Tools for IMSA from REF Study 2005

IMSA Workshop

27 September 2007

integrated
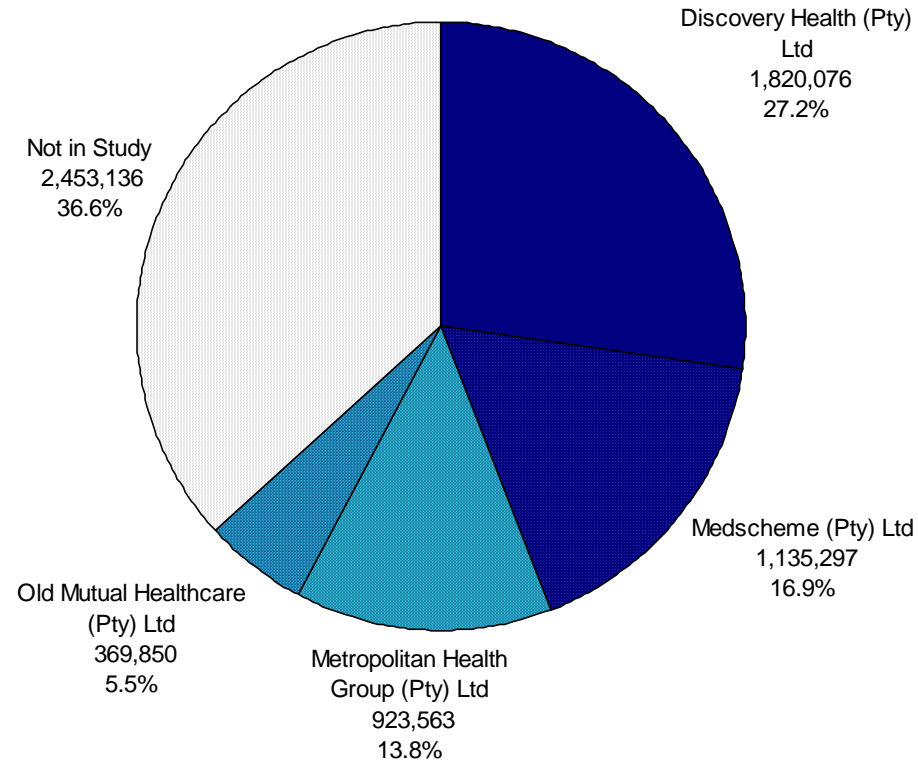healing

Study of the Prevalence of Chronic Disease in Medical Schemes

April 2007

Risk Equalisation Fund

REF Study 2005 Beneficiaries

Discovery Health (Pty) Ltd
1,820,076
27.2%

Not in Study
2,453,136
36.6%

Medscheme (Pty) Ltd
1,135,297
16.9%

Old Mutual Healthcare (Pty) Ltd
369,850
5.5%

Metropolitan Health Group (Pty) Ltd
923,563
13.8%

REF Study 2005 used 63.4% of beneficiaries in industry in REF Grids September 2005

There were 54 schemes with 149 options.
9 options in REF Grids not submitted to Study

Risk Equalisation Fund

REF Study 2005

- Tables derived from data in **REF Study 2005:**
  - Four administrators: Discovery Health, Medscheme, MHG and Old Mutual Healthcare.
  - Data on prevalence and PMB expenditure for calendar 2005.
  - **TREATED** data is beneficiaries meeting all criteria in REF Entry and Verification Criteria v2, in force from 1 January 2007.
  - **CASES** data is before test for "treated patient".

- Graphs show final prevalence table published with REFCT2007:
  - Uses **TREATED Revised Prevalence**: TREATED data after application of multiple disease rules.
  - Final REFCT2007 used for order of diseases.
  - Female, Male and Total tables, no smoothing.
- The tables are effectively for calendar 2007. HIV has been adjusted to the expected level of the epidemic in 2007.
- Comparison: REF Study 2002 Prevalence, adj. to 2005.

Source: REF Study 2005

Risk Equalisation Fund

TREATED Revised Prevalence

- The tables are for calendar 2007. HIV has been adjusted from the 2005 Study to the expected level of the epidemic in 2007.
- **TREATED** data is beneficiaries meeting all criteria in REF Entry and Verification Criteria v2, in force from 1 January 2007.
- Uses **TREATED Revised Prevalence**: TREATED data after application of multiple disease rules.
- This removes any effects of up-coding or multiple coding amongst similar diseases. It has the effect of equalising the coding practice between administrators in the Study.
- For example, the multiple disease rules allow only one of Asthma, COPD and Bronchiectasis.
- Schemes need to compare their own results to this tighter definition and not to prevalence that contains multiple coding for the same disease.
- Final REFCT2007 disease values used for order of diseases.

Source: REF Study 2005

Risk Equalisation Fund
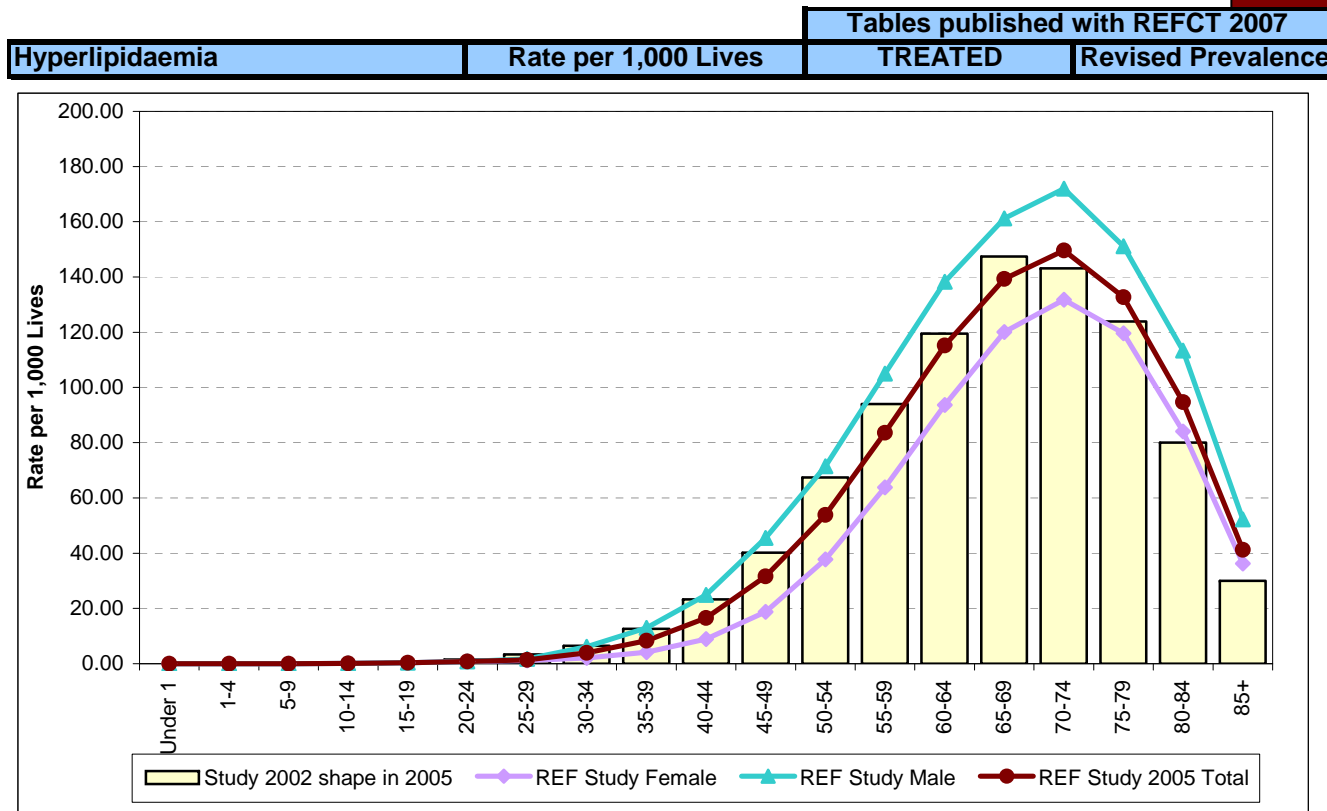
Ranking of Diseases in Multiple Disease Rules

- Effectively uses an approach similar to hierarchical co-existing conditions methodology.

- Order of diseases from REFCT2007 using gender as a risk factor.

- Only one disease in the following groups may be selected. Highest cost disease in **bold**:

  - respiratory: **COP**+AST+BCE
  - cardiac: **CMY**+CHF+IHD+DYS+HYP
  - renal: **CRF**+HYP
  - gastro: **CSD**+IBD
  - diabetes: DM1+**DM2** (always default to DM2)
  - mental: **BMD**+SCZ
  - neuro: **MSS**+BMD+EPL
  - skeletal: **SLE**+RHA (other way around in REF Study 2002)

Source: REF Study 2005

Risk Equalisation Fund

Hyperlipidaemia Prevalence

Hyperlipidaemia	Rate per 1,000 Lives	Tables published with REFCT 2007	
		TREATED	Revised Prevalence

Not included in cardiac multiple rule. Levels similar to 2002. Predominantly male.

Source: REF Study 2005

Risk Equalisation Fund

Hypertension Prevalence

TREATED Verified
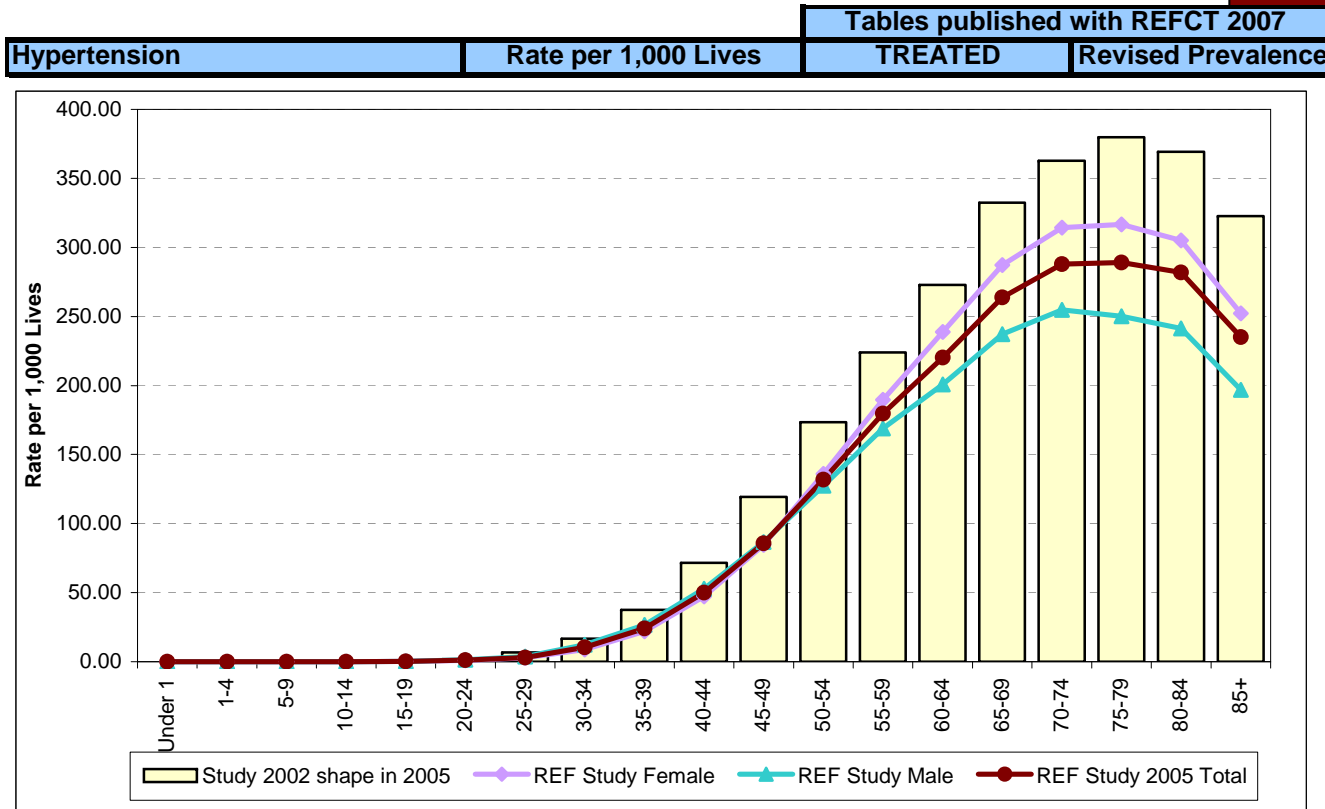
Impact of renal and cardiac multiple rules at older ages.

Source: REF Study 2005

Risk Equalisation Fund

Cardiomyopathy and Cardiac Failure Prevalence

TREATED Verified

Tables published with REFCT 2007

Cardiomyopathy and Cardiac failure	Rate per 1,000 Lives	TREATED	Revised Prevalence

Study 2002 shape in 2005 — **REF Study Female** — **REF Study Male** — **REF Study 2005 Total**
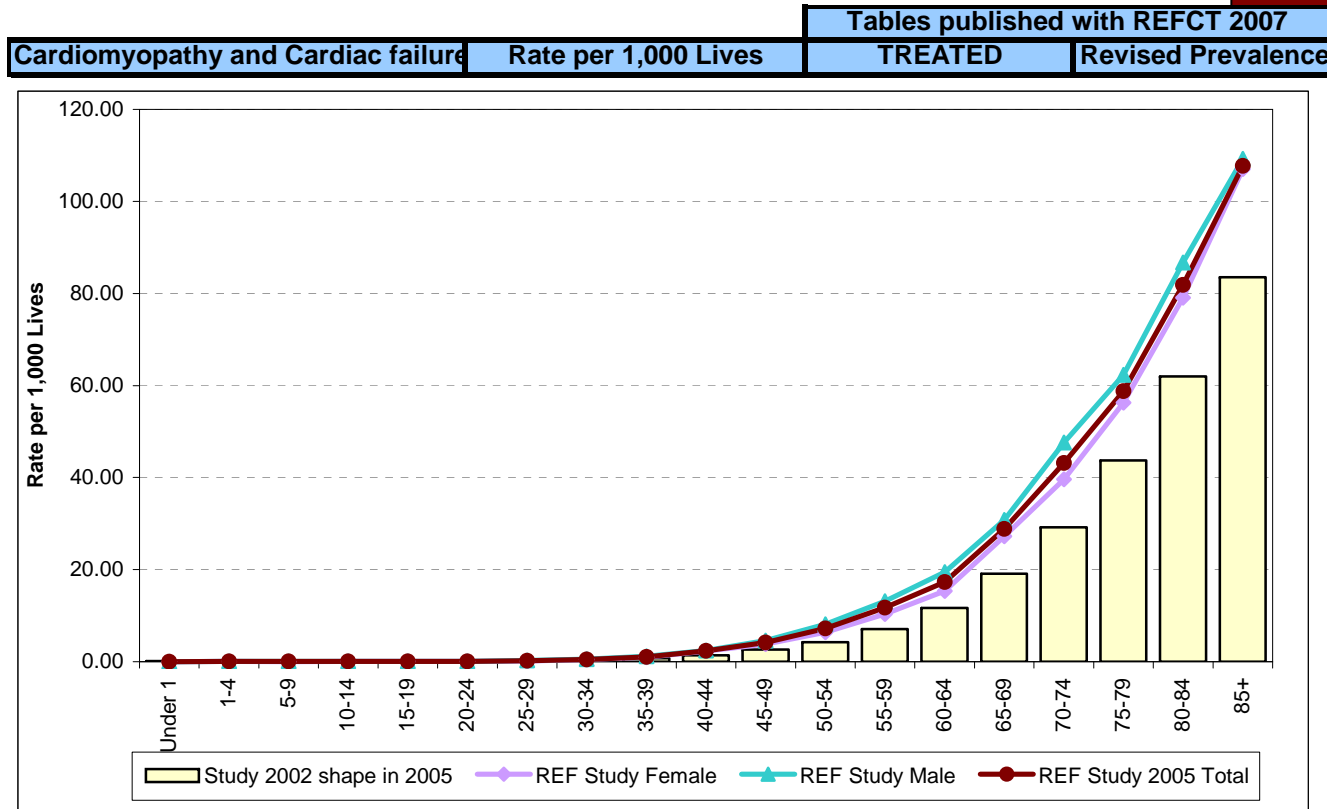
Diseases now combined but prevalence exceeds CHF+CMY in 2002.

Source: REF Study 2005

Risk Equalisation Fund

Diabetes Type 2 Prevalence

TREATED Verified

		Tables published with REFCT 2007	
Diabetes Mellitus 2	Rate per 1,000 Lives	TREATED	Revised Prevalence

Study 2002 shape in 2005 — **REF Study Female** — **REF Study Male** — **REF Study 2005 Total**
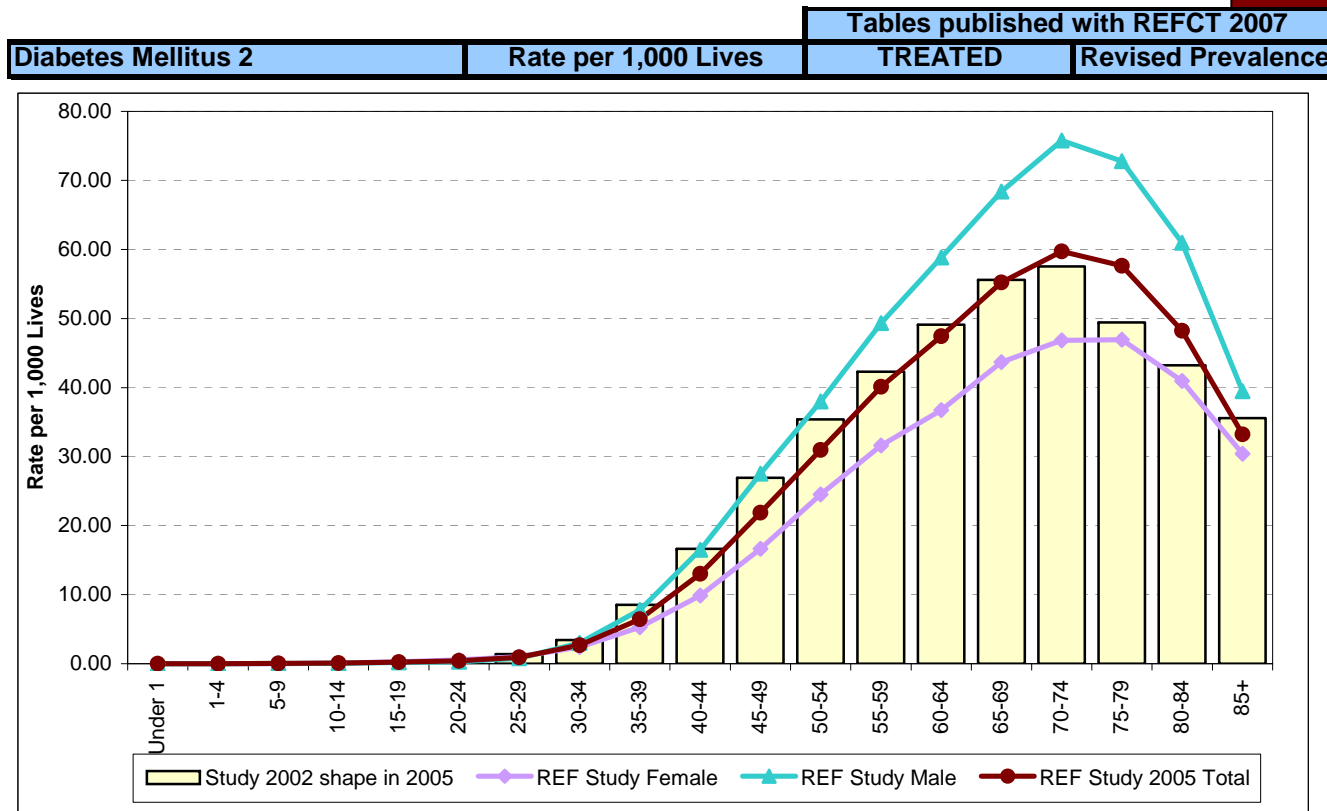
Similar to previous levels. Predominantly male.

