

**Methodology to determine the REF weighting table and
REF count table for 2010**

[Base 2005, Use 2010]

8 March 2010

Table of Contents

1. Introduction and purpose of this document.....	1
2. Adjustment to REFWT for inflation	1
2.1. Inflation estimate	1
2.2. REF Weighting table for 2010 (Base 2005, Use 2010) (REFWT 2010)	2
3. Adjustment to Count 2009 table to prepare the Count 2010 table	2
4. Estimated industry community rate for 2010.....	2

List of Tables

Table 1: Weighted inflation estimate.....	1
Table 2: Factors applied to 2007 table to generate REFWT 2010	2

List of Annexures

Annexure A: Methodology to Determine the Inflation Estimates used to Adjust the REF Contribution Table.....	3
Annexure B: REF Weighting table [Base 2005, Use 2010]	5
Annexure C: REF Count 2010 table	7
Annexure D: Target population for the calculation of the estimated REF community rate for 2010.....	9



1. Introduction and purpose of this document

This document sets out the methodology used to determine the inflation factors that were used to adjust the REF weighting table (REFWT). The inflation adjustment has not lead to a change in the cost hierarchy of conditions and the count table was therefore not recalculated to estimate the industry community rate for 2010.

2. Adjustment to REFWT for inflation

2.1. Inflation estimate

During March 2010 Discovery, Metropolitan Health Group, and Medscheme administrators submitted inflation estimates after applying the methods set out in Annexure A (page 3).

These inflation estimates for each of DTP Hospital, CDL Medicine and Related Diagnosis & Treatment costs, were weighted by the number of beneficiaries on which the respective estimates were based. The weighted average for these estimates is presented in Table 1 (page 1).

Table 1: Weighted inflation estimate

Weighted Inflation estimates to be applied for the adjustment of REFCT2007 for use in 2010				
Based on submissions from Medscheme, Discovery, and MHG				
Weighted average industry inflation estimate for the REF weighting table , representing 5,356,860 beneficiaries, weighted by the total numberof lives on which the respective estimates were based.				
Year	Comment	DTP Hospital	CDL Medicine	Related Diagnosis & Treatment
2005 - 2006	Previous Estimate	6.50%	4.90%	10.85%
2005 - 2006	Actual	9.32%	5.58%	9.62%
2006 - 2007	Previous Estimate	7.50%	8.16%	4.90%
2006 - 2007	Actual	7.33%	6.40%	5.40%
2007 - 2008	Previous Estimate	8.74%	5.91%	7.04%
2007 - 2008	Actual	7.25%	4.69%	5.90%
2008 - 2009	Previous Estimate	12.00%	9.00%	11.00%
2008 - 2009	Actual	13.84%	9.74%	11.52%
2009 - 2010	Current Estimate	8.69%	7.36%	7.96%



2.2. REF Weighting table for 2010 (Base 2005, Use 2010) (REFWT 2010)

The weighted inflation estimates for each of the cost components were applied to calculate the factor that was applied to each of the cost components, and are presented in Table 2.

Table 2: Factors applied to 2007 table to generate REFWT 2010

Factors applied to the 2007 table for the creation of 2010 table			
	DTP Hospital	CDL Medicine	Related Diagnosis & Treatment
Inflation factor used for 2005-2007 based on projections	1.175200000	1.142000000	1.149900000
Correct inflation factor for 2005-2007 based on actuals	1.173285684	1.123391115	1.155394800
Inflation factor for 2005-2010 based on known actuals & current estimate	1.557016255	1.385628134	1.473069362
Adjustment required to 2007 table to generate 2010 table	1.324894703	1.213334618	1.281041275

The full REFWT 2010, indicating the new estimated costs by risk factor, is presented in Annexure B (page 5).

3. Adjustment to Count 2009 table to prepare the Count 2010 table

There were no changes to the cost hierarchy that necessitated changes to the expected count table for 2010, which is attached in Annexure C (page 7).

