



中華人民共和國香港特別行政區政府總部食物及衛生局  
Food and Health Bureau, Government Secretariat  
The Government of the Hong Kong Special Administrative Region  
The People's Republic of China

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7 April 2014

Ms Maisie LAM  
Chief Council Secretary  
Legislative Council Secretariat  
Legislative Council Complex  
1, Legislative Council Road  
Central

Dear Ms LAM,

**Panel on Health Services  
Subcommittee on Health Protection Scheme**

**Follow-up to the meeting on 18 February 2014**

I refer to your letter of 18 March 2014. The requested supplementary information is provided at **Annex**.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Sheung-yuen LEE'.

(Sheung-yuen LEE)

for Secretary for Food and Health

Encl.

**Supplementary information requested by the meeting of  
Subcommittee on Health Protection Scheme  
of the Panel on Health Services on 18 February 2014**

Item (a) -

*Details, such as the survey method, population coverage, sample size, response rate, etc., of the Thematic Household Survey conducted by the Census and Statistics Department in 2011 on coverage of private health insurance.*

Administration's response

The latest official statistics about the population coverage of private health insurance were derived from the Thematic Household Survey on the topic of health-related issues conducted by the Census and Statistics Department (C&SD) during October 2011 to January 2012. The Survey covered the land-based non-institutional population of Hong Kong (i.e. excluding persons living on board vessels and inmates of institutions such as elderly homes and prisons) and did not cover foreign domestic helpers. The Survey is based on a sample of quarters selected from all permanent quarters and quarters in segments which are for residential and partially residential purposes in Hong Kong. In the Survey, a total of 13 411 households were found in the sample of 13 223 occupied residential quarters. Among those households, 10 065 households had been successfully enumerated, constituting an overall response rate of 75%. The questionnaires collected information pertaining to 29 187 persons in these households.

2. Within each enumerated household, the household head or person(s) knowledgeable with the subject matter were asked to identify those in the household who were entitled to medical benefits provided by employers to their employees and their dependents, and if so the types of benefits involved. The household head or person(s) knowledgeable with the subject matter were also asked to identify those in the household who were covered by medical insurance purchased by individuals, and if so the

types of benefits involved. Persons covered by private health insurance referred to those entitled to medical benefits provided by employers (except medical benefits for Civil Service and Hospital Authority staff) and / or covered by medical insurance purchased by individuals, including indemnity hospital insurance and other types of private health insurance (e.g. hospital cash, out-patient insurance, etc.). Persons with only medical benefits for Civil Service or Hospital Authority staff, and those who were only covered by critical illnesses insurance were not included.

Item (b) -

*The detailed actuarial models, methodology and data used, and the calculations for the estimated average premium per insured member under HPS Standard Plan, which, according to the Consultant, was estimated to be \$3,600 in 2012 constant dollar and subject to a potential range of variation between -8% and +45%.*

Administration's response

3. The estimated average standard premium for the Health Protection Scheme (HPS) Standard Plan was derived through a sophisticated actuarial pricing model developed by the Consultant (PricewaterhouseCoopers Advisory Services Limited). The information requested is provided in the findings and analysis of the Consultant<sup>1</sup> at **Appendix A** (only English version is available) for reference.

Item (c) -

*In respect of the estimated cost on the part of the Government for funding the operation of the High Risk Pool for a 25-year period (i.e. from 2016 to 2040),*

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<sup>1</sup> Due to the sophistication of the model, the Consultant cautions that it is important to read the information together with the entire consultancy report. It is desirable to have the assistance of professional actuaries to avoid incomplete or misleading interpretations. The finalized consultancy report will be released in conjunction with the public consultation exercise on the HPS to be launched in mid-2014.