Source: REF Study 2005

Risk Equalisation Fund

Rheumatoid Arthritis Prevalence

TREATED
Verified

		Tables published with REFCT 2007	
Rheumatoid Arthritis	Rate per 1,000 Lives	TREATED	Revised Prevalence

Chart legend: Study 2002 shape in 2005 • REF Study Female • REF Study Male • REF Study 2005 Total

Y-axis: Rate per 1,000 Lives (0.00 to 16.00)

X-axis categories: Under 1, 1-4, 5-9, 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+
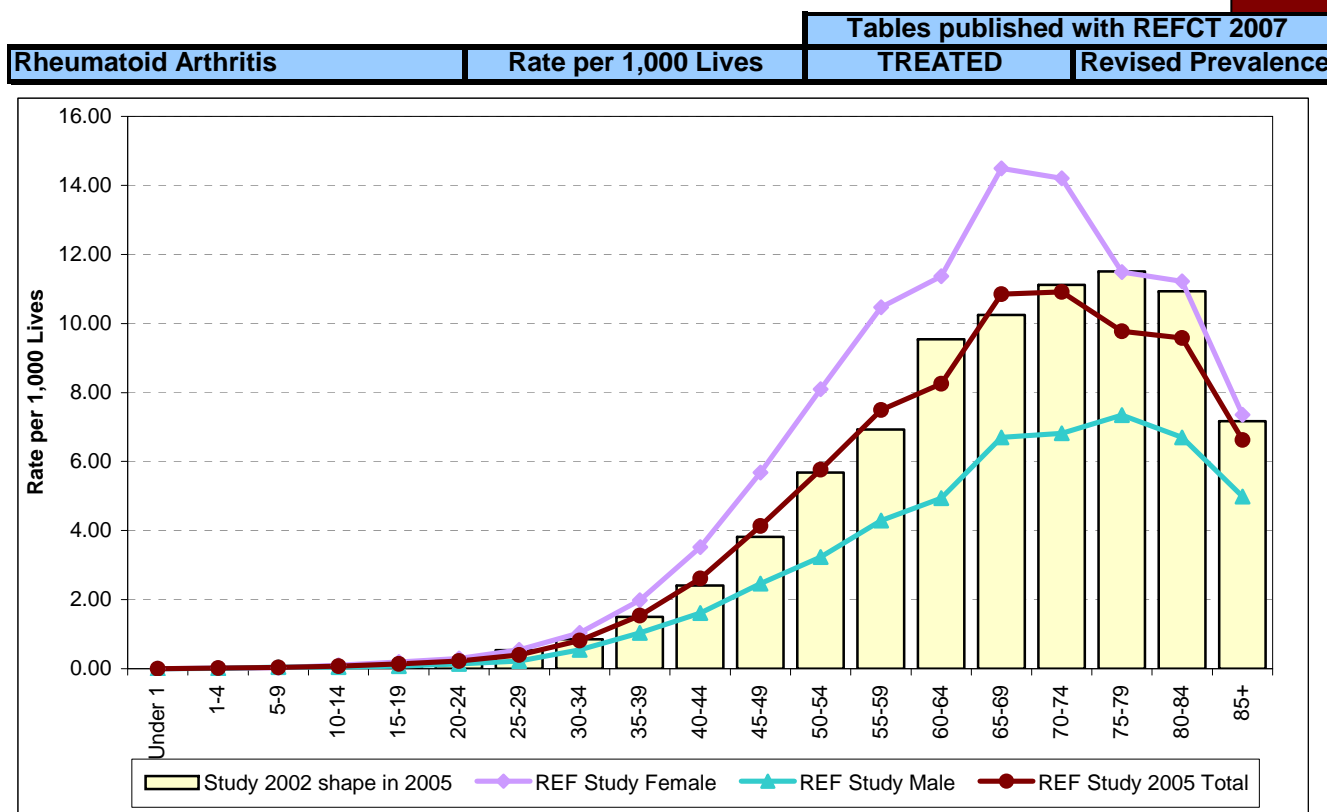
Female prevalence nearly double that of males.

Source: REF Study 2005

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HIV on ARVs Prevalence

TREATED Verified
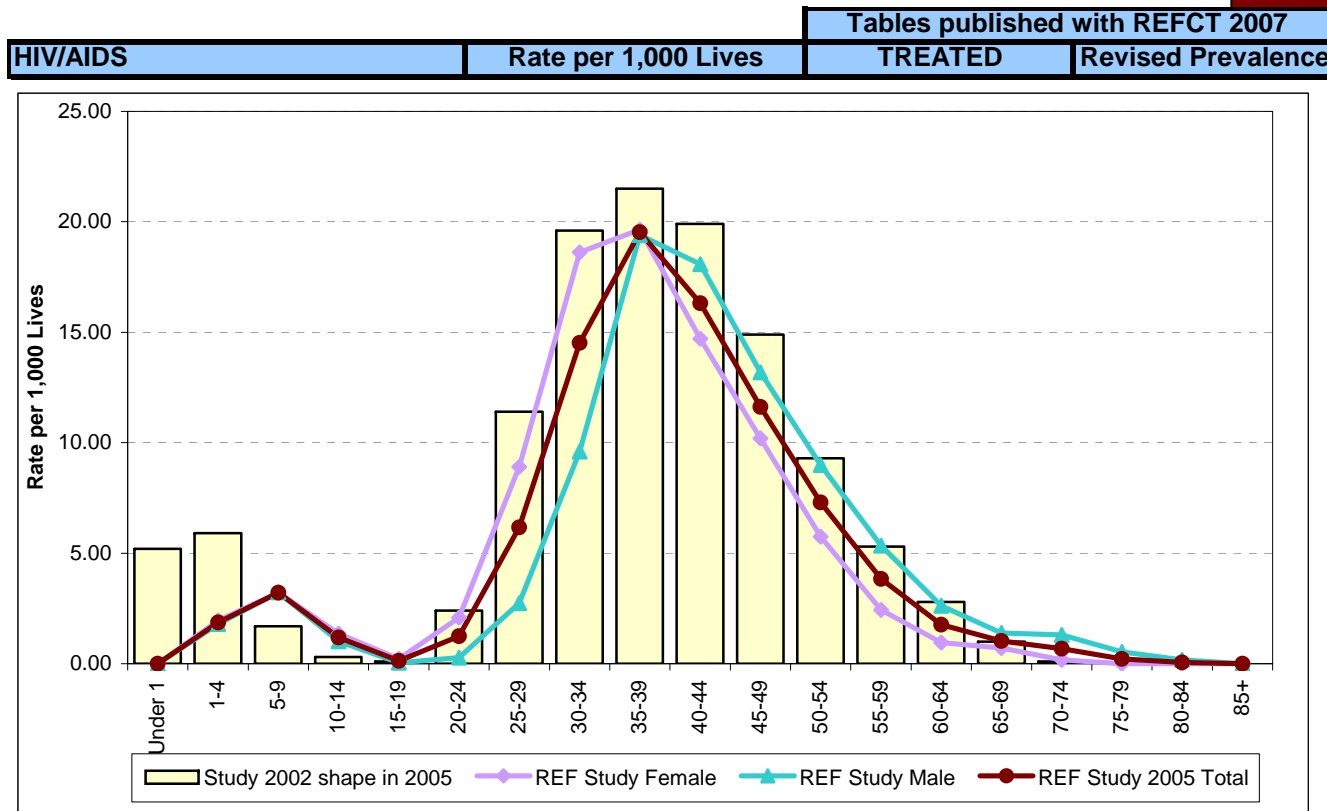
		Tables published with REFCT 2007	
HIV/AIDS	Rate per 1,000 Lives	TREATED	Revised Prevalence

Expected epidemic in 2007 using TREATED data very similar to previous estimate for 2005.

Source: REF Study 2005

Risk Equalisation Fund

Study of the Impact on REF of Autochronic Definitions

April 2007

Risk Equalisation Fund

Source of Chronic Identification

- Three columns for the source of chronic identification, populated "Y" for True and "N" for False.
- These are not mutually exclusive, as the patient may be identifiable by all three methods.

- **AuthICD**: a granted authorisation was found outside 2005, (during 2006 or before 2005)
- **ClaimICD**: either the dispensing provider or the prescribing provider on a claim from any period was a medical practitioner (GP or Specialist)
- **CrosswalkICD**: a proxy diagnosis was made using the MHG in-house NAPPI-ICD crosswalk.

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MHGr Beneficiaries

TREATED

Auth+Claim
1,486
0.0%

Auth+Claim+Cross
walk
169,689
1.6%

Chronic
1,176,072
11.3%

Auth+Crosswalk
43,895
0.4%

Auth only
2,247
0.0%

Claim+Crosswalk
593,951
5.7%

Claim only
16,462
0.2%

Crosswalk only
1,242,849
12.0%

NON after Ac due
to Treatment
335,535
3.2%

NON after Ac
982,047
9.5%

NON due to
Treatment
215,948
2.1%

NON
5,582,114
53.9%
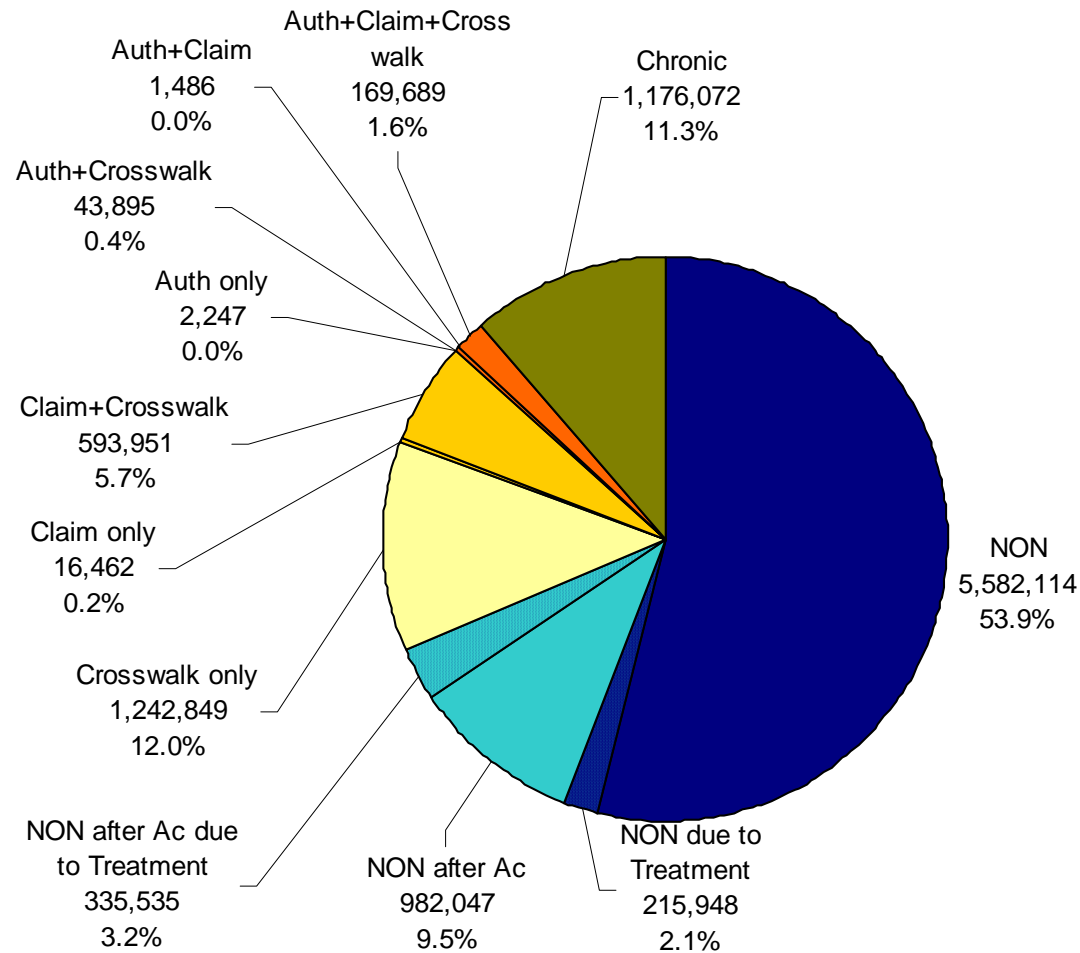
TREATED: must meet additional criteria for "treated patient".

Source: REF Study 2005

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MHG Data Sets

MHGr1 Chronic
1,176,072
11.3%

MHGr2 Chronic
217,317
2.1%

MHGr3 Chronic
610,413
5.9%

MHGr4 Chronic
1,242,849
12.0%

MHGr1 NON
7,115,644
68.7%
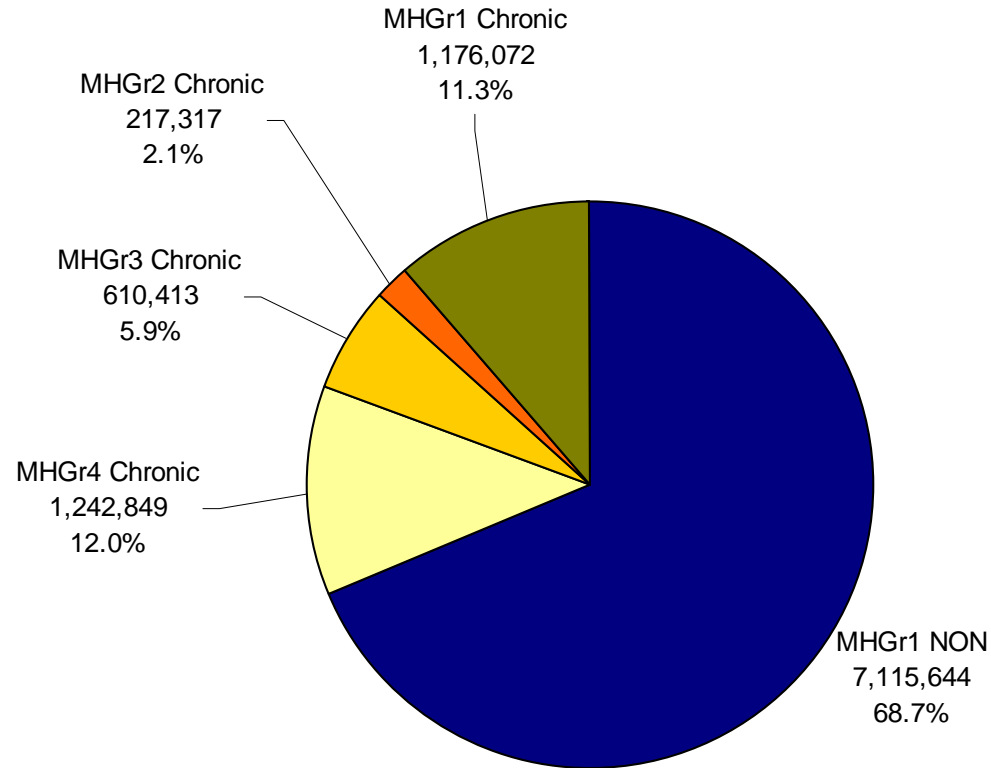
Four sets of data extracted for analysis

Source: REF Study 2005
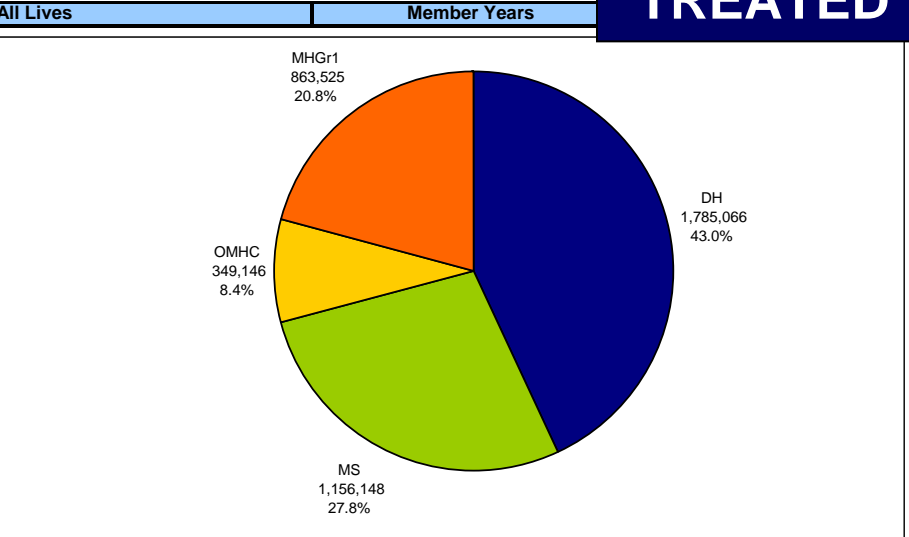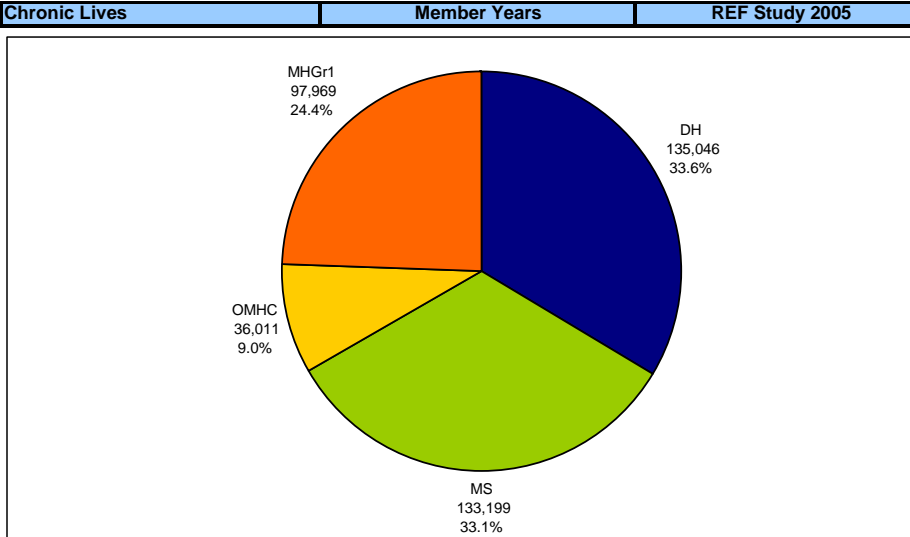
**Risk
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Four Sets of MHGr Data

◆ Four sets of data were analysed for MHG (for each of CASES and TREATED):

◆ **MHGr1:** MHG No Autochronic: all lives identified in Autochronic runs (contains the three Autochronic source columns) are defaulted to NON.

◆ **MHGr2:** MHG using AuthICD: all MHG1 lives plus those with AuthICD=Y. Others with chronic disease defaulted to NON.

◆ **MHGr3:** MHG using AuthICD or ClaimICD: all MHG1 lives plus those with AuthICD=Y or ClaimICD=Y. Others with chronic disease defaulted to NON.