4. Estimated industry community rate for 2010

The target population used to estimate the 2010 industry community rate is based on the June 2009 REF returns, and is presented in Annexure D (page 9)

Applying the Count 2010 table and the REFWT 2010 tables to the June 2009 target population, the community rate for 2010 is estimated to be R 340.95 pbpm.



Annexure A: Methodology to Determine the Inflation Estimates used to Adjust the REF Contribution Table

Note prepared for RETAP by Brett Mill
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This document sets out the methodology used to determine the inflation factors to be used in adjusting the REF contribution table and the industry community rate. The inflation calculations set out below should be done for the year-to-date.

Three inflation components are determined:

1. DTP Hospital Costs

Step 1: Calculate the actual year-on-year change in the per life per month DTP Hospital Cost.

Step 2: Quantify the impact of the change in the age and gender profile of the scheme over the year. This can be done by using the following steps:

- a) Calculate a per life per month DTP Hospital Cost per age band and gender for the prior year.
- b) Calculate the weighted average DTP Hospital Cost by multiplying the prior year exposure per age band and gender by the per life per month DTP Hospital Cost per age band and gender calculated in Step 2a) and dividing the result by the total exposure.
- c) Redo the calculation Step 2b) using the current year exposure per age band and gender.
- d) The impact of the actual change in the age and gender profile is calculated as the per life per month DTP Hospital Cost calculated in Step 2c) divided by the per life per month DTP Hospital Cost calculated in Step 2b) minus 1.

Step 3: The REF inflation factor is equal to the increase calculated in Step 1 less the demographic change effect calculated in Step 2.

2. CDL Medicine Costs

Step 1: Calculate the year-on-year change in the CDL Medicine Cost per claimant per month. The CDL Medicine Cost per claimant per month is calculated as the sum of the CDL Medicine Costs divided by the sum of the CDL claimants in each month. The CDL medicine cost should be based on a mark-up of R26/26%. The CDL claimants in each month are determined without applying the REF Entry and Verification criteria. A beneficiary is counted as a claimant in a particular month if a claim for CDL medication obtained in that month has been paid.

Step 2: Quantify the impact of the change in the mix of chronic conditions over the year. This can be done by using the following steps:

- a) Calculate a cost per claimant per month for each CDL condition for the prior year.



- b) Calculate the weighted average cost per claimant per month by multiplying the monthly claimants per condition for the prior year by the cost per claimant per month calculated in Step 2a) and dividing the result by the total number of claimants.
- c) Redo the calculation Step 2b) using the monthly claimants per condition for the current year.
- d) The impact of the actual change in the mix of CDL conditions is calculated as the cost per claimant calculated in Step 2c) divided by the cost per claimant calculated in Step 2b) minus 1.

Step 3: The REF inflation factor is equal to the increase calculated in Step 1 less the demographic change effect calculated in Step 2.

3. Related Diagnosis and Treatment Costs

The REF inflation factor is set as the average NHRPL price increase for Related Diagnosis and Treatment Costs plus a 0.5% margin to allow for increased utilization.



Annexure B: REF Weighting table [Base 2005, Use 2010]