- (i) *the detailed actuarial models, methodology, data and the calculations employed by the Consultant to arrive the estimation that the cost would be about \$4.3 billion in 2012 constant dollar; and*
- (ii) *the respective adjustment in the estimated cost in paragraph (c)(i) above if the proposed entry age limit for guaranteed acceptance with a premium loading cap of 200% of standard premium for HPS Standard Plan, which was set at the age of 40 under the current proposal, was changed to 45, 50, 55, 60 and 65 years of age.*

Administration's response

4. The estimated cost to the Government for funding the operation of the High Risk Pool (HRP) was derived through a sophisticated actuarial model developed by the Consultant. The information requested is provided in the findings and analysis of the Consultant at **Appendix B** (only English version is available) for reference.

Item (d) -

*Whether consideration could be given to allowing insurers to offer individual-based indemnity hospital insurance plans with exclusion of specific pre-existing condition(s) to provide accessible and affordable health insurance cover to those high-risk individuals aged over 40 years who chose to subscribe health insurance after the first year of the launch of HPS.*

Administration's response

5. Coverage of pre-existing conditions is one of the key Minimum Requirements proposed for the HPS. Currently, high-risk individuals with pre-existing conditions or those with higher health risks often have difficulties in obtaining private health insurance. Even if their applications for health insurance are accepted by insurers, additional exclusion clauses may be imposed so that claims arising from pre-existing conditions, directly or indirectly, would be excluded from coverage. In

such cases, many would be compelled to seek treatment from the public healthcare sector if the illness concerned is pre-existing. This would mean reducing consumer choice of healthcare service providers, and would not be consistent with the policy objective of the HPS, i.e. encouraging and facilitating those who are able and willing to make use of private healthcare services, thereby relieving the pressure on the public healthcare sector and enhancing the long-term sustainability of our healthcare system.

6. From the angle of consumer protection, which is another major underlying objective of the HPS, the requirement of coverage of pre-existing conditions is also desirable as exclusion clauses are often the source of disputes. According to statistics of the Insurance Claims Complaints Bureau, “excluded items” is one of the main categories of complaints received by the Bureau concerning hospitalisation/medical insurance. Among the 161 cases closed in 2013, 50 were about “excluded items”. The results of previous public consultations also reveal that coverage of pre-existing conditions received broad support from the general public. In a public opinion survey conducted via telephone interviews during November 2010 to April 2011 in conjunction with the Second Stage Public Consultation on Healthcare Reform, 68% of the respondents considered that the HPS should cover pre-existing conditions after the required waiting period.

7. Furthermore, the requirement of coverage of pre-existing conditions is in keeping with international experience and practice. Coverage of pre-existing conditions is a common basic requirement of private health insurance in countries where private health insurance plays a significant role in the healthcare system, such as in Australia, Ireland, the Netherlands, Switzerland and the United States.

8. Taking into account the above, we consider it appropriate and desirable from the health policy perspective to introduce coverage of pre-existing conditions as a mandatory requirement for all individual-based indemnity hospital insurance, since relaxing this requirement will inevitably impair the effectiveness of the HPS in achieving its policy objectives.

9. As regards the accessibility and affordability of private health insurance, under the HPS, high-risk individuals aged above 40 would be able to benefit from guaranteed acceptance and premium loading cap (200% of standard premium) if they subscribe in the first year of the implementation of the HPS. This would be a major benefit to those who currently cannot obtain private health insurance coverage at all, or have to pay a very high premium loading. For those who lacks the means to purchase private health insurance, or are unwilling to make use of private healthcare services, the public healthcare system will continue to act as the safety net for all by providing affordable and equitable healthcare services to all in need.