◆ **MHGr4:** MHG with Autochronic: as submitted by MHG to the REF Study 2005.

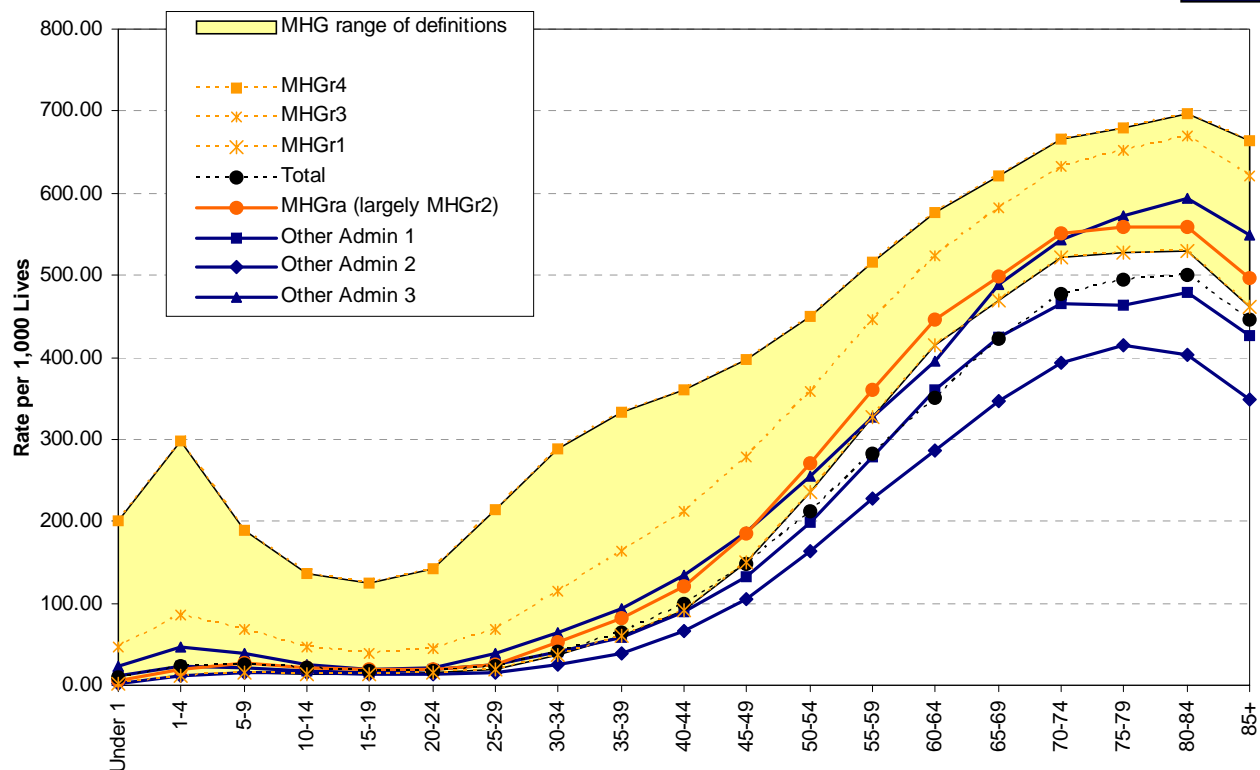**Risk Equalisation Fund**

Impact on Share of Chronic Lives
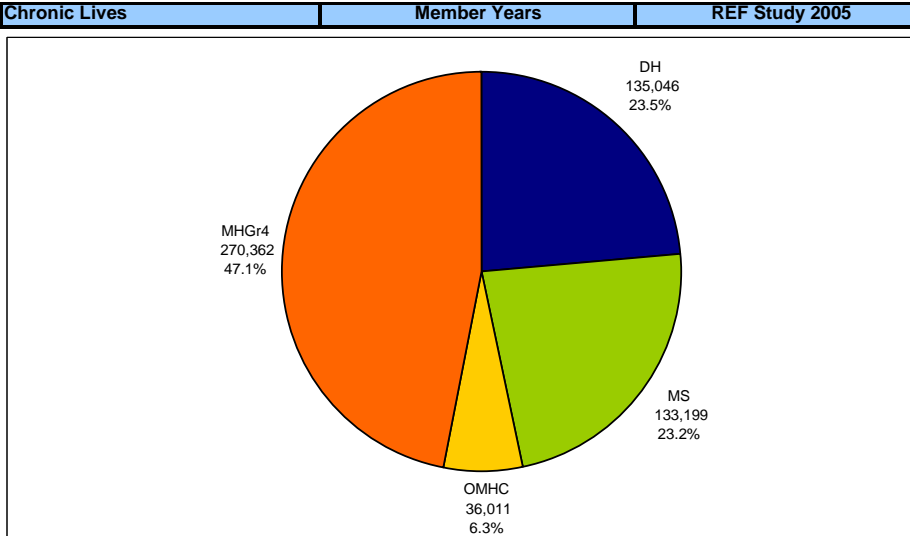
Source: REF Study 2005
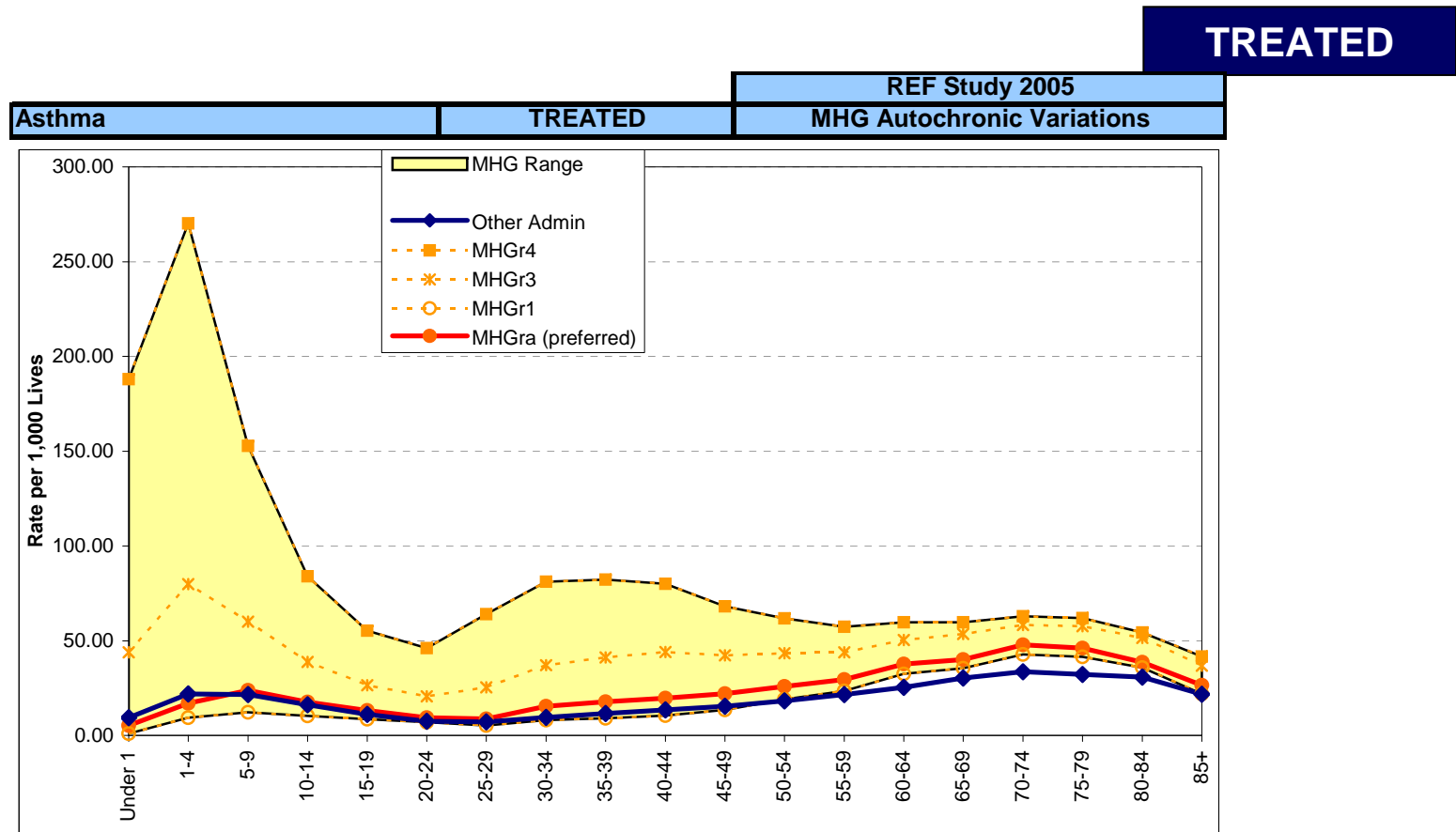
Impact on Chronic Rate per 1,000

MHGr4 impossible shape. MHGr3 too high. Choice between MHGr2 and MHGr1. MHGra is essentially MHGr2 with amended COP, DM1 and DM2
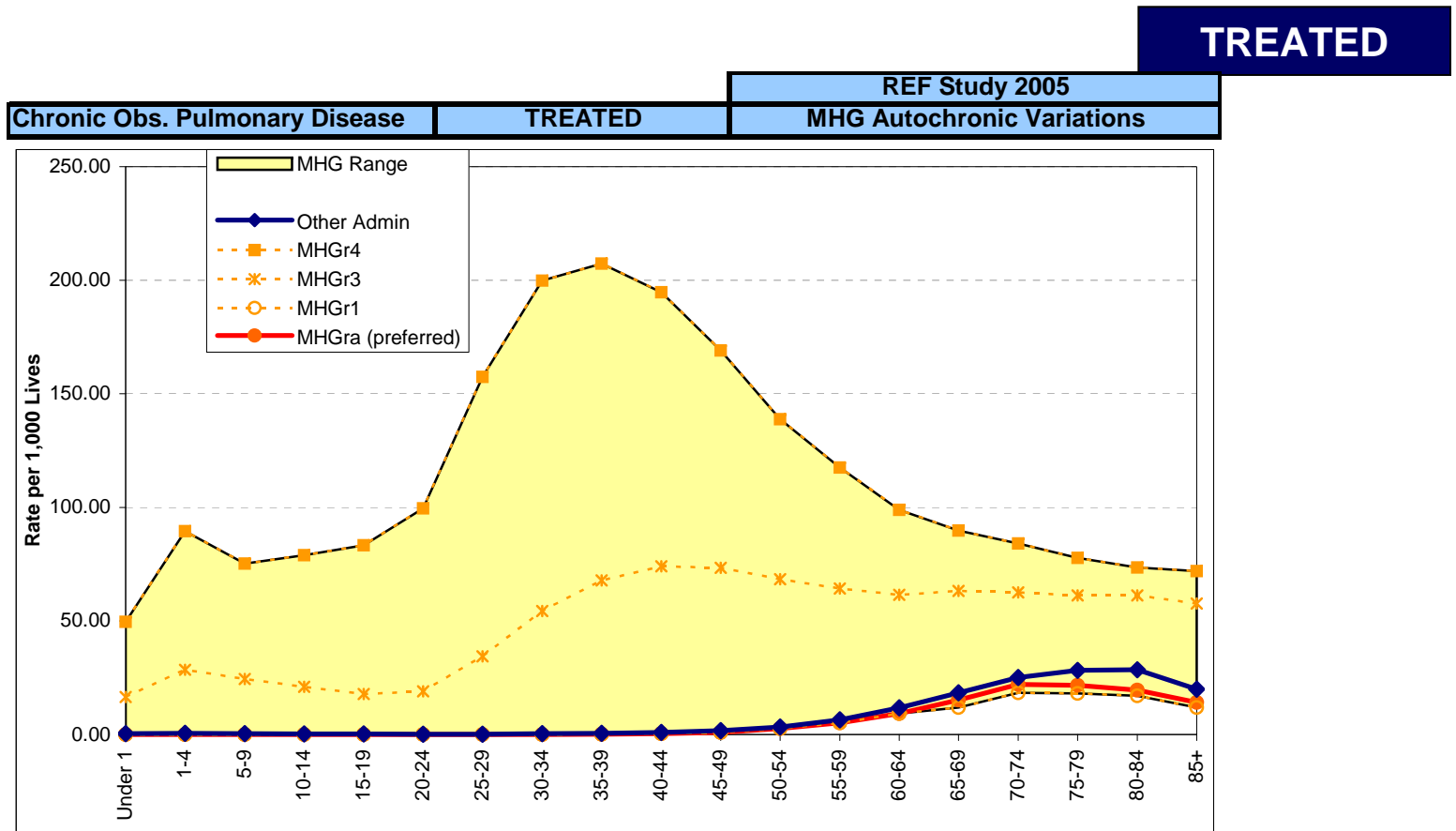
Source: REF Study 2005

Risk Equalisation Fund

Autochronic Impact on AST

MHGr4 and MHGr3 clearly presents an over-estimation of chronic disease.

Source: REF Study 2005
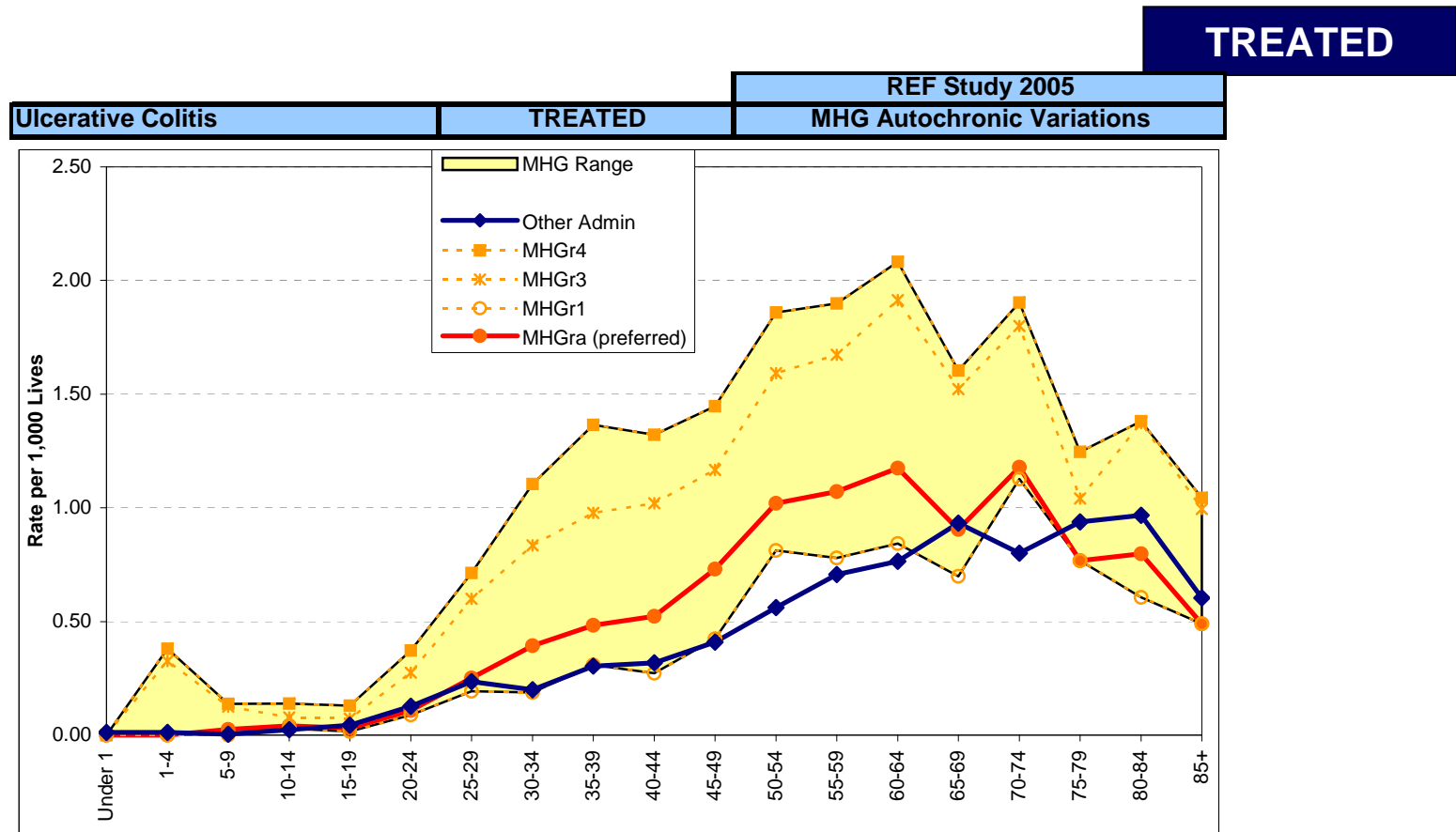
Risk Equalisation Fund

Autochronic Impact on COP

MHGr4 and MHGr3 clearly over-estimates. MHGra is
MHGr2 but adjusted manually to convert CASES data to
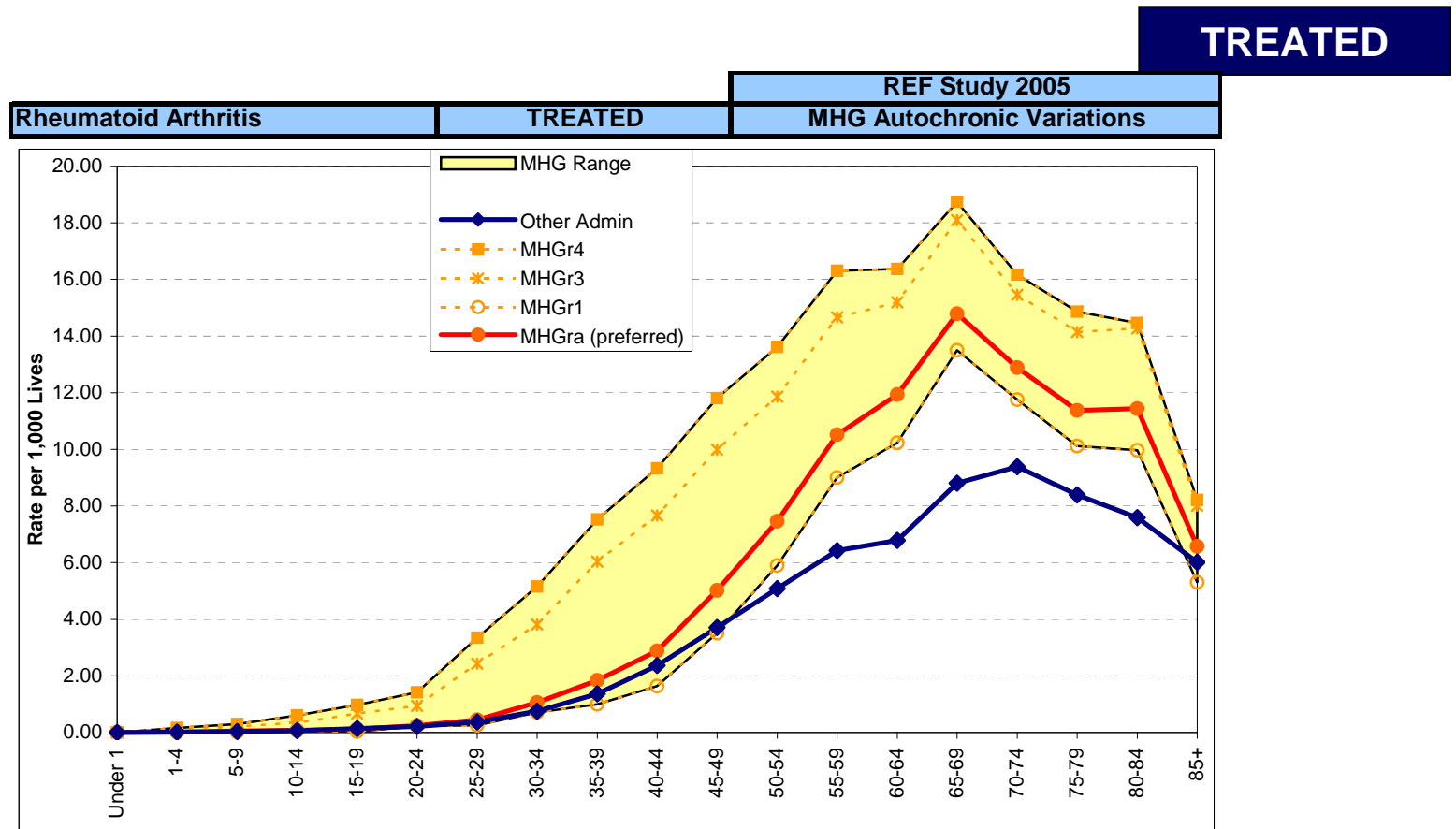TREATED data.

