399.19	1,238.26	509.42	809.92	1,149.00	479.46		
65-69	379.66	598.52	763.52	592.94	1,333.95	1,708.02	1,708.02	1,235.94	6,472.02	2,126.54	1,479.47	1,318.54	589.70	890.20	1,229.28	559.74		
70-74	476.24	695.10	860.10	689.52	1,430.53	1,804.60	1,804.60	1,332.52	6,568.60	2,223.12	1,576.05	1,415.12	686.28	986.78	1,325.86	656.32		
75-79	503.49	722.35	887.35	716.77	1,457.78	1,831.85	1,831.85	1,359.77	6,595.85	2,250.37	1,603.30	1,442.37	713.53	1,014.03	1,353.11	683.57		
80-84	510.12	728.98	893.98	723.40	1,464.41	1,838.48	1,838.48	1,366.40	6,602.48	2,257.00	1,609.93	1,449.00	720.16	1,020.66	1,359.74	690.20		
85+	437.48	656.34	821.34	650.76	1,391.77	1,765.84	1,765.84	1,293.76	6,529.84	2,184.36	1,537.29	1,376.36	647.52	948.02	1,287.10	617.56		

Diseases/Conditions	
Code	Explanation
NON	No CDL disease
ADS	Addison's Disease
AST	Asthma
BCE	Bronchiectasis
BMD	Bipolar Mood Disorder
CHF	Cardiac failure
CMY	Cardiomyopathy
COP	Chronic Obs. Pulmonary Disease
CRF	Chronic Renal Disease
CSD	Crohn's Disease
DBI	Diabetes Insipidus
DM1	Diabetes Mellitus 1
DM2	Diabetes Mellitus 2
DYS	Dysrhythmias
EPL	Epilepsy
GLC	Glaucoma
HAE	Haemophilia
HYL	Hyperlipidaemia
HYP	Hypertension
IBD	Ulcerative Colitis
IHD	Coronary Artery Disease
MSS	Multiple Sclerosis
PAR	Parkinson's Disease
RHA	Rheumatoid Arthritis
SCZ	Schizophrenia
SLE	Systemic LE
TDH	Hypothyroidism
HIV	HIV/AIDS
MAT	Caesarean / NVD in period
CC2	Two simultaneous conditions
CC3	Three simultaneous conditions
CC4	Four or more simultaneous conditions

Table for use in Shadow Year 2006

												HIV/AIDS
HAE	HYL	HYP	IBD	IHD	MSS	PAR	RHA	SCZ	SLE	TDH	HIV	
17	18	19	20	21	22	23	24	25	26	27	28	
7,231.03	843.68	789.43	1,481.92	1,464.65	5,124.08	1,253.03	797.28	1,194.79	748.78	571.80	1,962.80	
6,756.30	368.95	314.70	1,007.19	989.92	4,649.35	778.30	322.55	720.06	274.05	97.07	1,488.07	
6,724.48	337.13	282.88	975.37	958.10	4,617.53	746.48	290.73	688.24	242.23	65.25	1,456.25	
6,723.64	336.29	282.04	974.53	957.26	4,616.69	745.64	289.89	687.40	241.39	64.41	1,455.41	
6,731.24	343.89	289.64	982.13	964.86	4,624.29	753.24	297.49	695.00	248.99	72.01	1,463.01	
6,750.35	363.00	308.75	1,001.24	983.97	4,643.40	772.35	316.60	714.11	268.10	91.12	1,482.12	
6,769.64	382.29	328.04	1,020.53	1,003.26	4,662.69	791.64	335.89	733.40	287.39	110.41	1,501.41	
6,779.66	392.31	338.06	1,030.55	1,013.28	4,672.71	801.66	345.91	743.42	297.41	120.43	1,511.43	
6,793.90	406.55	352.30	1,044.79	1,027.52	4,686.95	815.90	360.15	757.66	311.65	134.67	1,525.67	
6,802.77	415.42	361.17	1,053.66	1,036.39	4,695.82	824.77	369.02	766.53	320.52	143.54	1,534.54	
6,821.03	433.68	379.43	1,071.92	1,054.65	4,714.08	843.03	387.28	784.79	338.78	161.80	1,552.80	
6,854.23	466.88	412.63	1,105.12	1,087.85	4,747.28	876.23	420.48	817.99	371.98	195.00	1,586.00	
6,895.16	507.81	453.56	1,146.05	1,128.78	4,788.21	917.16	461.41	858.92	412.91	235.93	1,626.93	
7,002.36	615.01	560.76	1,253.25	1,235.98	4,895.41	1,024.36	568.61	966.12	520.11	343.13	1,734.13	
7,082.64	695.29	641.04	1,333.53	1,316.26	4,975.69	1,104.64	648.89	1,046.40	600.39	423.41	1,814.41	
7,179.22	791.87	737.62	1,430.11	1,412.84	5,072.27	1,201.22	745.47	1,142.98	696.97	519.99	1,910.99	
7,206.47	819.12	764.87	1,457.36	1,440.09	5,099.52	1,228.47	772.72	1,170.23	724.22	547.24	1,938.24	
7,213.10	825.75	771.50	1,463.99	1,446.72	5,106.15	1,235.10	779.35	1,176.86	730.85	553.87	1,944.87	
7,140.46	753.11	698.86	1,391.35	1,374.08	5,033.51	1,162.46	706.71	1,104.22	658.21	481.23	1,872.23	

Modifier for number of chronic conditions			
Number of Conditions	2	3	4 or more
	CC2	CC3	CC4
All Ages	363.80	807.77	1,545.30
Amount is per beneficiary per month.			
Add to amounts obtained from Columns 1 to 28			

Modifier for Maternity	
	MAT
All Ages	19,226.78
Amount is per delivery (as defined).	
Use only once per delivery, not monthly.	