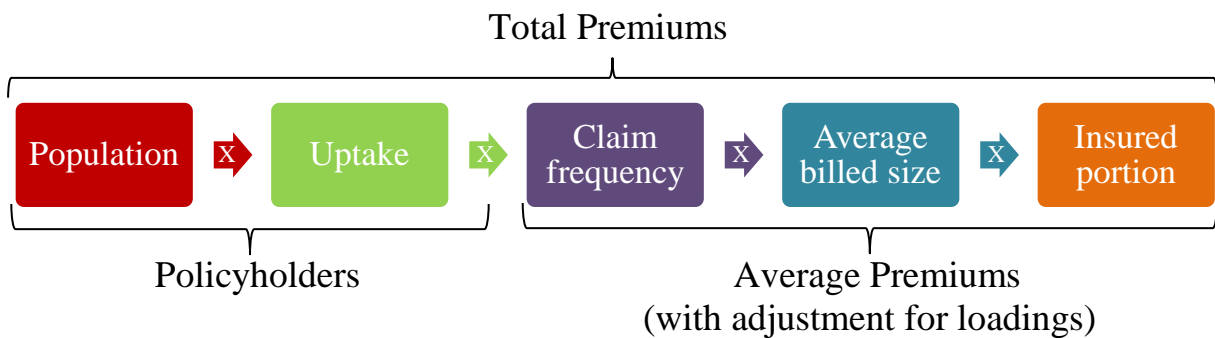
**Food and Health Bureau**  
**April 2014**

## Findings and Analysis of Consultant on Health Protection Scheme

### Creating a Baseline model

A model of the current indemnity hospital insurance market has been constructed using the following five key modules.

**Figure 1: Approach to estimating base premiums**



*Note: Insured portion (%) = 1 – out of pocket contribution by policyholder (as a %)*

- (a) Population multiplied by estimated uptake rates provides an estimate of total policyholders
  - (b) Average billed size multiplied by the ‘Insured portion’ gives an estimate of the Average Claim size (ACS). It is noted that supplementary major medical claims costs have been excluded from analysis.
  - (c) ACS multiplied by Claim Frequency and adjusted for expense/profit loadings provides an estimate of Average Premiums in the market
  - (d) Multiplying all five components together gives us an estimate of total claims costs across the market
2. This analysis has been undertaken for detailed population cohorts and for different major procedures types as set out in **Table 1**. For the purposes of this analysis the Hong Kong population excludes foreign and domestic helpers. In considering the insured population the following criteria have been followed:
- Exclude foreign and domestic helpers

- Only consider people covered by indemnity hospital insurance products, therefore:
  - Exclude people with products that only provide nominal cash benefits (cash plans)
  - Exclude lump sum insurances such as critical illness products
  - Exclude people who hold outpatient plans only
- The individual market considers products purchased by individuals on behalf of themselves and their dependents. Each person, including dependants, covered by a plan are considered as separate policyholders.
- The group market considers insurance purchased by companies to cover their employees and dependents.

### **Estimating Health Protection Scheme (HPS) premiums**

3. The impact of HPS on premiums has been estimated by considering how average premiums would change if current Ward-level policyholders (i.e. policyholders with policies designed to provide coverage for general ward class private healthcare services) had insurance benefits consistent with the proposed HPS Standard plan. Five key changes to benefits have been considered:

- (a) **New benefit structure** – proposed HPS benefit limits were applied to historical Hong Kong Federation of Insurers (HKFI) claims data to determine the insurance cost of HPS against a realistic distribution of claims and provider costs.
- (b) **Guaranteed acceptance** – increases to claims frequency are assumed to occur from the removal of case-based exclusions on many HPS policies. This has been applied to all policyholders with health conditions. In the projection analysis this effect is phased in over time as some policyholders will migrate to HPS and keep their case-based exclusions.
- (c) **New benefits** – the cost of chemotherapy / radiotherapy and advanced diagnostic tests (MRI, CT and PET) has been calculated by using local and international benchmarks for utilisation per person per annum and average cost per disability.



- (d) **The cost of the conversion option** (the proposed conversion option will allow an employee to switch to an individual Standard Plan without re-underwriting upon leaving employment or retirement) – has been estimated for the Group market, drawing on current market practice and uptake.
- (e) **Coverage of some procedures in ambulatory settings** – savings due to coverage of colonoscopies and endoscopies in an ambulatory setting, rather than an inpatient setting, have been estimated by assuming a lower average billed size for these procedures but higher overall demand.