Source: REF Study 2005

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Autochronic Impact on IBD

MHGr4 and MHGr3 clearly too high.

Source: REF Study 2005

Autochronic Impact on RHA

MHGr4 and MHGr3 clearly too high. MHGra similar to two other administrators.

Risk Equalisation Fund

Autochronic Impact on SLE
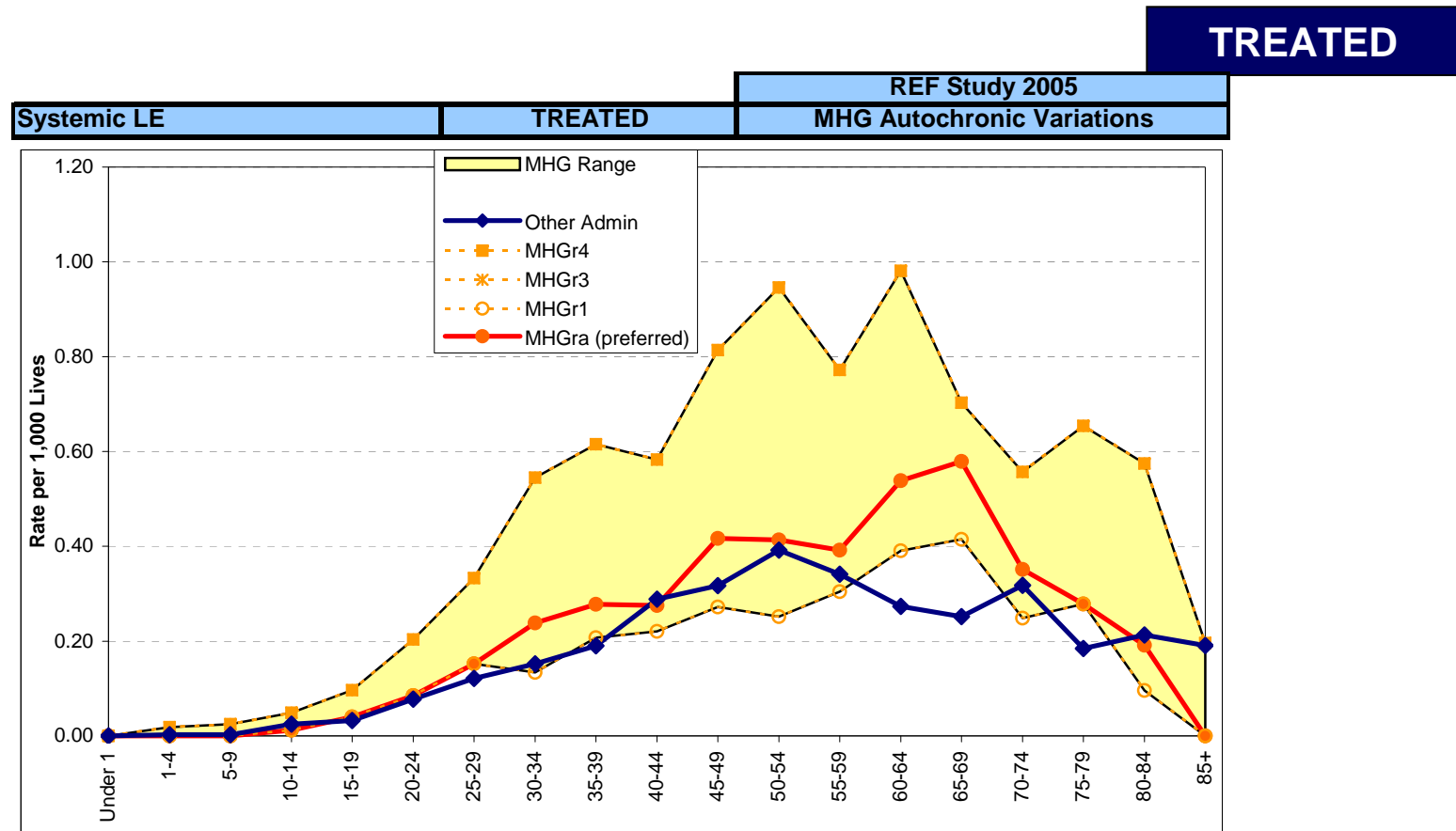
MHGr4 and MHGr3 clearly too high. MHGra
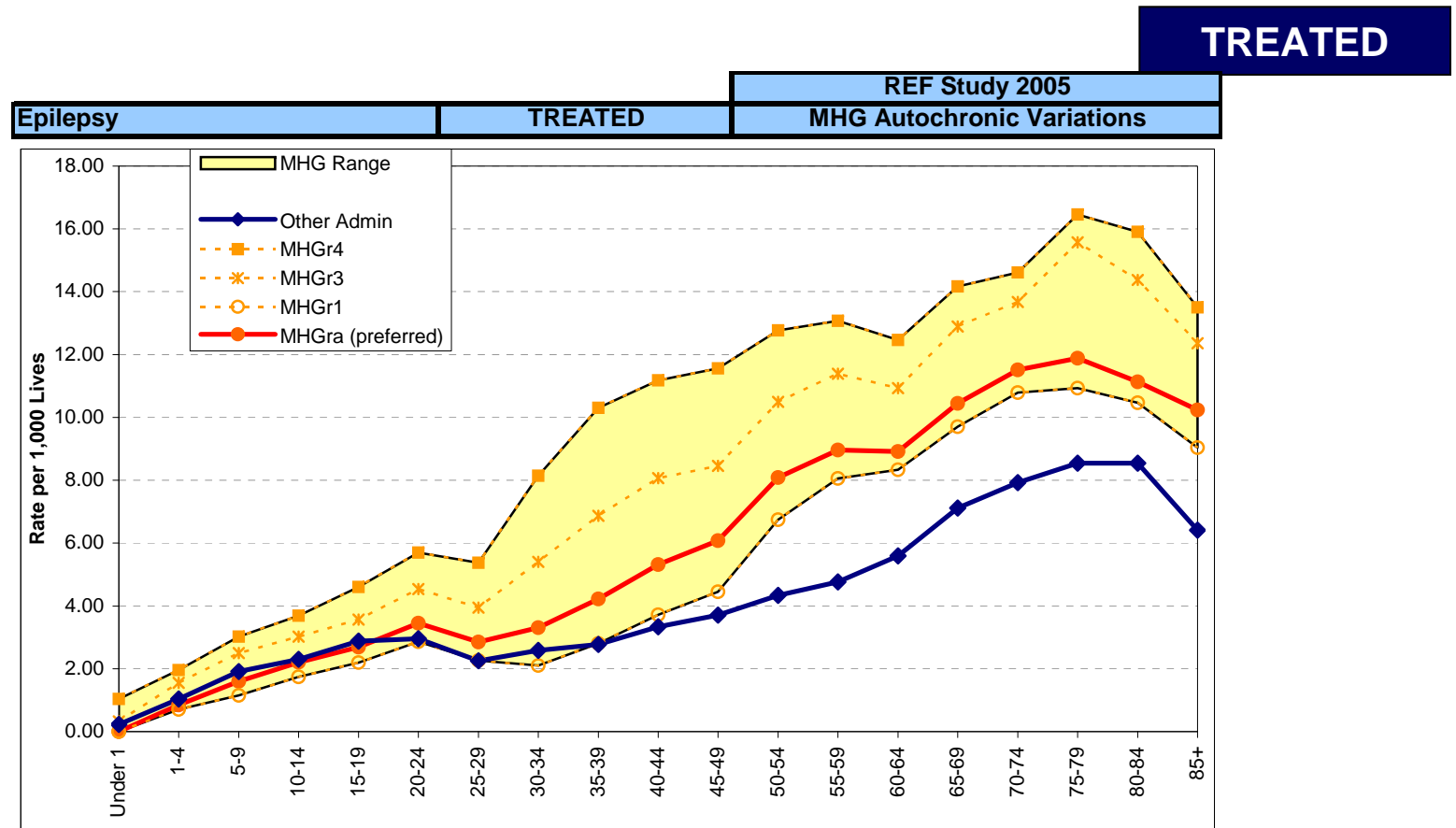similar to two other administrators.

Source: REF Study 2005

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Autochronic Impact on EPL

MHGr4 and MHGr3 clearly too high. MHGra is
somewhat higher than nearest two administrators

Source: REF Study 2005

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Conclusions from the Study

- The decision by the REF pricing team was to use MHGr2, except for:
    - Multiple diabetes rule applied to default all with DM1+DM2 to DM2.
    - COPD manually adjusted to deal with serious definitional issues.
- The only chronic definition acceptable to the REF Study was where there was a granted authorisation for a CDL disease, even if the authorisation was found outside that year (mostly during 2006 as schemes worked to record the authorisations required by the Verification Criteria).
- All other auto-chronic definitions / and or claims identification methods were not acceptable for the REF pricing.
- By extension, all other auto-chronic definitions are unacceptable for inclusion in REF Grid Counts submitted to Council and for REF shadow payments using REFCT2007.

Source: REF Study 2005

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Summary of Decision

- In terms of REF submissions: the only **acceptable** chronic definition is where there is a granted <u>authorisation</u> for a CDL disease, even if the authorisation is found in a period outside the submission period.

- All other auto-chronic definitions are **unacceptable** for REF purposes. Unacceptable definitions include:

  - any diagnosis made from a <u>claim</u> that contains an ICD-10 code from a healthcare professional (even if the dispensing provider or the prescribing provider on a claim was a medical practitioner (GP or Specialist)); and

  - any diagnosis made by <u>proxy</u> using the medicine or class of medicine prescribed to arrive at a diagnosis (for example, a NAPPI-ICD crosswalk or any similar tool).

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The Impact of the Verification Criteria on the REF Grid Count

April 2007

Risk Equalisation Fund

Table 25: HIV / AIDS

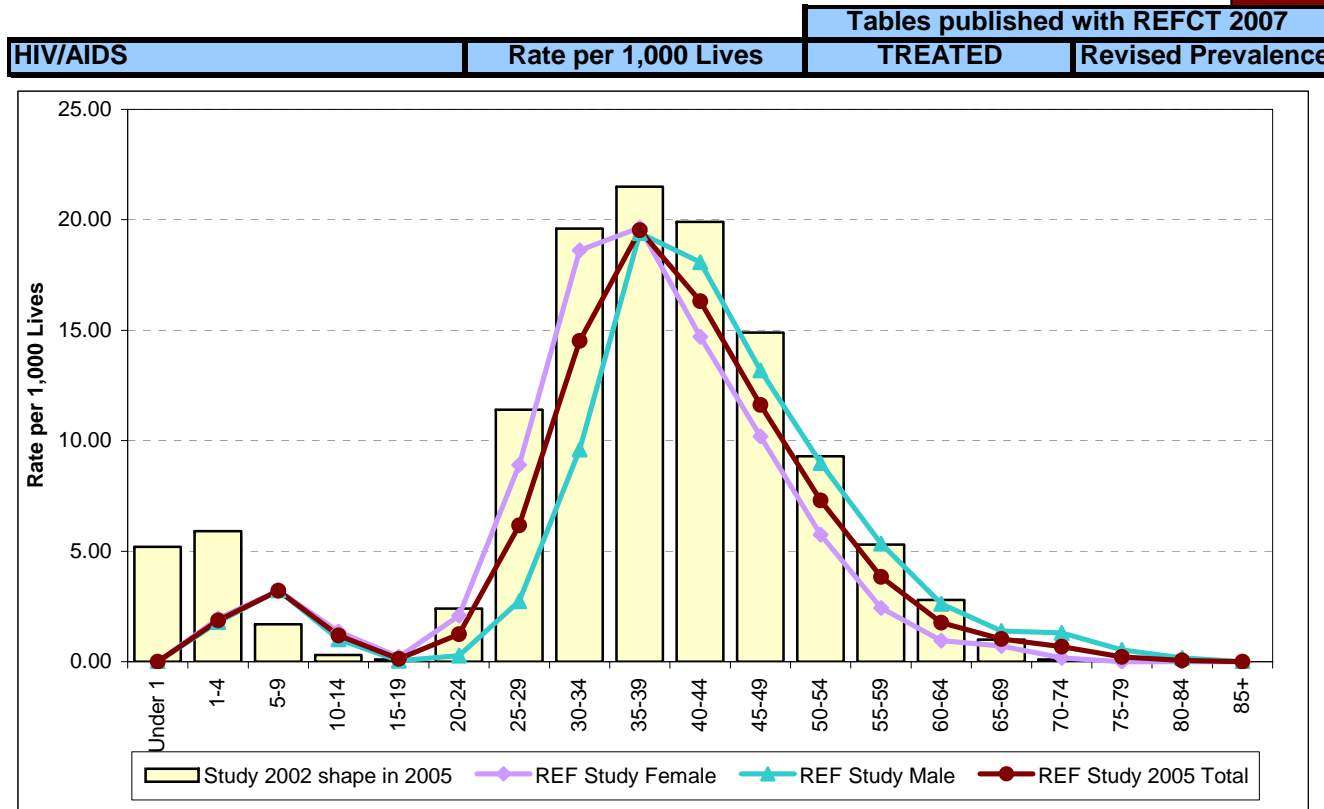| HIV / AIDS							
Documented proof that demonstrates that the patient qualifies for ART in accordance with the National Antiretroviral Treatment Guidelines must be made available to auditors on request but may be in the form of voice recordings or other electronic records							
Diagnosis-related information						Proof of Treatment	
Provider code of the diagnosing provider	AND	ICD10 Codes(Any of the following)		AND	Documented proof to demonstrate that patient qualifies for ART in accordance with the National Antiretroviral Treatment Guidelines	AND	Evidence of payment of claims for any product included in the ATC categories below, in two different calendar months in the three calendar months preceding the current month:
Any registered medical practitioner		Z21 B20 B20.0 B20.1 B20.2 B20.3 B20.4 B20.5 B20.6 B20.7 B20.8 B20.9 B21 B21.0 B21.1 B21.2	B21.3 B21.7 B21.8 B21.9 B22 B22.0 B22.1 B22.2 B22.7 B23 B23.0 B23.1 B23.2 B23.8 B24				J05AE J05AF J05AG

CASES
and
TREATED

TREATED requires
Proof of Treatment
i.e. evidence of
payment for ARVs

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HIV on ARVs Prevalence

		Tables published with REFCT 2007	
HIV/AIDS	Rate per 1,000 Lives	TREATED	Revised Prevalence

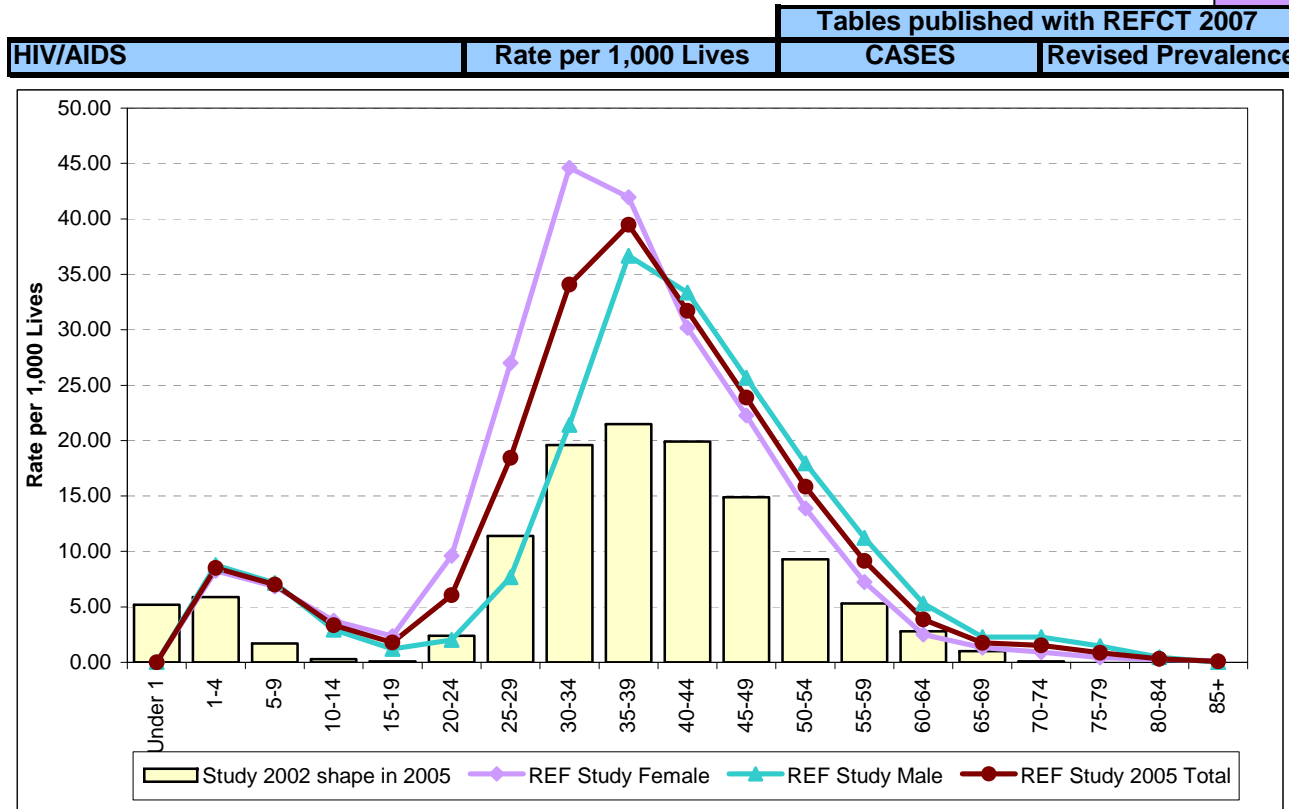Chart legend: Study 2002 shape in 2005 — REF Study Female — REF Study Male — REF Study 2005 Total

**Expected epidemic in 2007 using TREATED data
very similar to previous estimate for 2005.**

Source: REF Study 2005

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HIV on ARVs Prevalence

HIV/AIDS	Rate per 1,000 Lives	Tables published with REFCT 2007	
		CASES	Revised Prevalence

CASES expected in 2007 almost double the expected level in 2005.