# Appendix C: REF Grid Counts implicit in REF Contribution Table 2006

Assumed REF Grid Count in REF Contribution Table 2006		Industry Assumptions	
Total number of beneficiary months in the cell for the period, per 1,000 exposed beneficiaries in the scheme		Base Period	HIV/AIDS expected in 2006, all other diseases from REF Grids Q3 2005
Explanation: This REF Grid Count used in the calculation of the Expected Industry REF Community Rate is not prevalence of the disease. It is arrived at by taking the most expensive disease in any multiple disease combination. It can NOT be compared directly to prevalences in published medical literature.			
Occurrence per 1,000 Beneficiaries in each age band in the Scheme			

Age Bands	No CDL Diseases NON	Chronic Disease List (CDL)													
		ADS	AST	BCE	BMD	CHF	CMY	COP	CRF	CSD	DBI	DM1	DM2	DYS	EPL
Column	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Under 1	988.171	0.022	5.624	0.022	0.000	0.076	0.043	0.087	0.076	0.000	0.011	0.043	0.000	0.022	0.508
1-4	967.623	0.008	23.412	0.004	0.004	0.081	0.016	0.069	0.049	0.004	0.004	0.275	0.004	0.016	2.289
5-9	960.184	0.019	32.657	0.015	0.053	0.077	0.022	0.071	0.087	0.003	0.012	0.724	0.040	0.028	3.656
10-14	965.604	0.021	26.368	0.024	0.124	0.050	0.009	0.050	0.094	0.015	0.018	1.090	0.094	0.050	4.683
15-19	971.115	0.015	17.831	0.015	0.453	0.077	0.034	0.028	0.120	0.083	0.015	1.443	0.231	0.089	5.284
20-24	970.699	0.025	11.769	0.021	0.911	0.076	0.055	0.055	0.227	0.181	0.029	1.957	0.411	0.155	5.252
25-29	956.592	0.011	10.405	0.007	1.110	0.100	0.093	0.081	0.285	0.374	0.022	2.264	1.077	0.181	3.981
30-34	929.117	0.032	12.943	0.012	1.213	0.204	0.166	0.125	0.338	0.408	0.020	2.697	2.207	0.362	4.379
35-39	899.276	0.051	14.649	0.021	1.375	0.505	0.248	0.230	0.433	0.415	0.024	3.472	4.853	0.448	4.393
40-44	851.555	0.054	16.186	0.013	1.247	1.113	0.413	0.528	0.592	0.375	0.032	5.118	7.446	0.763	5.054
45-49	791.766	0.066	18.508	0.026	1.512	2.085	0.738	1.090	0.672	0.477	0.029	6.853	9.742	1.340	5.275
50-54	712.794	0.056	20.143	0.019	1.498	3.826	1.201	2.694	0.978	0.589	0.023	8.653	11.769	2.351	6.144
55-59	633.971	0.083	22.818	0.048	1.414	6.879	1.830	5.341	1.200	0.517	0.048	10.503	11.709	4.319	6.351
60-64	551.545	0.168	25.241	0.097	1.590	10.575	2.606	9.153	1.599	0.724	0.027	11.998	12.881	7.934	6.944
65-69	467.203	0.118	28.130	0.105	1.584	19.294	4.005	13.941	1.767	0.785	0.052	12.645	16.506	11.087	8.129
70-74	406.884	0.098	28.362	0.157	1.236	28.793	5.119	18.280	2.020	0.765	0.059	11.376	14.593	16.515	8.689
75-79	381.936	0.177	24.388	0.118	1.271	43.426	5.351	20.131	1.862	1.005	0.059	9.519	14.249	21.136	8.987
80-84	370.703	0.000	23.961	0.108	0.757	58.957	7.627	19.472	2.001	0.649	0.054	6.545	11.413	23.691	7.951
85+	419.008	0.000	17.962	0.109	0.653	85.674	8.165	12.084	1.742	0.435	0.000	4.572	10.124	23.841	7.185
Total by Condition*	856.012	0.044	19.538	0.027	0.909	3.510	0.719	1.967	0.514	0.314	0.024	4.094	4.662	1.944	4.922

\* using target population age profile used to determine Expected Industry REF Community Rate