REF Contribution Table [Base 2005, Use 2010] Combined		Expected Industry REF Community Rate										340.95		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 [Important: see Note 3 below]																	
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	668.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1-4	115.32	294.10	496.92	691.86	1,593.16	3,066.39	1,632.44	1,857.29	20,513.12	1,648.90	1,111.82	1,892.70	664.63	867.89	1,003.91	390.23	
5-9	53.09	231.87	434.69	629.63	1,530.93	3,004.16	1,570.21	1,795.06	20,450.89	1,586.67	1,049.59	1,830.47	602.41	805.66	941.68	328.00	
10-14	49.13	227.92	430.73	625.67	1,526.97	3,000.21	1,566.26	1,791.11	20,446.93	1,582.71	1,045.63	1,826.52	598.45	801.71	937.72	324.04	
15-19	72.64	251.43	454.24	649.18	1,550.48	3,023.72	1,589.77	1,814.62	20,470.44	1,606.22	1,069.14	1,850.03	621.96	825.22	961.23	347.55	
20-24	114.90	293.68	496.50	691.44	1,592.74	3,065.97	1,632.02	1,856.87	20,512.70	1,648.48	1,111.40	1,892.28	664.22	867.47	1,003.49	389.81	
25-29	161.98	340.77	543.58	738.52	1,639.82	3,113.06	1,679.11	1,903.96	20,559.78	1,695.56	1,158.48	1,939.37	711.30	914.56	1,050.57	436.89	
30-34	186.95	365.74	568.55	763.49	1,664.79	3,138.03	1,704.07	1,928.93	20,584.75	1,720.53	1,183.45	1,964.34	736.27	939.53	1,075.54	461.86	
35-39	194.03	372.82	575.63	770.57	1,671.87	3,145.11	1,711.15	1,936.01	20,591.83	1,727.61	1,190.53	1,971.41	743.35	946.61	1,082.62	468.94	
40-44	217.79	396.58	599.39	794.33	1,695.63	3,168.86	1,734.91	1,959.76	20,615.59	1,751.37	1,214.29	1,995.17	767.11	970.36	1,106.38	492.70	
45-49	252.69	431.47	634.28	829.23	1,730.53	3,203.76	1,769.81	1,994.66	20,650.48	1,786.26	1,249.18	2,030.07	802.00	1,005.26	1,141.28	527.60	
50-54	318.58	497.37	700.18	895.12	1,796.42	3,269.65	1,835.70	2,060.55	20,716.38	1,852.16	1,315.08	2,095.96	867.90	1,071.15	1,207.17	593.49	
55-59	409.90	588.69	791.50	986.44	1,887.74	3,360.98	1,927.03	2,151.88	20,807.70	1,943.48	1,406.40	2,187.29	959.22	1,162.48	1,298.49	684.81	
60-64	551.00	729.79	932.60	1,127.54	2,028.84	3,502.07	2,068.12	2,292.97	20,948.80	2,084.58	1,547.50	2,328.38	1,100.32	1,303.57	1,439.59	825.91	
65-69	689.79	868.58	1,071.39	1,266.33	2,167.63	3,640.87	2,206.91	2,431.77	21,087.59	2,223.37	1,686.29	2,467.17	1,239.11	1,442.37	1,578.38	964.70	
70-74	794.36	973.15	1,175.96	1,370.90	2,272.20	3,745.44	2,311.48	2,536.34	21,192.16	2,327.94	1,790.86	2,571.74	1,343.68	1,546.94	1,682.95	1,069.27	
75-79	846.87	1,025.65	1,228.46	1,423.41	2,324.70	3,797.94	2,363.99	2,588.84	21,244.66	2,380.44	1,843.36	2,624.25	1,396.18	1,599.44	1,735.46	1,121.78	
80-84	786.38	965.16	1,167.98	1,362.92	2,264.22	3,737.45	2,303.50	2,528.35	21,184.18	2,319.96	1,782.88	2,563.76	1,335.69	1,538.95	1,674.97	1,061.29	
85+	705.64	884.43	1,087.24	1,282.18	2,183.48	3,656.72	2,222.77	2,447.62	21,103.44	2,239.22	1,702.14	2,483.03	1,254.96	1,458.22	1,594.23	980.55	