Source: REF Study 2005

Risk Equalisation Fund

Effect of Verification Criteria on HIV on ARVs Prevalence
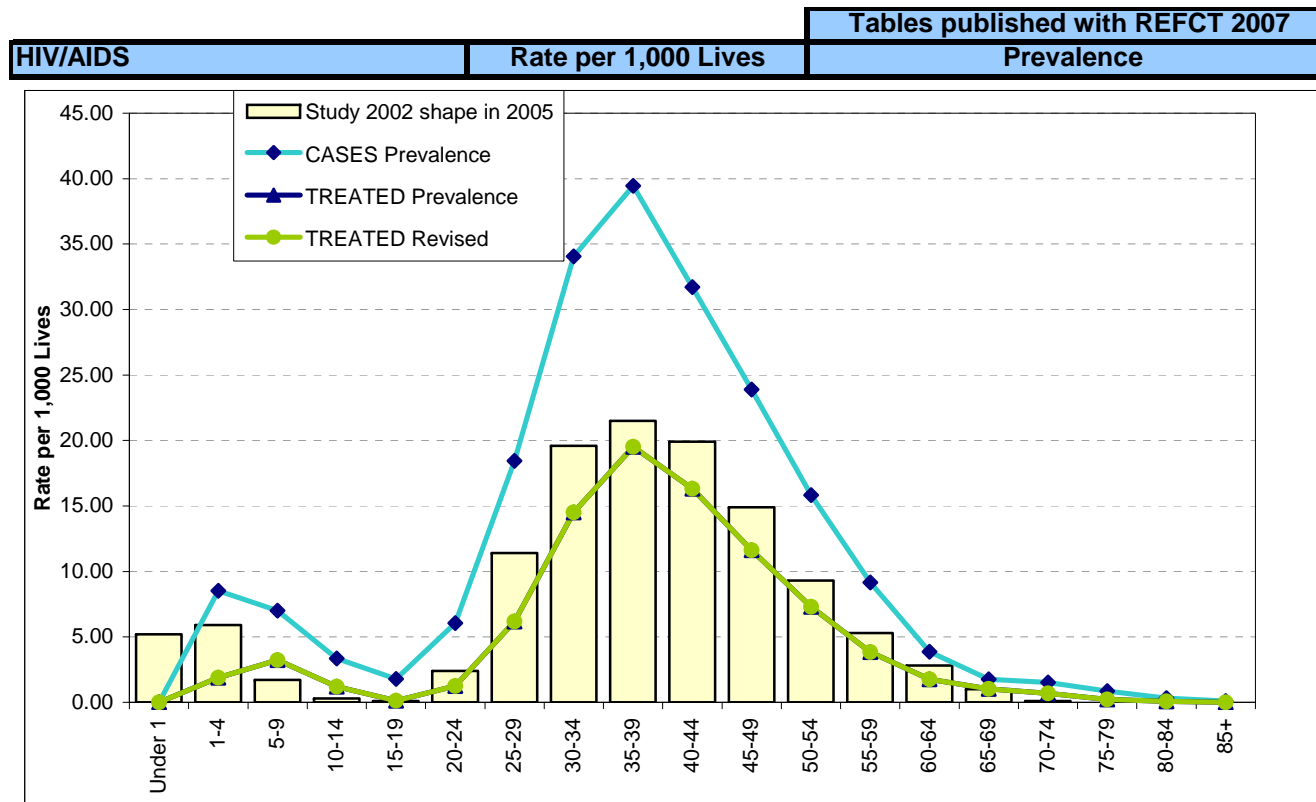
CASES and TREATED now projected to expected epidemic in 2007. TREATED in 2007 should be similar to originally expected in 2005.

Source: REF Study 2005

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Definition of TREATED and CASES

- Two sets of data were extracted:
  - The first used the full Entry and Verification definitions and was called the "Treated Patient Data set" or "**TREATED**"
  - The second set was extracted without the test for "treated patient" and was called the "Total Cases Data set" or "**CASES**".
- While this meant a doubling of the extractions, it provided a powerful tool to investigate potential prevalence and cost if compliance improves and to be able to determine the impact if more people in future fall within the definition of "treated patient".
- Most important comparison for REF financial sensitivity is **CASES Count** vs. **TREATED Count.** Difference represents "bubbling under" for each disease.
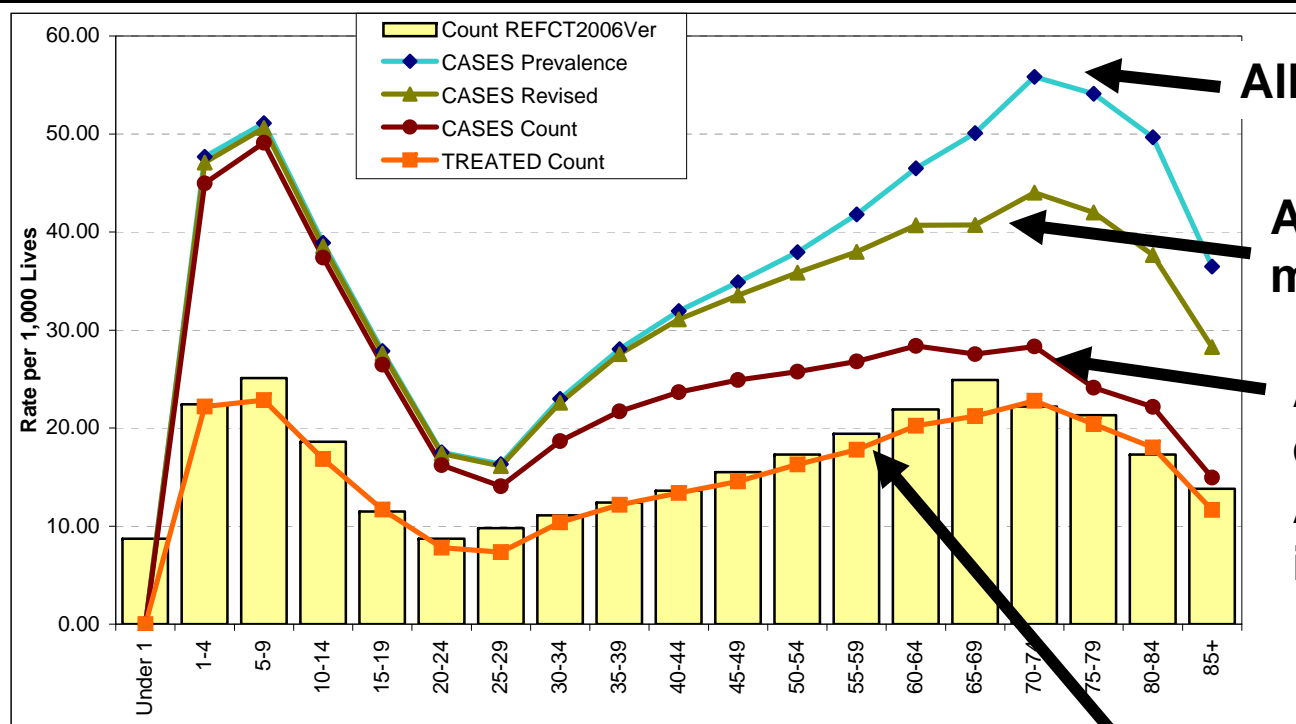
Source: REF Study 2005

Risk Equalisation Fund

Amounts above NON for Diseases

Disease	REFCT2004	REFCT2005	REFCT2006	REFCT2007	REFCT2007 Gender	REFCT2007 CASES	Disease	REFCT2007 relative to 2006	CASES relative to REFCT2007
ADS	249.24	223.25	218.86	**147.35**	147.35	119.45	ADS	67.3%	81.1%
AST	404.55	379.09	383.86	**303.90**	304.73	154.08	AST	79.2%	50.7%
BCE	242.9	217.56	213.28	**463.70**	464.97	298.02	BCE	217.4%	64.3%
BMD	953.6	922.52	954.29	**1178.43**	1178.97	690.19	BMD	123.5%	58.6%
CHF	1155.81	1200.4	1328.36	**1179.94**	1173.80	1233.60	CHF	88.8%	104.5%
CMY	1370.97	1418.24	1328.36	**1179.94**	1173.80	1233.60	CMY	88.8%	104.5%
COP	823.5	815.48	856.28	**1371.42**	1356.44	658.76	COP	160.2%	48.0%
CRF	5350.59	5607.69	6092.36	**15899.13**	15886.07	3610.19	CRF	261.0%	22.7%
CSD	1635.2	1646.52	1746.88	**1206.23**	1205.70	921.30	CSD	69.1%	76.4%
DBI	1252.51	1121.87	1099.81	**833.64**	821.29	117.19	DBI	75.8%	14.1%
DM1	981.19	924.06	938.88	**1418.31**	1411.20	640.72	DM1	151.1%	45.2%
DM2	239.2	214.25	210.04	**447.83**	436.33	187.56	DM2	213.2%	41.9%
DYS	462.31	475.25	510.54	**606.18**	595.00	594.35	DYS	118.7%	98.0%
EPL	832.72	815.1	849.62	**708.16**	705.92	533.50	EPL	83.4%	75.3%
GLC	205.09	183.7	180.08	**223.88**	224.27	109.03	GLC	124.3%	48.7%
HAE	10018.77	6307.2	6702.98	**10727.77**	10727.77	5815.20	HAE	160.0%	54.2%
HYL	359.45	321.96	315.63	**225.17**	225.02	123.44	HYL	71.3%	54.8%
HYP	282.13	260.69	261.38	**169.64**	170.70	131.75	HYP	64.9%	77.7%
IBD	940.7	917.34	953.87	**426.49**	426.50	255.12	IBD	44.7%	59.8%
IHD	860.85	876.72	936.6	**855.68**	837.89	836.68	IHD	91.4%	97.8%
MSS	1238.3	1109.13	4596.03	**8925.82**	8924.99	3477.60	MSS	194.2%	39.0%
PAR	825.64	739.52	724.98	**889.09**	876.89	623.42	PAR	122.6%	70.1%
RHA	306.61	274.63	269.23	**366.03**	377.01	153.76	RHA	136.0%	42.0%
SCZ	759.31	680.11	666.74	**639.44**	639.45	339.64	SCZ	95.9%	53.1%
SLE	251.37	225.15	220.73	**1254.40**	1261.61	416.28	SLE	568.3%	33.2%
TDH	49.82	44.63	43.75	**83.24**	84.77	69.78	TDH	190.3%	83.8%
HIV	1471.59	1326.09	1434.75	**997.33**	995.29	748.62	HIV	69.5%	75.1%

Source: REF Study 2005

Explanation of graphs using AST

respiratory: COP+AST+BCE

COP>BCE>AST

Source: REF Study 2005

CMY

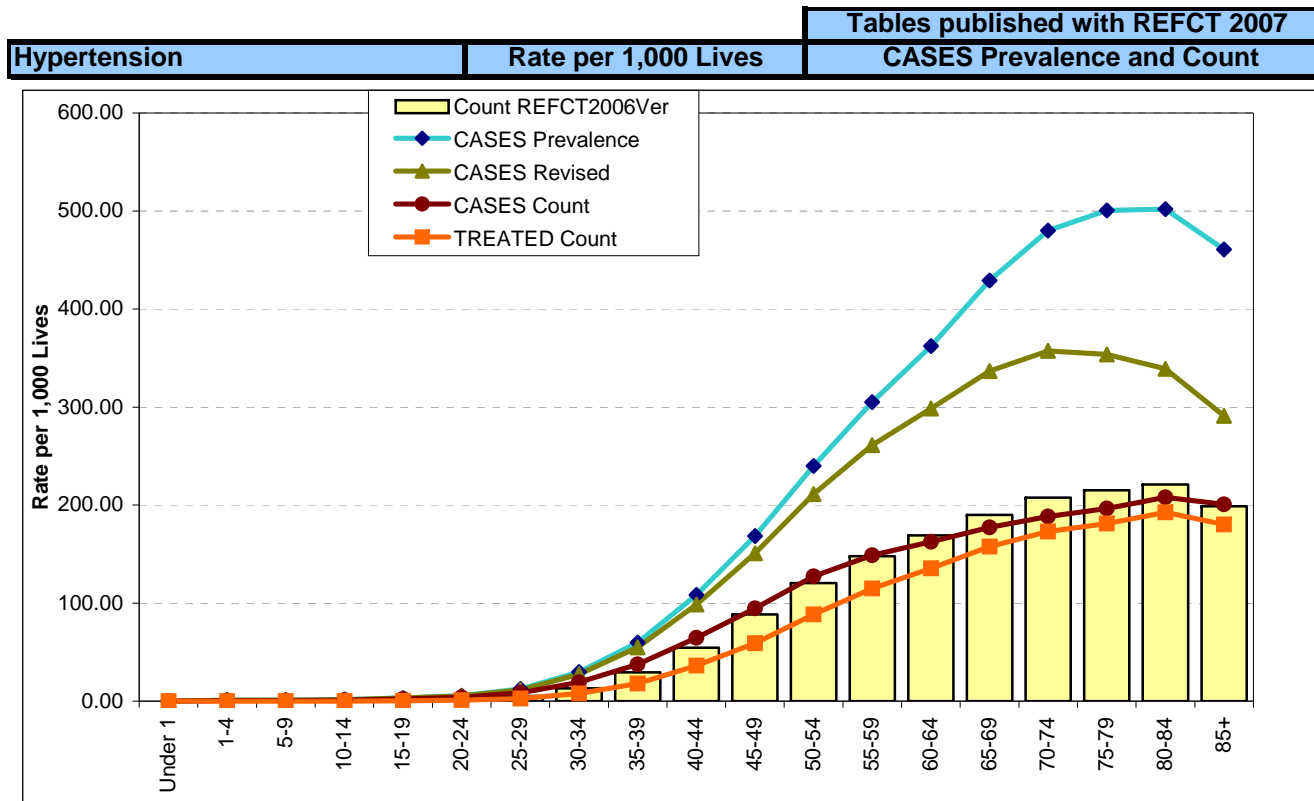| Cardiomyopathy and Cardiac failure	Rate per 1,000 Lives	CASES Prevalence and Count
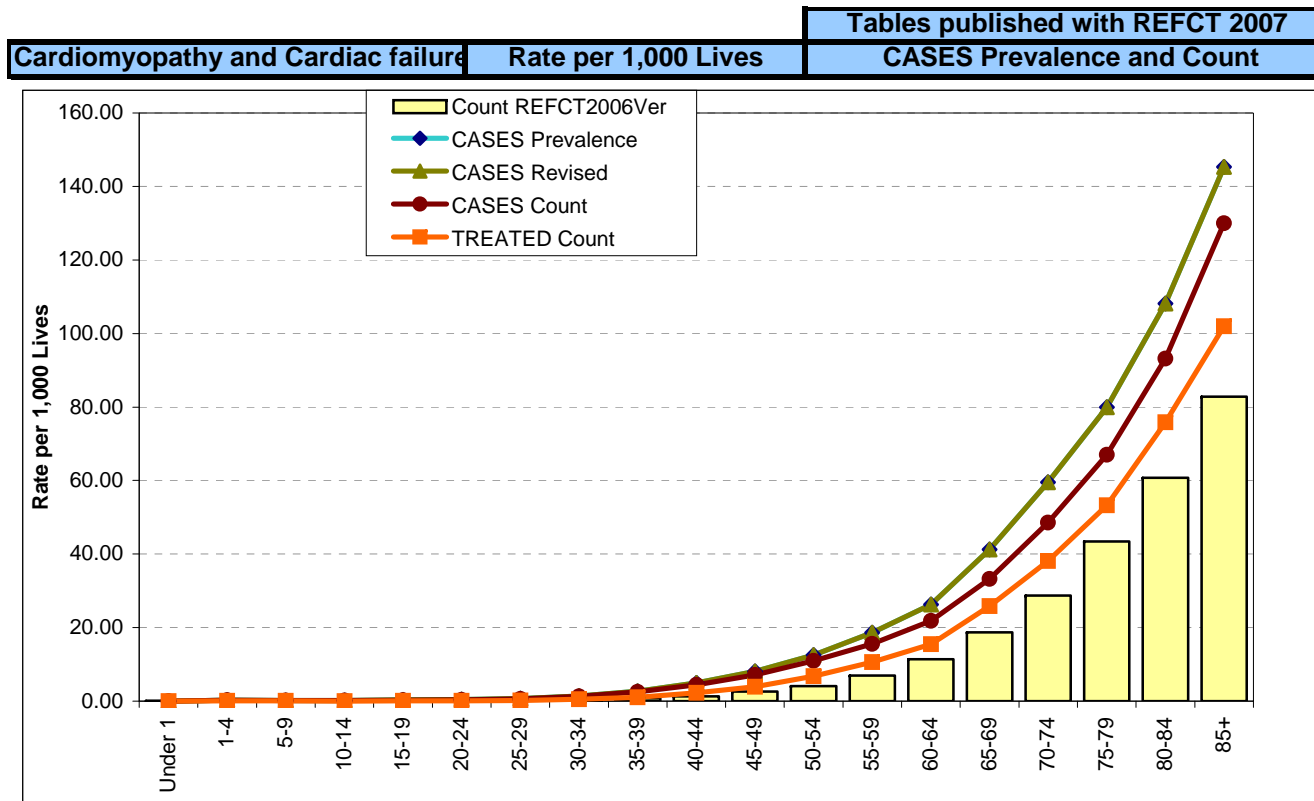
CHF no longer exists – combined with CMY. New combined disease exceeds CHF+CMY in 2002.

cardiac: CMY+CHF+IHD+DYS+HYP

Source: REF Study 2005

Risk Equalisation Fund

HYP

| Hypertension | Rate per 1,000 Lives | CASES Prevalence and Count |

Impact of renal and cardiac rules at older ages.

cardiac: CMY+CHF+IHD+DYS+HYP

renal: CRF+HYP

Source: REF Study 2005

Risk Equalisation Fund

RHA
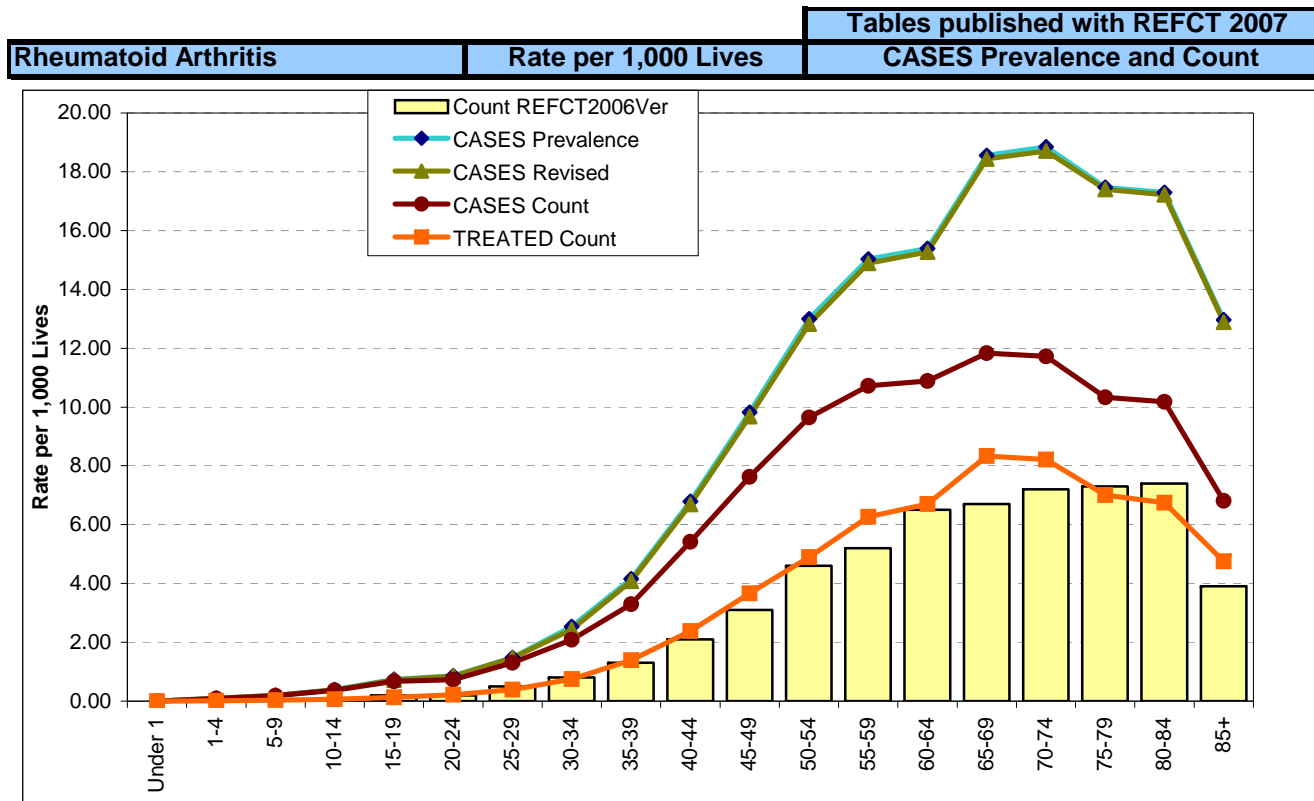
SLE now greater than RHA but very little impact from rule.

skeletal: RHA+SLE

Source: REF Study 2005

REF Contribution Table 2007

[Base 2005, Use 2007]

RETAP Meeting, 24 January 2007

Risk Equalisation Fund

Definitions and Guiding Principles

◆ In the context of the REF, **risk** is defined as:

   ◆ The expected and predictable significant deviation from the theoretical national community-rated price for groups of beneficiaries with a measurable set of <u>risk factors</u>.