**Table 1: Summary of key model assumptions**

<b>Model area</b>	<b>Key considerations</b>	<b>Data sources</b>
<b>Hong Kong population</b>	Population forecasts (by age and gender) are further considered by: <ul style="list-style-type: none"> <li>• Company size – for the employed population</li> <li>• Prevalence of chronic health conditions</li> <li>• Monthly household income</li> </ul>	2011 Hong Kong census projections  2009 Thematic Household Survey
<b>Uptake of Indemnity Hospital Insurance Products (IHIPs)</b>	The following factors have been considered as key drivers of IHIP uptake in group and individual markets. <b>Group market:</b> <ul style="list-style-type: none"> <li>• Company size</li> <li>• Age and gender</li> </ul> <b>Individual market:</b> <ul style="list-style-type: none"> <li>• Age and gender</li> <li>• Existence of chronic health conditions</li> <li>• Monthly household income</li> <li>• Impact of changes to the group market (i.e. reducing coverage in the group market will increase demand for IHIPs in the individual market)</li> </ul>	2009 Thematic Household Survey  HKFI industry statistics – 2004 to 2011  HKFI claims and policies database – 2006 to 2010

Model area	Key considerations	Data sources
<b>Claim frequency</b>	Claims frequencies and claim sizes have been modelled for four separate procedure groups: Colonoscopies and endoscopies; Chemotherapy and radiotherapy; MRI, CT and PET; Other procedures. Key considerations in modelling future claim frequency rates: <ul style="list-style-type: none"> <li>• Age and gender</li> <li>• Observable trends in historical data</li> <li>• Prevalence of chronic health conditions</li> <li>• Case-based exclusions on policies historical policies</li> </ul>	HKFI claims and policies database – 2006 to 2010  HKFI industry statistics – 2004 to 2011  Private hospital datasets
<b>Average billed size of claims lodged</b>	Key considerations in modelling future average billed sizes: <ul style="list-style-type: none"> <li>• Age and gender</li> <li>• Observable trends in historical data</li> <li>• Extent of Ward level policyholders receiving treatment in private and semi-private settings where costs escalate above the level charged in Ward settings</li> </ul>	HKFI claims and policies database – 2006 to 2010  HKFI industry statistics – 2004 to 2011  Private hospital datasets
<b>Insured portion of billed costs</b>	Key considerations in modelling the insured portion (and hence out-of-pocket share) of claims: <ul style="list-style-type: none"> <li>• Age and gender</li> <li>• Observable trends in historical data</li> </ul>	HKFI claims and policies database – 2006 to 2010  HKFI industry statistics – 2004 to 2011

### Introduction to indicative HPS premiums

4. This paper includes an estimate of the premium which would be payable in respect of a ‘**standard risk**’ in the individual market or an ‘**average member**’ in the Group market for a HPS Standard plan.

5. Analysis focuses on Ward-level indemnity hospital insurance plans purchased by an individual or family. Cash plans, outpatient only plans and

critical illness plans are not included in the analysis. Individual and Group products are considered separately. All results in this paper include expense/profit loadings for profit, expenses and commissions.

6. The results are presented on a hypothetical 2012 basis for ease of comparison. All elements of the proposed HPS are assumed to be fully implemented in the calculation of these indicative premiums. In reality, many product features would not be implemented until 2015 or later and several of the market changes sought through implementation of HPS would take some time to be achieved. This is considered in more detail in the projection analysis.

### **HPS Premiums in the Individual market**

7. Throughout this paper reference is made to “Base” premiums – which relate to products commonly offered in the market today, before the impact of HPS, and “HPS” premiums, which represent the proposed HPS minimum level standard product. **Table 2** summarises the estimated impact of HPS on premiums in the individual market – **a 9% increase on average**. These numbers represent the average **standard** premium across the market, with a standard premium being the premium for someone who insurance companies consider to be a ‘standard risk’ with zero ‘risk loadings’. The premiums shown are an average across all age groups in the market, assuming that the profile of policyholders is broadly similar to what exists in the market at present.