Diseases/Conditions	
Code	Explanation
NON	No CDL disease
ADS	Addison's Disease
AST	Asthma
BCE	Bronchiectasis
BMD	Bipolar Mood Disorder
CHF	Cardiac failure
CMY	Cardiomyopathy
COP	Chronic Obs. Pulmonary Disease
CRF	Chronic Renal Disease
CSD	Crohn's Disease
DBI	Diabetes Insipidus
DM1	Diabetes Mellitus 1
DM2	Diabetes Mellitus 2
DYS	Dysrhythmias
EPL	Epilepsy
GLC	Glaucoma
HAE	Haemophilia
HYL	Hyperlipidaemia
HYP	Hypertension
IBD	Ulcerative Colitis
IHD	Coronary Artery Disease
MSS	Multiple Sclerosis
PAR	Parkinson's Disease
RHA	Rheumatoid Arthritis
SCZ	Schizophrenia
SLE	Systemic LE
TDH	Hypothyroidism
HIV	HIV/AIDS
MAT	Caesarean / NVD in period
CC2	Two simultaneous conditions
CC3	Three simultaneous conditions
CC4	Four or more simultaneous conditions

HAE	HYL	HYP	IBD	IHD	MSS	PAR	RHA	SCZ	SLE	TDH	HIV/AIDS	HIV	Total by Age Band	Multiple CDL Conditions			Maternity (Annual)	Industry Age Profile per 1,000 beneficiaries
														2	3	4 or more		
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32			
0.011	0.000	0.011	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.032	5.230	1,000.0	0.227	0.022	0.000	0.000	15.9687	
0.020	0.008	0.101	0.004	0.008	0.000	0.000	0.024	0.004	0.000	0.073	5.888	1,000.0	0.514	0.016	0.000	0.000	61.9660	
0.040	0.050	0.118	0.015	0.019	0.000	0.000	0.059	0.022	0.006	0.090	1.927	1,000.0	0.669	0.034	0.003	0.000	84.8498	
0.021	0.200	0.200	0.035	0.035	0.003	0.006	0.106	0.029	0.012	0.236	0.794	1,000.0	0.737	0.044	0.012	0.201	91.0878	
0.015	0.623	0.543	0.077	0.025	0.009	0.003	0.182	0.173	0.049	0.503	0.888	1,000.0	1.147	0.099	0.022	7.624	88.5364	
0.042	1.188	1.822	0.302	0.092	0.042	0.008	0.323	0.558	0.143	1.096	2.435	1,000.0	1.843	0.269	0.071	30.363	64.0391	
0.041	2.801	4.906	0.518	0.122	0.137	0.015	0.544	0.396	0.185	2.179	11.388	1,000.0	3.360	0.537	0.133	61.939	63.6168	
0.015	5.846	13.552	0.545	0.452	0.230	0.006	0.953	0.443	0.181	3.750	19.585	1,000.0	7.225	1.397	0.283	47.038	83.3083	
0.018	9.993	28.147	0.571	1.252	0.245	0.024	1.372	0.466	0.239	5.409	21.474	1,000.0	13.943	3.105	0.753	19.852	88.0130	
0.013	18.731	55.794	0.662	3.305	0.286	0.115	2.220	0.455	0.251	7.099	19.938	1,000.0	27.656	6.765	1.702	3.696	83.1486	
0.007	31.201	90.109	0.690	6.868	0.301	0.220	3.473	0.547	0.231	10.120	14.938	1,000.0	47.870	13.292	3.887	0.250	75.3125	
0.023	50.377	131.141	0.992	13.197	0.283	0.380	4.832	0.496	0.301	13.930	9.274	1,000.0	75.579	23.867	7.577	0.167	56.3891	
0.006	73.487	162.034	1.283	22.997	0.368	1.028	6.006	0.535	0.214	16.640	5.306	1,000.0	107.783	38.514	13.996	0.000	46.2606	
0.018	95.638	187.875	1.308	34.748	0.256	2.173	6.511	0.760	0.159	19.879	2.849	1,000.0	139.574	57.489	22.971	0.000	32.7248	
0.000	110.124	215.378	1.414	47.044	0.288	3.508	7.212	0.589	0.170	20.656	0.988	1,000.0	172.156	79.350	35.892	0.000	23.9336	
0.020	109.642	238.114	1.177	61.804	0.098	6.943	7.806	0.785	0.137	20.497	0.754	1,000.0	194.139	95.128	45.642	0.000	17.0428	
0.000	91.699	252.808	1.596	68.937	0.059	11.233	6.563	0.739	0.030	20.959	0.558	1,000.0	202.672	100.597	50.639	0.000	12.1939	
0.054	64.420	267.849	1.677	76.158	0.162	11.846	6.437	0.757	0.054	21.636	0.890	1,000.0	200.400	100.065	48.626	0.000	7.2061	
0.109	25.474	261.267	0.980	65.535	0.000	10.886	5.443	0.653	0.000	17.527	0.759	1,000.0	181.363	85.238	34.944	0.000	4.4021	
0.021	21.175	51.958	0.515	7.763	0.151	0.644	1.953	0.360	0.140	5.967	8.862	1,000.0	34.285	12.874	5.125	12.580	1,000.000	