   ◆ The national community-rated price is the <u>reasonably efficient achievable price</u> for the common set of benefits, which is the <u>PMBs</u>.

Risk Equalisation Fund

REF Contribution Table

◆ The REF Contribution Table is a table of amounts payable by the REF per beneficiary, according to the REF risk factors. The amount is determined from historic data and other inputs on costs per disease. The amount is set in order to cover:

  ◆ a defined benefit package (the Prescribed Minimum Benefits (PMBs));

  ◆ for the entire medical scheme industry population that is expected for the next year (the Target Population); and

  ◆ with an agreed dispensation of cost and other (managed care) efficiencies.

Risk Equalisation Fund

Risk Factors in SA Formula

- **<u>Age</u>**
- **<u>Deliveries</u>**
- **<u>Gender</u>** (recommended from 2007)
- Not ethnicity. Not geographic region
- Not open/restricted scheme
- Not primary member, marital status or family size
- Not income
- **Measures of chronic disease burden:**
    - **<u>Numbers with each CDL disease</u>**
    - **<u>Numbers with multiple CDL diseases</u>**
    - **<u>Numbers with HIV/AIDS on ARV therapy</u>**
- Not high cost, low frequency conditions.

Source: FCTT 5 November 2003; RETAP 2007

Risk Equalisation Fund

REF Contribution Table
[Base 2005, Use 2007]

REF Contribution Table [Base 2005, Use 2007]

Per Beneficiary Per Month

Expected Industry REF Community Rate: **257.05** — The actual Industry Community Rate for each payment period is determined according to the REF Grids that are approved for shadow payments.

Chronic Disease List (CDL) Conditions

Age Bands	No CDL Diseases NON	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	505.04															
1-4	87.62	234.97	391.53	551.32	1,266.05	1,267.57	1,267.57	1,459.04	15,986.75	1,293.86	921.26	1,505.94	535.45	693.80	795.78	311.50
5-9	40.45	187.80	344.35	504.15	1,218.88	1,220.39	1,220.39	1,411.87	15,939.57	1,246.68	874.09	1,458.76	488.27	646.63	748.61	264.33
10-14	37.41	184.76	341.31	501.11	1,215.84	1,217.35	1,217.35	1,408.83	15,936.54	1,243.64	871.05	1,455.71	485.23	643.59	745.57	261.28
15-19	55.41	202.76	359.33	519.11	1,233.84	1,235.36	1,235.36	1,426.83	15,954.53	1,261.65	889.05	1,473.71	503.23	661.59	763.57	279.28
20-24	87.76	235.11	391.66	551.46	1,266.19	1,267.71	1,267.71	1,459.18	15,986.89	1,294.00	921.40	1,506.06	535.57	693.94	795.92	311.63
25-29	123.63	270.98	427.53	587.33	1,302.04	1,303.57	1,303.57	1,495.05	16,022.74	1,329.87	957.27	1,541.93	571.44	729.80	831.78	347.50
30-34	142.63	289.99	446.55	606.34	1,321.06	1,322.59	1,322.59	1,514.05	16,041.76	1,348.87	976.27	1,560.94	590.45	748.81	850.80	366.51
35-39		295.36		611.71	1,326.44	1,327.96	1,327.96	1,519.43	16,047.14	1,354.25	981.65	1,566.31	595.83	754.19	856.17	371.88
40-44	166.14	313.45	470.05	629.85	1,344.56	1,346.09	1,346.09	1,537.56	16,065.26	1,372.38	999.78	1,584.45	613.96	772.32	874.31	390.02
45-49		340.17		656.52	1,371.25	1,372.77	1,372.77	1,564.24	16,091.95	1,399.06	1,026.46	1,611.14	640.65	799.00	900.98	416.70
50-54	243.13	390.48	547.03	706.82	1,421.55	1,423.07	1,423.07	1,614.54	16,142.24	1,449.36	1,076.77	1,661.42	690.94	849.30	951.28	466.99
55-59	312.98	460.33	616.89	776.69	1,491.40	1,492.93	1,492.93	1,684.40	16,212.10	1,519.22	1,146.62	1,731.29	760.80	919.16	1,021.15	536.86
60-64	421.34	568.69	725.26	885.05	1,599.77	1,601.29	1,601.29	1,792.76	16,320.47	1,627.59	1,254.98	1,839.65	869.17	1,027.52	1,129.51	645.22
65-69	527.24	674.59	831.15	990.94	1,705.66	1,707.19	1,707.19	1,898.66	16,426.36	1,733.48	1,360.88	1,945.54	975.06	1,133.41	1,235.40	751.11
70-74	606.36	753.71	910.26	1,070.06	1,784.79	1,786.30	1,786.30	1,977.77	16,505.49	1,812.59	1,440.00	2,024.66	1,054.18	1,212.54	1,314.52	830.23
75-79	645.30	792.65	949.22	1,109.01	1,823.73	1,825.26	1,825.26	2,016.72	16,544.43	1,851.54	1,478.94	2,063.61	1,093.13	1,251.48	1,353.47	869.18
80-84	596.89	744.24	900.80	1,060.60	1,775.31	1,776.84	1,776.84	1,968.31	16,496.01	1,803.13	1,430.53	2,015.20	1,044.71	1,203.07	1,305.06	820.76
85+	534.18	681.53	838.11	997.89	1,712.61	1,714.14	1,714.14	1,905.60	16,433.31	1,740.43	1,367.82	1,952.49	982.01	1,140.36	1,242.34	758.06

Combined Female and Male Tables for Comparison

HAE	HYL	HYP	IBD	IHD	MSS	PAR	RHA	SCZ	SLE	TDH	HIV/AIDS HIV
17	18	19	20	21	22	23	24	25	26	27	28
10,815.39	312.80	257.26	514.11	943.30	9,013.45	976.71	453.66	727.06	1,342.03	170.86	1,084.96
10,768.22	265.62	210.09	466.94	896.12	8,966.27	929.54	406.48	679.89	1,294.85	123.69	1,037.77
10,765.18	262.58	207.05	463.90	893.08	8,963.23	926.50	403.44	676.85	1,291.81	120.64	1,034.74
10,783.17	280.59	225.05	481.90	911.08	8,981.23	944.49	421.45	694.85	1,309.82	138.65	1,052.75
10,815.53	312.93	257.41	514.26	943.42	9,013.58	976.85	453.79	727.20	1,342.17	171.00	1,085.09
10,851.40	348.80	293.28	550.13	979.29	9,049.45	1,012.72	489.65	763.07	1,378.04	206.87	1,120.96
10,870.40	367.82	312.28	569.13	998.30	9,068.46	1,031.72	508.68	782.08	1,397.04	225.88	1,139.97
10,875.77	373.19	317.65	574.50	1,003.69	9,073.83	1,037.10	514.05	787.45	1,402.42	231.25	1,145.35
10,893.91	391.31	335.79	592.64	1,021.81	9,091.96	1,055.23	532.17	805.59	1,420.55	249.39	1,163.47
10,920.59	418.00	362.46	619.31	1,048.50	9,118.65	1,081.91	558.86	832.26	1,447.23	276.06	1,190.16
10,970.89	468.30	412.77	669.62	1,098.78	9,168.94	1,132.21	609.16	882.57	1,497.53	326.36	1,240.46
11,040.75	538.15	482.63	739.48	1,168.65	9,238.80	1,202.07	679.01	952.43	1,567.39	396.23	1,310.31
11,149.11	646.51	590.99	847.84	1,277.02	9,347.16	1,310.43	787.38	1,060.79	1,675.76	504.59	1,418.68
11,255.01	752.41	696.89	953.74	1,382.90	9,453.06	1,416.33	893.28	1,166.69	1,781.65	610.48	1,524.58
11,334.12	831.53	776.00	1,032.85	1,462.03	9,532.17	1,495.45	972.39	1,245.80	1,860.76	689.60	1,603.69
11,373.07	870.48	814.95	1,071.80	1,500.97	9,571.13	1,534.39	1,011.35	1,284.75	1,899.71	728.55	1,642.65
11,324.66	822.06	766.54	1,023.39	1,452.56	9,522.71	1,485.98	962.92	1,236.34	1,851.30	680.14	1,594.22
11,261.95	759.36	703.83	960.68	1,389.86	9,460.01	1,423.27	900.22	1,173.62	1,788.60	617.43	1,531.53

Modifiers

Modifier for number of chronic conditions

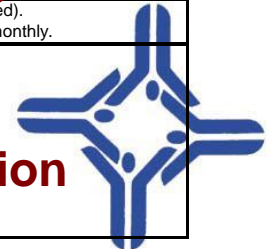| Number of Conditions	2	3	4 or more
	CC2	CC3	CC4
All Ages	194.88	532.95	1,074.78

Amount is per beneficiary per month.
Add to amounts obtained from Columns 1 to 28.
Not applicable to Under 1's.

Modifier for Maternity
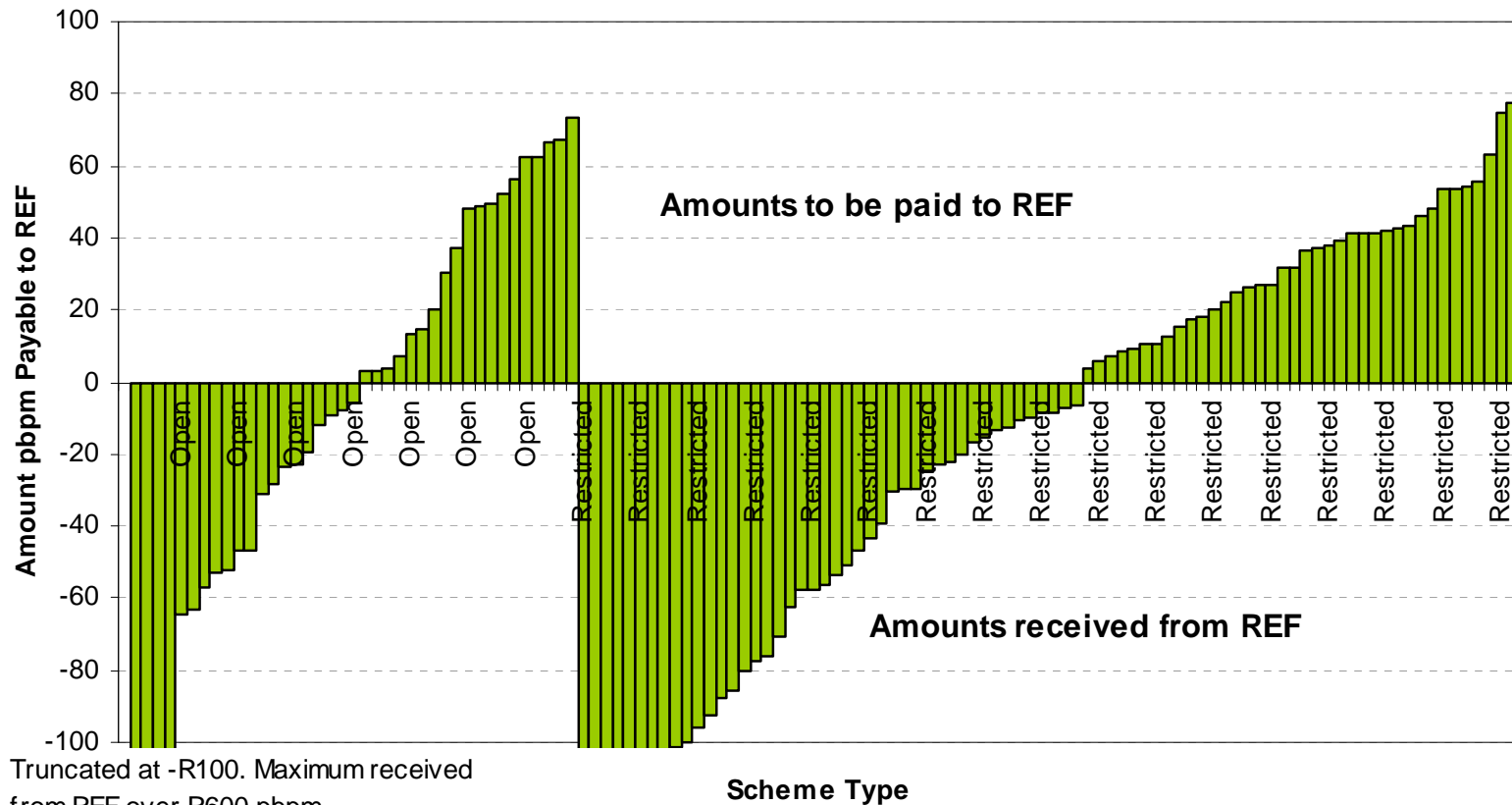
	MAT
All Ages	17,515.39

Amount is per child (per defined).
Use only once per delivery, not monthly.

Risk Equalisation Fund

Amount pbpm Payable to REF

Truncated at -R100. Maximum received from REF over R600 pbpm.

Industry Community Rate for March 2006 is R224.90

Risk Equalisation Fund

REF Contribution Table 2007
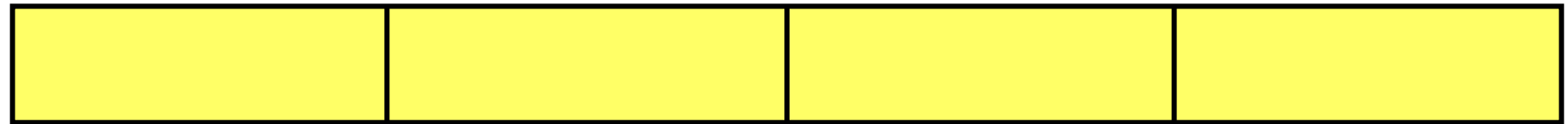
Historic data: 2005

Analysis and pricing

Analysis : 2006

Review 2005 REF results. Definition of PMBs for 2007. Review risk factors to use. Define data.

Data extraction with run-off of claims to 31 Mar. Publish planned methodology.

Planned publication 31 Aug before REF delayed. Schemes no longer need for pricing for 2007.

Shadow REF period

Applicable year: 2007

Finalise, approve and publish REFCT2007

Risk Equalisation Fund

Pricing of REF Contribution Table

Demographic correction for Target Population

Adjustment for policy issues

Adjustment for efficiency

Adjustment for inflation to period of use

Margins and adjustments for uncertainty in study
Adjust to industry demographic profile

Base price from formula fitted to sample of
industry data

Prevalence of Chronic Disease

Three CDL Conditions 0.6%

Two CDL Conditions 2.6%

Four+ CDL Conditions 0.1%

One CDL Condition 7.4%

HIV/AIDS 0.7%

Chronic not Verified 7.2%

No Chronic Disease 81.5%

"Chronic not verified" are those identified with a chronic disease who do not meet the "treated patient" criteria for 2007.