											HIV/ AIDS	Modifier for number of chronic conditions			Modifier for Maternity		
HAE	HYL	HYP	IBD	IHD	MSS	PAR	RHA	SCZ	SLE	TDH	HIV	Number of Conditions	2	3	4 or more	All Ages	MAT
17	18	19	20	21	22	23	24	25	26	27	28		CC2	CC3	CC4		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Modifiers	246.12	673.34	1,372.56	23,191.78	
13,131.69	390.49	324.43	632.81	1,184.40	10,956.96	1,206.07	587.48	891.18	1,753.73	219.81	1,361.92		246.12	673.34	1,372.56	23,191.78	
13,069.46	328.26	262.20	570.58	1,122.17	10,894.73	1,143.84	525.25	828.96	1,691.50	157.58	1,299.69		246.12	673.34	1,372.56	23,191.78	
13,065.51	324.31	258.25	566.62	1,118.21	10,890.78	1,139.88	521.29	825.00	1,687.54	153.63	1,295.74		246.12	673.34	1,372.56	23,191.78	
13,089.02	347.82	281.76	590.13	1,141.72	10,914.29	1,163.39	544.80	848.51	1,711.05	177.14	1,319.24		246.12	673.34	1,372.56	23,191.78	
13,131.27	390.07	324.01	632.39	1,183.98	10,956.54	1,205.65	587.06	890.77	1,753.31	219.39	1,361.50		246.12	673.34	1,372.56	23,191.78	
13,178.36	437.16	371.10	679.47	1,231.06	11,003.63	1,252.73	634.14	937.85	1,800.39	266.48	1,408.59		246.12	673.34	1,372.56	23,191.78	
13,203.33	462.13	396.06	704.44	1,256.03	11,028.60	1,277.70	659.11	962.82	1,825.36	291.45	1,433.55		246.12	673.34	1,372.56	23,191.78	
13,210.41	469.21	403.14	711.52	1,263.11	11,035.68	1,284.78	666.19	969.90	1,832.44	298.53	1,440.63		246.12	673.34	1,372.56	23,191.78	
13,234.17	492.97	426.90	735.28	1,286.87	11,059.44	1,308.54	689.95	993.66	1,856.20	322.29	1,464.39		246.12	673.34	1,372.56	23,191.78	
13,269.06	527.86	461.80	770.17	1,321.76	11,094.33	1,343.43	724.84	1,028.55	1,891.09	357.18	1,499.29		246.12	673.34	1,372.56	23,191.78	
13,334.95	593.76	527.69	836.07	1,387.66	11,160.23	1,409.33	790.74	1,094.45	1,956.99	423.08	1,565.18		246.12	673.34	1,372.56	23,191.78	
13,426.28	685.08	619.02	927.39	1,478.98	11,251.55	1,500.65	882.06	1,185.77	2,048.31	514.40	1,656.51		246.12	673.34	1,372.56	23,191.78	
13,567.38	826.18	760.11	1,068.49	1,620.08	11,392.65	1,641.75	1,023.16	1,326.87	2,189.41	655.50	1,797.60		246.12	673.34	1,372.56	23,191.78	
13,706.17	964.97	898.90	1,207.28	1,758.87	11,531.44	1,780.54	1,161.95	1,465.66	2,328.20	794.29	1,936.39		246.12	673.34	1,372.56	23,191.78	
13,810.74	1,069.54	1,003.47	1,311.85	1,863.44	11,636.01	1,885.11	1,266.52	1,570.23	2,432.77	898.86	2,040.96		246.12	673.34	1,372.56	23,191.78	
13,863.24	1,122.04	1,055.98	1,364.35	1,915.94	11,688.51	1,937.61	1,319.02	1,622.73	2,485.27	951.36	2,093.47		246.12	673.34	1,372.56	23,191.78	
13,802.75	1,061.55	995.49	1,303.86	1,855.46	11,628.02	1,877.13	1,258.54	1,562.24	2,424.79	890.87	2,032.98		246.12	673.34	1,372.56	23,191.78	
13,722.02	980.82	914.76	1,223.13	1,774.72	11,547.29	1,796.39	1,177.80	1,481.51	2,344.05	810.14	1,952.25		246.12	673.34	1,372.56	23,191.78	