Source: REF Contribution Table 2007

Risk Equalisation Fund

Prevalence by Age of Chronic Disease

Source: REF Contribution Table 2007

Risk Equalisation Fund
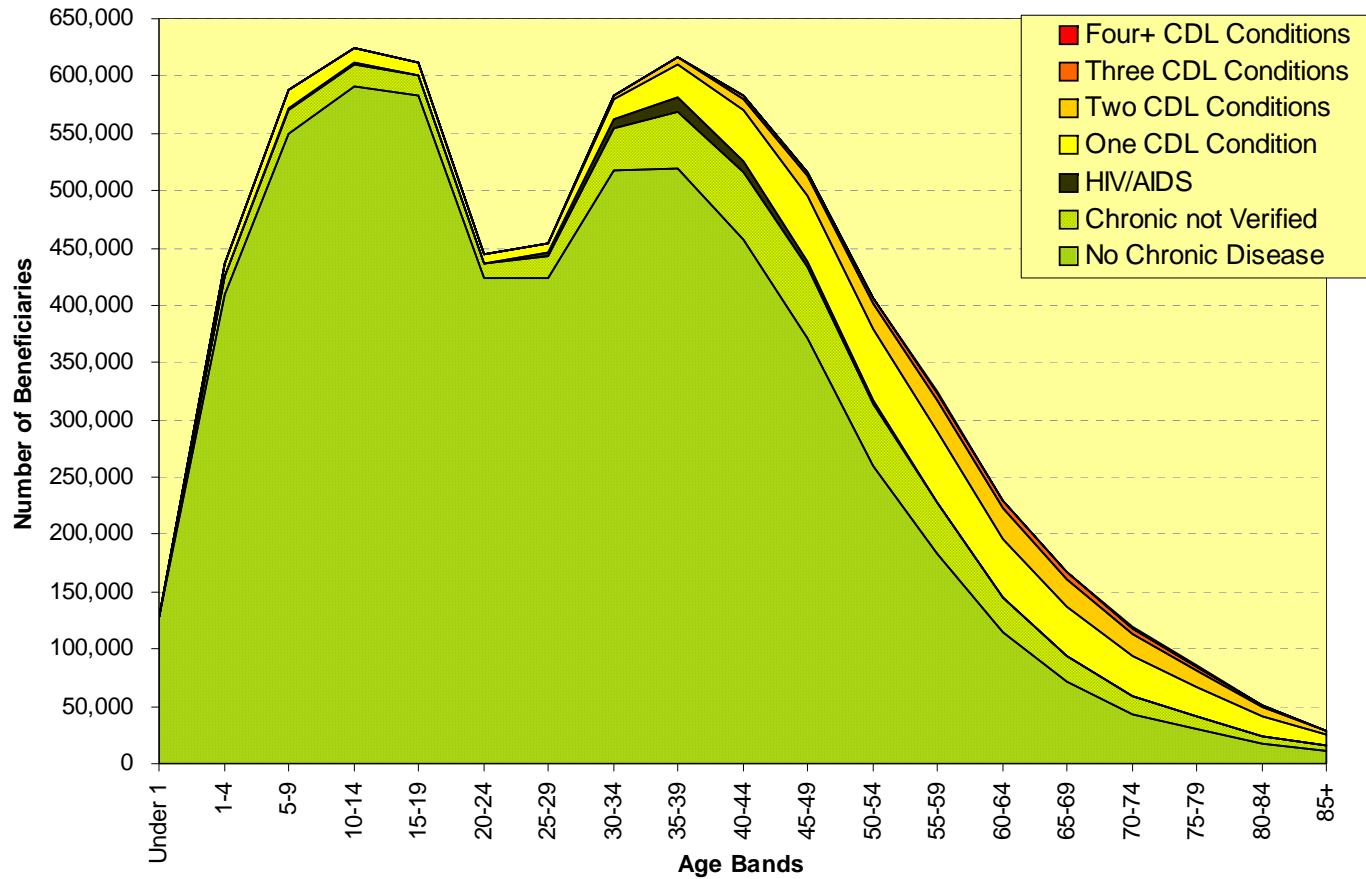
Proportion of Chronic Disease by Age
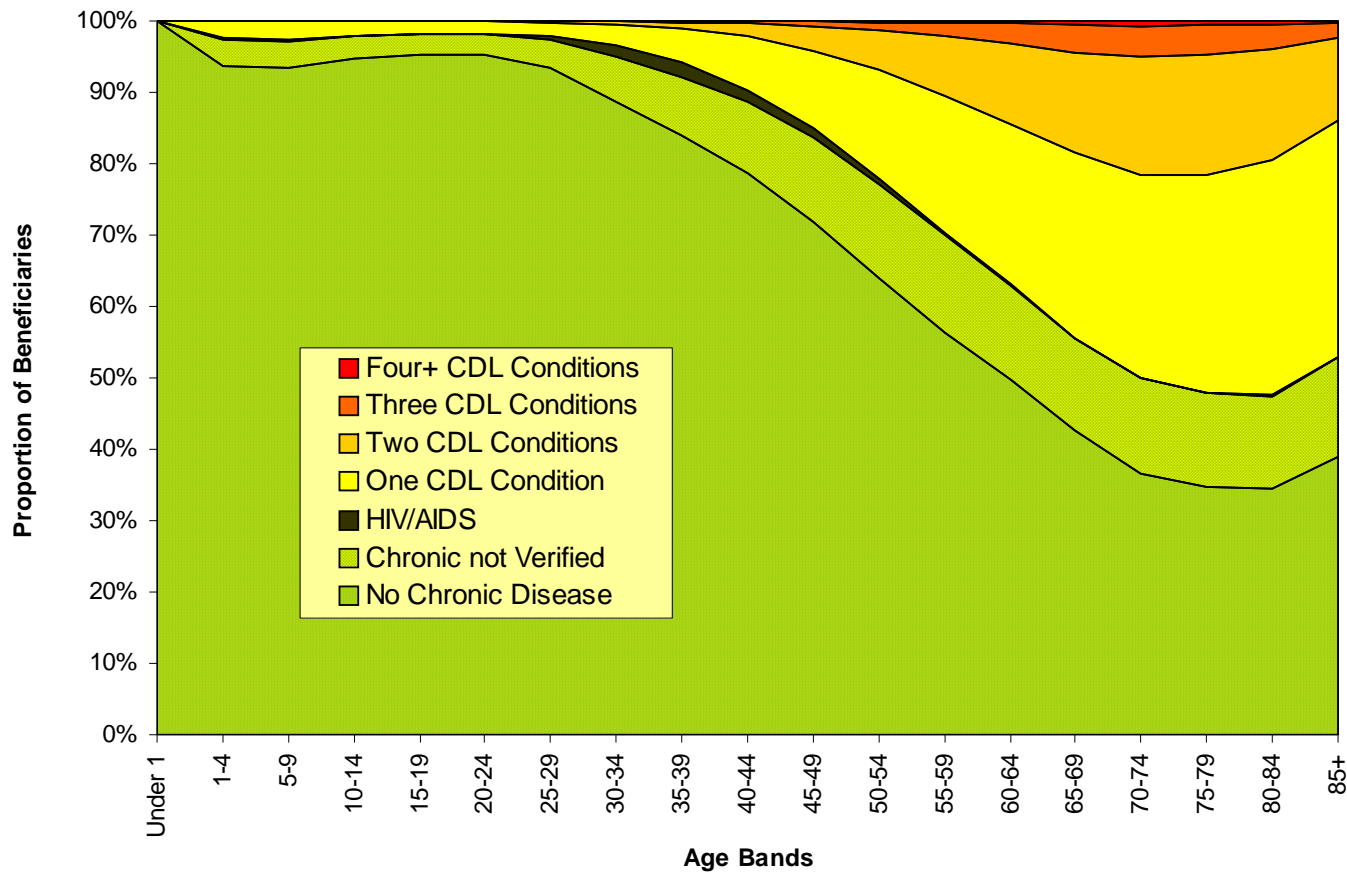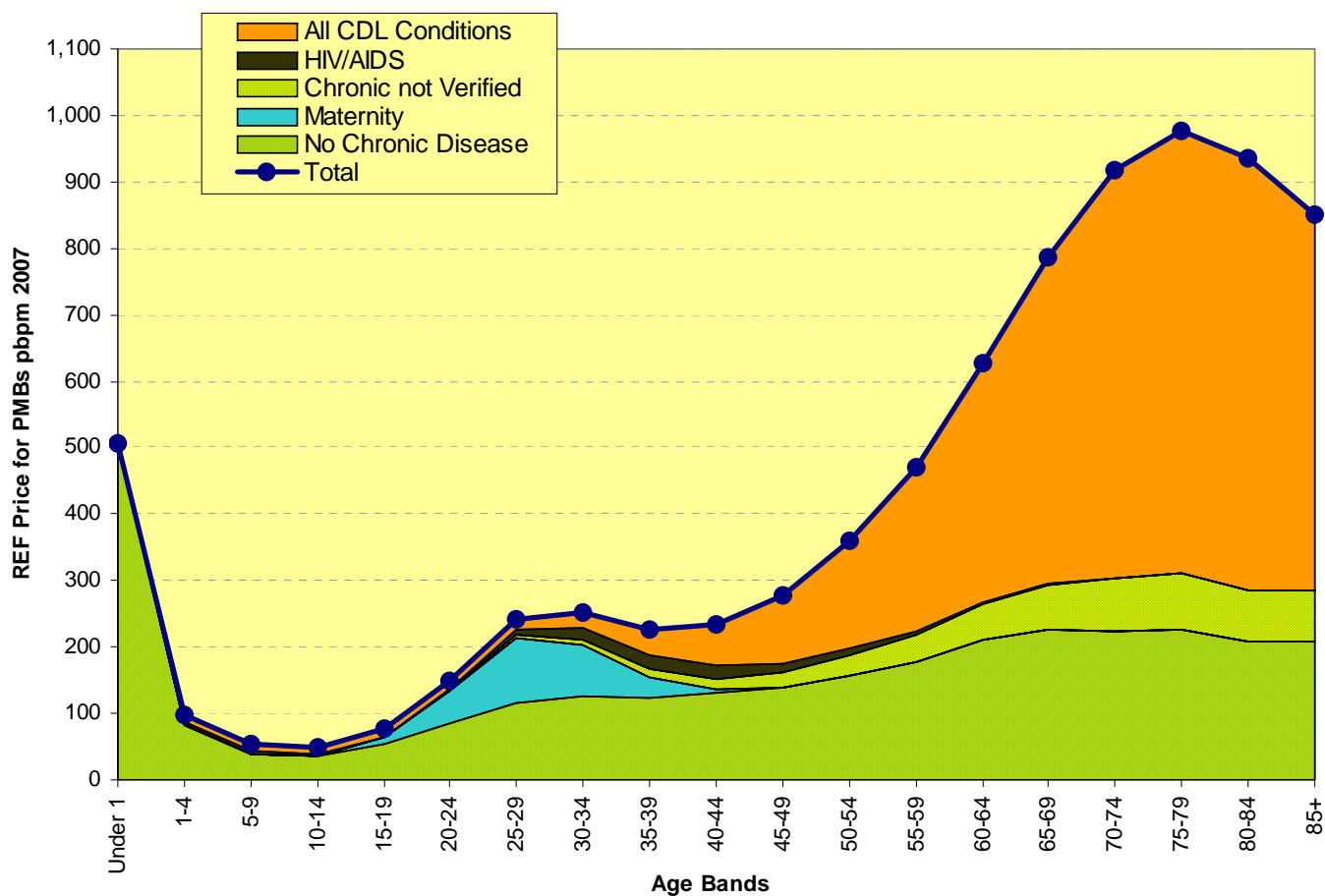
Proportion of Beneficiaries (y-axis: 0% to 100%)

Age Bands (x-axis: Under 1, 1-4, 5-9, 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+)

Legend:
- Four+ CDL Conditions
- Three CDL Conditions
- Two CDL Conditions
- One CDL Condition
- HIV/AIDS
- Chronic not Verified
- No Chronic Disease

Source: REF Contribution Table 2007

Risk Equalisation Fund

Price by Age of Chronic Disease

Source: REF Contribution Table 2007

Risk Equalisation Fund

Price by Age of Chronic Disease

Source: REF Contribution Table 2007

Risk Equalisation Fund
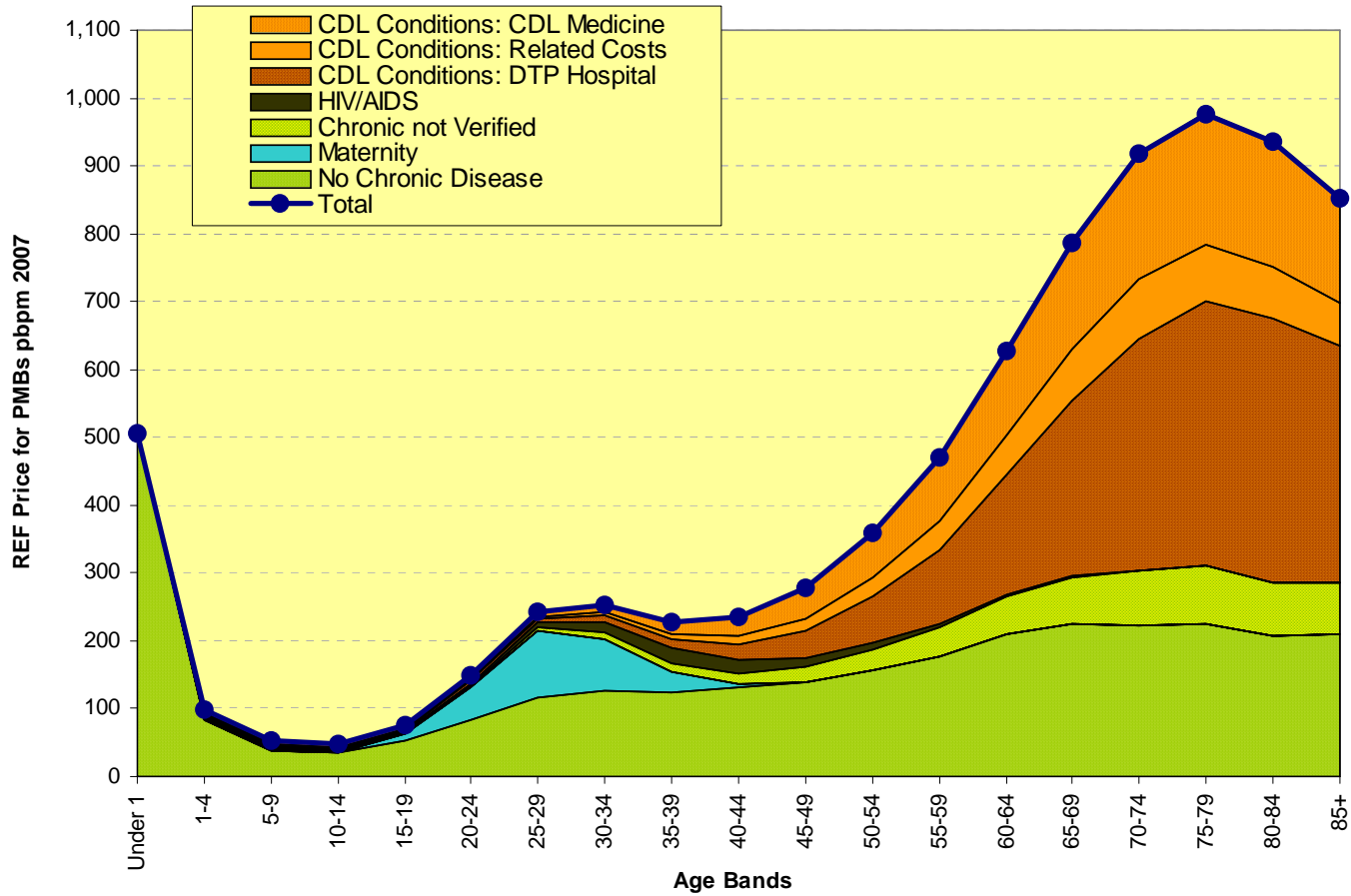
Proportion of Price by Age

Source: REF Contribution Table 2007

Risk
Equalisation
Fund
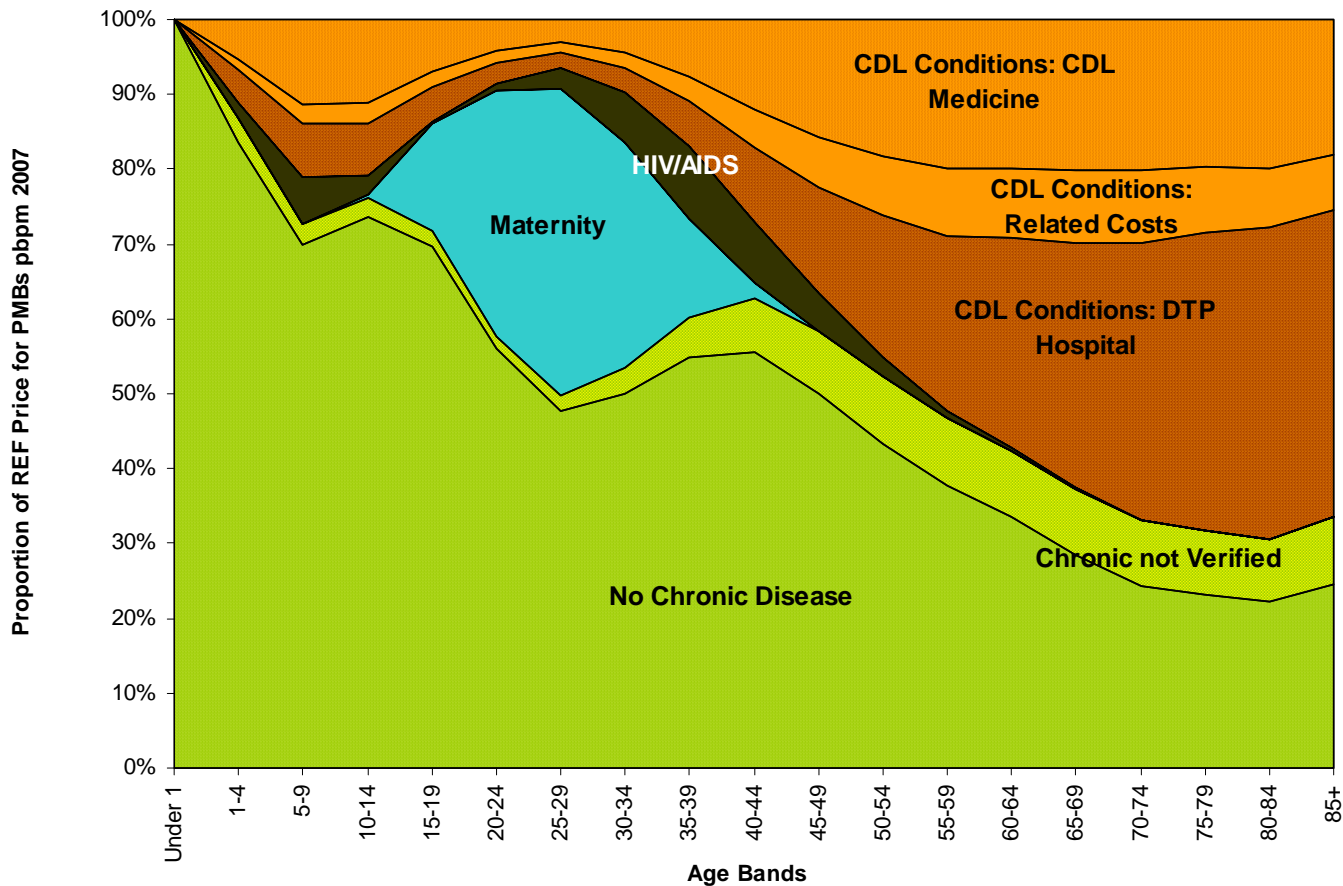
Price by Age of Chronic Disease
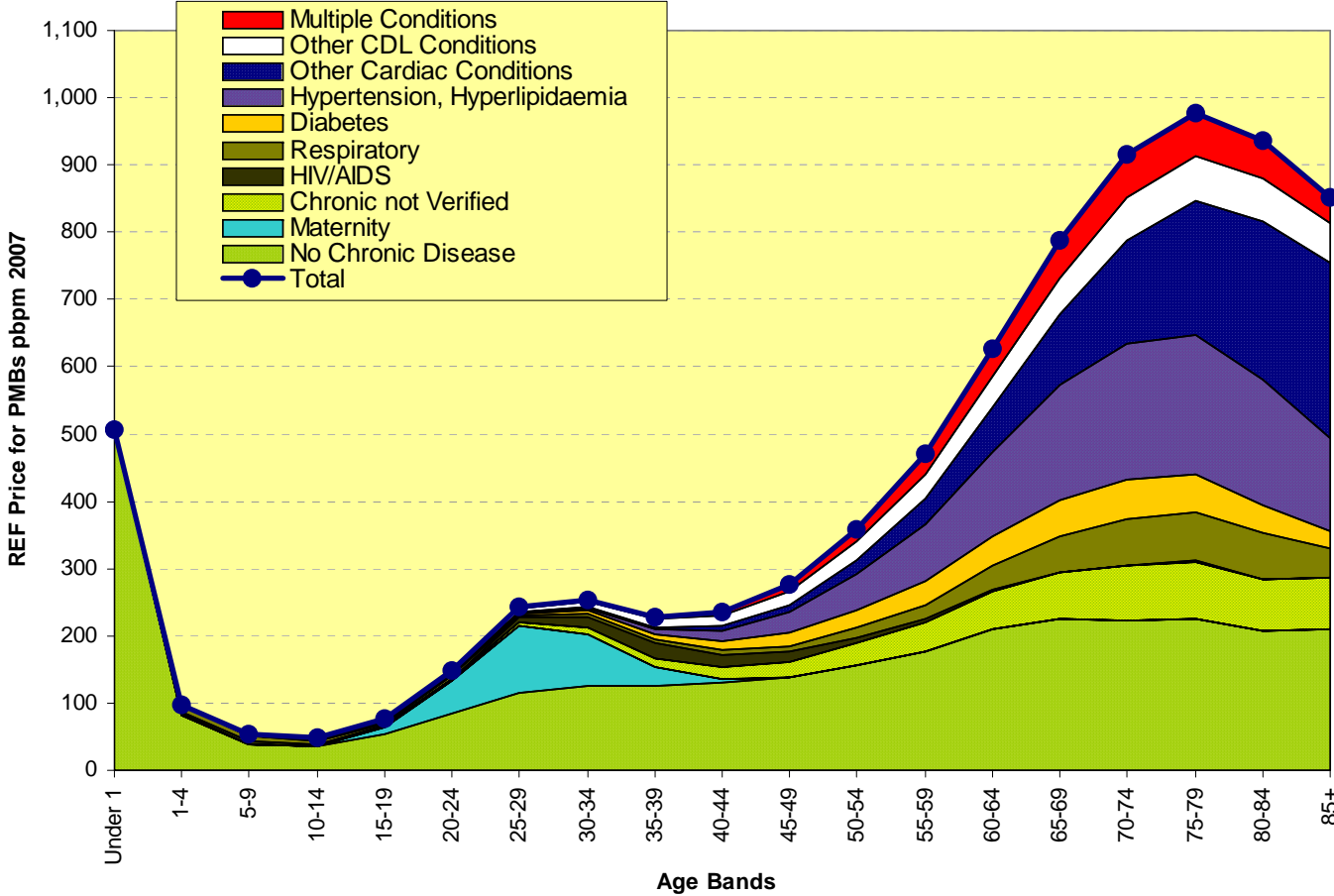
The burden of heart disease is clear.