Annexure C: REF Count 2010 table

Combined REF Grid Count in REF Contribution Table 2010																
Rate per 1,000 Beneficiaries in each Age Band																
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	1,000.000	-	-	-	-		-	-	-	-	-	-	-	-	-	-
1-4	974.554	0.006	22.201	0.057	0.009		0.076	0.449	0.006	0.003	-	0.192	0.011	0.004	1.087	0.005
5-9	971.853	0.009	22.828	0.034	0.021		0.052	0.344	0.006	0.003	0.010	0.560	0.034	0.012	1.935	0.002
10-14	977.606	0.009	16.840	0.035	0.057		0.037	0.221	0.010	0.010	0.010	0.999	0.074	0.019	2.360	0.013
15-19	981.762	0.022	11.682	0.021	0.230		0.069	0.191	0.024	0.053	0.012	1.282	0.215	0.023	2.921	0.024
20-24	982.056	0.009	7.786	0.006	0.484		0.069	0.139	0.072	0.104	0.020	1.782	0.407	0.046	3.112	0.079
25-29	975.530	0.007	7.334	0.019	0.563		0.177	0.161	0.108	0.164	0.019	1.745	0.874	0.061	2.330	0.099
30-34	951.106	0.020	10.374	0.028	0.706		0.485	0.315	0.155	0.191	0.008	1.983	2.534	0.146	2.662	0.136
35-39	922.320	0.037	12.181	0.033	0.866		1.027	0.504	0.184	0.211	0.011	2.404	6.134	0.237	3.017	0.264
40-44	884.104	0.040	13.385	0.060	0.819		2.280	0.867	0.291	0.200	0.019	3.180	12.168	0.360	3.657	0.491
45-49	835.729	0.028	14.548	0.046	1.020		3.931	1.616	0.374	0.276	0.016	3.931	19.804	0.803	3.978	0.934
50-54	770.636	0.040	16.281	0.066	1.002		6.768	3.315	0.567	0.347	0.004	4.484	27.392	1.536	4.730	1.866
55-59	698.776	0.068	17.779	0.128	0.963		10.586	6.340	0.808	0.326	0.029	5.259	34.066	2.940	5.107	2.882
60-64	629.086	0.123	20.241	0.165	1.076		15.528	11.441	1.038	0.563	0.015	5.922	38.197	5.446	5.458	4.347
65-69	555.387	0.071	21.215	0.169	1.030		25.801	17.908	1.035	0.474	0.009	6.464	41.983	8.007	6.652	7.192
70-74	499.297	0.101	22.769	0.142	0.673		38.112	24.697	0.991	0.443	0.017	6.403	42.295	11.901	7.463	9.821
75-79	478.953	0.162	20.403	0.155	0.755		53.211	26.482	0.768	0.315	-	5.986	39.289	15.420	7.546	12.342
80-84	474.894	0.025	18.000	0.074	0.453		75.826	25.614	0.416	0.272	-	4.696	30.632	15.164	6.787	16.497
85+	528.970	0.127	11.637	0.025	0.313		101.930	18.179	0.516	0.093	-	2.683	20.100	14.523	5.831	18.035
Total by Condition*	885.091	0.031	14.601	0.051	0.562	0.000	5.032	2.729	0.261	0.175	0.012	2.505	10.404	1.321	3.262	1.256