Source: REF Contribution Table 2007

Risk Equalisation Fund

Chronic Disease in Price of PMBs

Source: REF Contribution Table 2007

Risk Equalisation Fund

Sensitivity of Price of PMBs
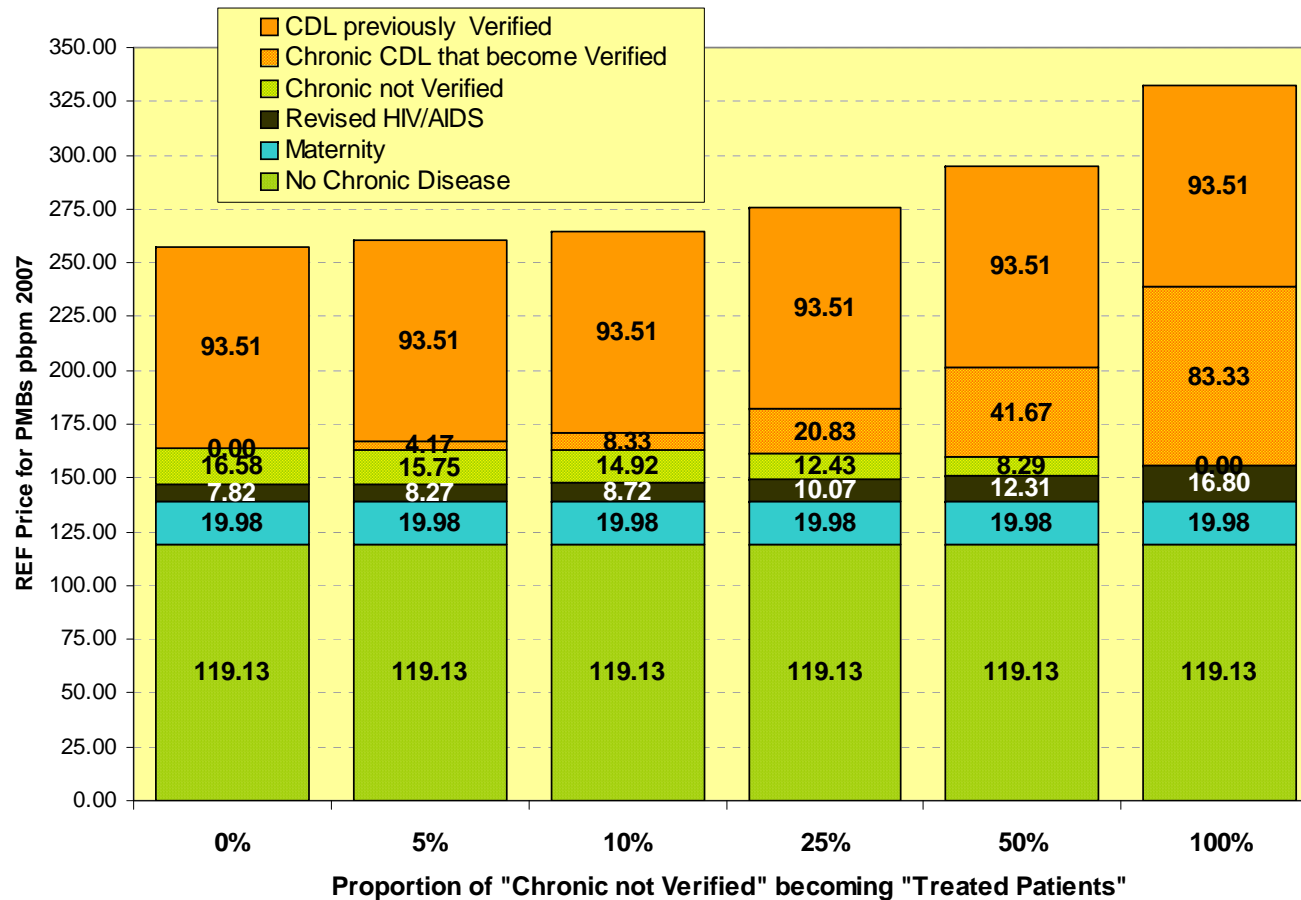
Community-rated PMB Price increases from R257.05 to R332.75 pbpm

Source: REF Contribution Table 2007

Risk
Equalisation
Fund

Hospital, Medicine and Related Components

Risk
Equalisation
Fund

Components of PMB Price by Age

Source: REF Contribution Table 2007

Risk
Equalisation
Fund
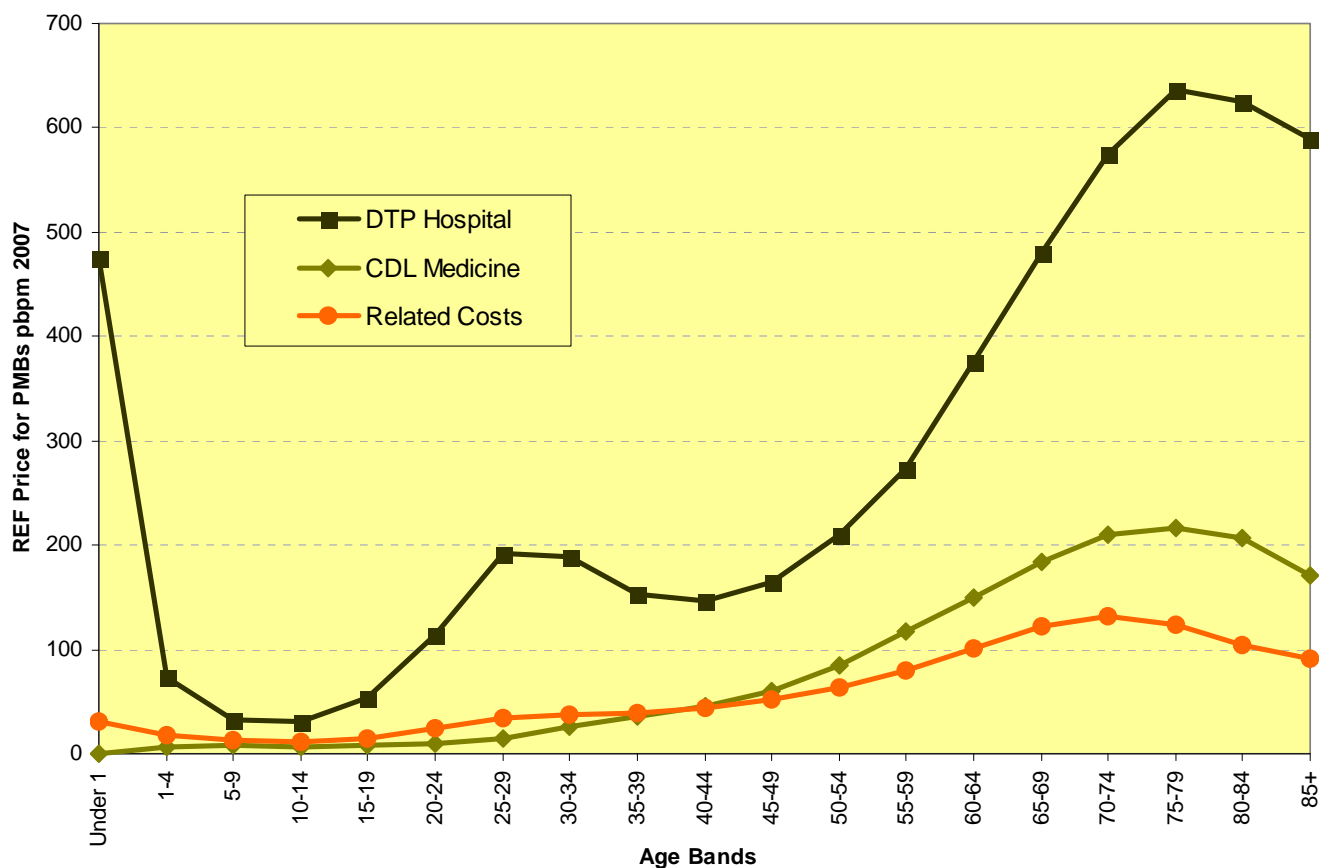
Components of PMB Price

Source: REF Contribution Table 2007

Comment on Sensitivity

◆ The Community Rate would be highly unlikely to reach the higher levels.

◆ As more chronic people become "treated patients", so the values for each disease should be altered to be closer to the CASES regression (with additional CDL medicine costs). The average cost comes down as people are added with less serious disease.

◆ There is a timing issue – the adjustment to the REF Table takes place annually while there could be an increase in the number of "treated patients" during the year.

◆ Schemes only need to consider changes in industry numbers of "treated patients" during a year, until the next revision of the REF Table.

Risk
Equalisation
Fund

Sensitivity of REF Table
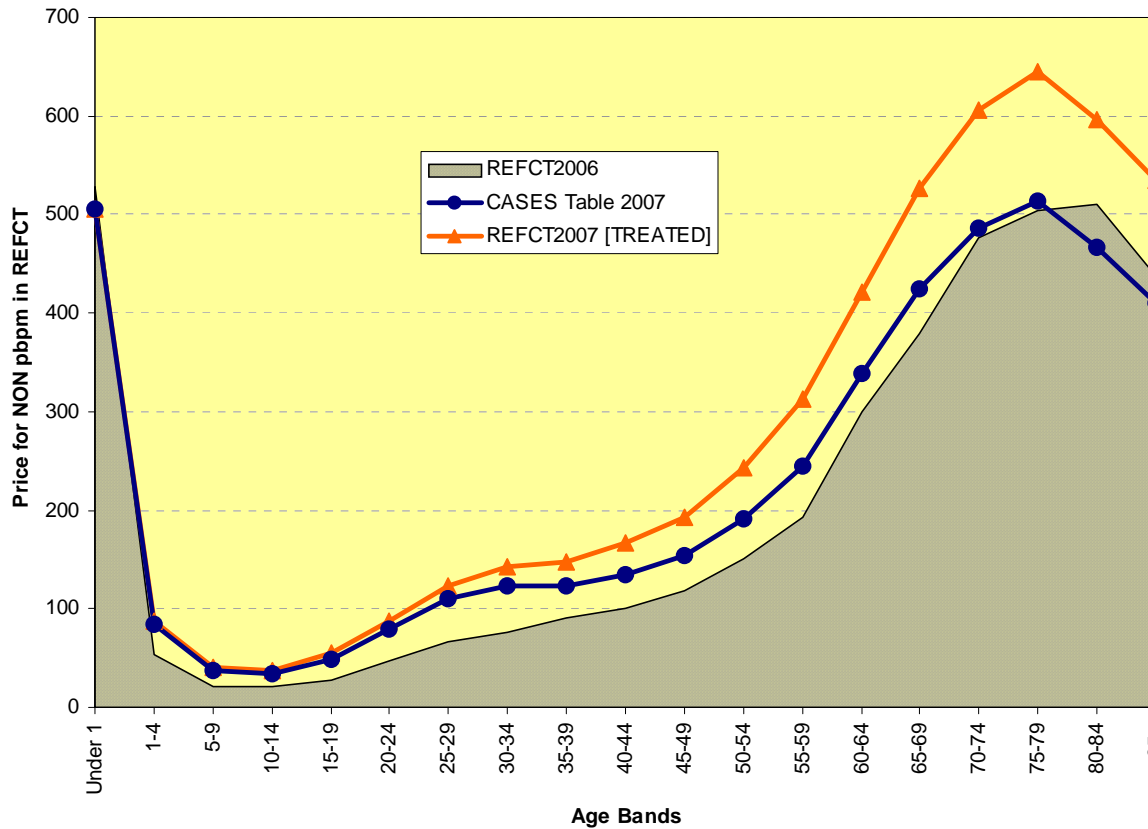
REFCT2007 uses "treated patient" data. If all "chronic not verified" become treated, then the correct values would be from the CASES data, adjusted for additional medicine expenditure.
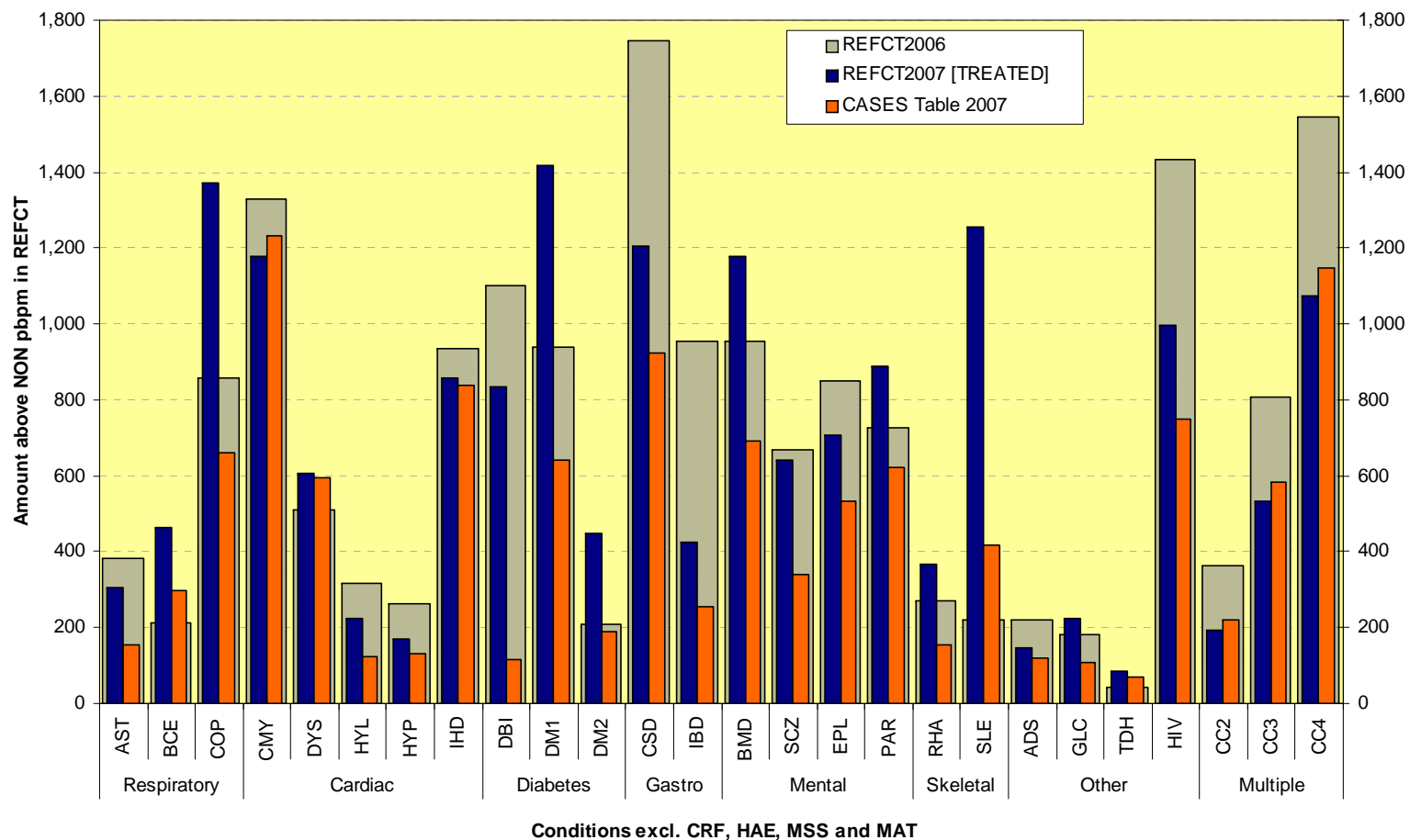
CASES values for diseases are usually much lower than TREATED values: patients added are less severe so average cost decreases.

Source: REF Contribution Table 2007
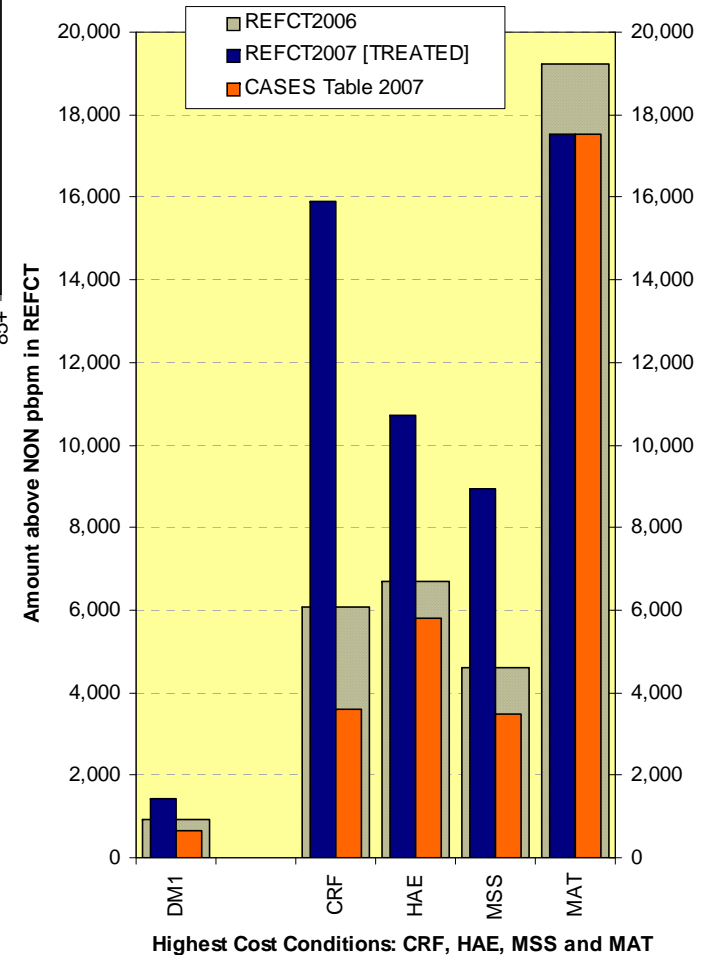
Sensitivity of REF Table

Source: REF Contribution Table 2007

Risk Equalisation Fund
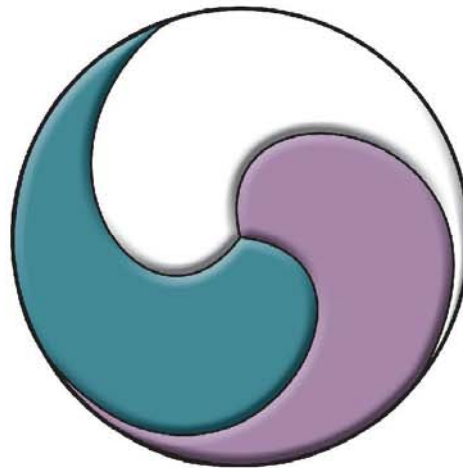
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