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

Methodology to determine the REFWT and REF Count tables for 2010



Based on REF Study 2005 with Industry Age and Gender Profile June 2009

												Total by Age Band	Multiple CDL Conditions			Maternity (Monthly per 1,000 Female Lives)
HAE	HYL	HYP	IBD	IHD	MSS	PAR	RHA	SCZ	SLE	TDH	HIV/AIDS		2	3	4 or more	
17	18	19	20	21	22	23	24	25	26	27	28		CC2	CC3	CC4	
-	-	-	-	-	-	-	-	-	-	-	-	1,000.00	-	-	-	-
0.012	0.001	0.028	0.008	0.002	-	-	0.015	0.005	0.002	0.052	1.215	1,000.00	0.258	-	-	-
0.032	0.029	0.030	0.005	0.001	0.004	-	0.032	0.012	0.003	0.051	2.098	1,000.00	0.267	0.006	0.003	-
0.013	0.106	0.068	0.029	0.007	0.008	-	0.070	0.020	0.025	0.142	1.212	1,000.00	0.257	0.008	0.002	0.029
0.016	0.320	0.201	0.039	0.019	0.023	-	0.127	0.089	0.037	0.322	0.276	1,000.00	0.379	0.022	0.004	1.249
0.027	0.632	0.867	0.118	0.031	0.053	0.007	0.214	0.289	0.081	0.672	0.838	1,000.00	0.795	0.086	0.006	5.301
0.017	1.167	2.507	0.218	0.123	0.127	0.010	0.387	0.201	0.131	1.371	4.550	1,000.00	1.400	0.164	0.013	10.230
0.007	3.120	7.963	0.226	0.334	0.182	0.017	0.754	0.272	0.176	2.650	13.450	1,000.00	3.810	0.521	0.044	7.984
0.007	6.160	18.004	0.331	0.972	0.214	0.029	1.387	0.309	0.223	3.866	19.068	1,000.00	8.800	1.383	0.150	3.233
0.019	11.896	36.196	0.323	2.450	0.244	0.087	2.378	0.328	0.293	5.276	18.589	1,000.00	18.291	3.011	0.286	0.559
0.009	21.774	59.078	0.380	5.517	0.278	0.118	3.662	0.390	0.366	7.830	13.564	1,000.00	34.163	6.374	0.624	0.034
0.016	36.277	88.404	0.562	10.317	0.221	0.305	4.897	0.386	0.405	10.802	8.374	1,000.00	55.701	11.649	1.364	0.015
0.001	55.064	114.785	0.664	17.501	0.265	0.810	6.268	0.430	0.356	12.862	4.937	1,000.00	83.992	18.905	2.335	-
0.004	72.386	135.350	0.592	27.442	0.186	1.712	6.703	0.537	0.318	13.978	2.146	1,000.00	111.742	28.338	3.935	-
0.011	84.493	157.622	0.686	37.067	0.177	3.444	8.330	0.461	0.328	13.131	0.853	1,000.00	141.188	37.860	5.618	-
-	83.972	172.909	0.653	49.728	0.117	5.819	8.214	0.575	0.328	12.254	0.306	1,000.00	163.592	44.218	6.839	-
-	71.881	181.167	0.600	55.300	0.088	9.594	7.003	0.667	0.226	11.372	0.315	1,000.00	168.050	41.455	6.434	-
-	50.253	192.435	0.601	56.880	0.153	10.780	6.738	0.766	0.206	11.776	0.062	1,000.00	154.661	34.196	4.894	-
-	19.110	180.164	0.406	49.366	0.115	11.501	4.748	1.303	0.127	10.198	0.000	1,000.00	116.047	21.226	2.539	-
0.014	15.655	36.387	0.257	6.215	0.129	0.570	2.024	0.249	0.174	4.272	6.761	1,000.000	26.486	6.022	0.800	2.233

Methodology to determine the REFWT and REF Count tables for 2010



Annexure D: Target population for the calculation of the estimated REF community rate for 2010

Based on the June 2009 REF returns

Females	Males	Total	Age band	% Female
91,597	95,198	186,795	2.38%	49.04%
260,985	272,377	533,362	6.79%	48.93%
312,950	323,469	636,419	8.10%	49.17%
317,211	325,215	642,426	8.18%	49.38%
322,638	327,221	649,859	8.27%	49.65%
265,554	234,215	499,769	6.36%	53.14%
316,949	262,888	579,837	7.38%	54.66%
340,047	289,615	629,662	8.02%	54.00%
355,789	311,649	667,438	8.50%	53.31%
324,511	296,253	620,764	7.90%	52.28%
296,297	274,171	570,468	7.26%	51.94%
246,685	230,118	476,803	6.07%	51.74%
191,400	176,934	368,334	4.69%	51.96%
145,030	130,229	275,259	3.50%	52.69%
104,561	87,916	192,477	2.45%	54.32%
78,163	61,142	139,305	1.77%	56.11%
55,856	39,072	94,928	1.21%	58.84%
35,729	21,053	56,782	0.72%	62.92%
24,242	10,804	35,046	0.45%	69.17%
4,086,194	3,769,539	7,855,733	100%	52.02%