8. It is estimated that in 2012, the average premium paid for a Ward level product was around \$3,300, for someone who is a ‘standard’ risk. The average premium for the HPS Standard plan is estimated to be **9% or \$300 higher** than this, at \$3,600. There is, however, considerable uncertainty around this estimate, and the impact may be as high as \$1,500 (45%) or as low as -\$250 (-8%).

9. The five different components which lead to this increase are described in more detail later in this paper. The most significant factor is the addition of advanced diagnostic tests – MRI, CT and PET scans - to the HPS Standard product. This estimate is also the most uncertain. Advanced diagnostics could add between 5% and 42% to the base premium, depending on the level at which the packaged prices for these tests are set, and how well demand for these services is managed when coverage expands.

10. Offsetting the premium increases arising from expanding coverage and benefits are savings arising from funding colonoscopies and endoscopies using packaged benefit limits, set consistent with the price of these procedures in ambulatory care settings.

**Table 2: Individual market – Impact of HPS on average standard premium<sup>Note 1</sup>**

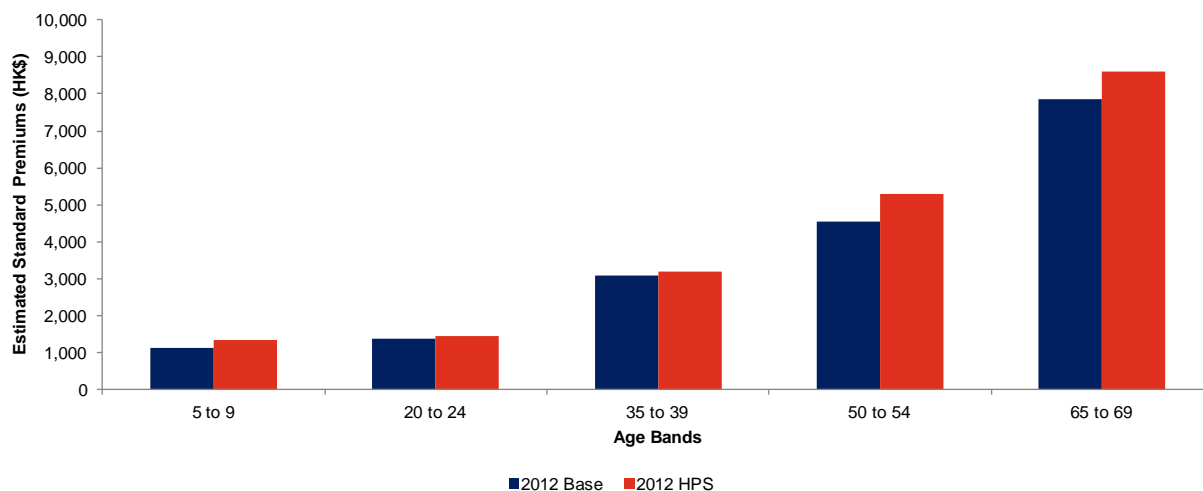
Feature	Impact (Mid Scenario)	Potential range (\$)	Potential range (%)	Explanation at
<b>2012 baseline (before HPS)</b>	\$3,300			
<b>New benefit structure</b>	-\$250 (-8%)	-\$250	-8%	Paragraphs 13 -16
<b>Coverage of pre-existing conditions</b>	+\$150 (+5%)	+\$150	+5%	Paragraphs 17 -19
<b>Chemotherapy and radiotherapy</b>	+\$250 (+8%)	+\$150 to +\$350	+5% to +11%	Paragraphs 20 -22
<b>Advanced diagnostic tests – MRI, CT &amp; PET (30% co-pay)</b>	+\$550 (+17%)	+\$150 to +\$1,400	+5% to +42%	Paragraphs 23 -26
<b>Coverage of endoscopy / colonoscopy in ambulatory setting with packaged pricing</b>	-\$400 (-12%)	-\$450 to -\$150	-14% to -5%	Paragraphs 27 -30
<b>2012 HPS premium</b>	\$3,600 <sup>Note 2</sup> +\$300 (+9%)	-\$250 to +\$1,500	-8% to +45%	

*Note 1: A deductible of \$2,000 would reduce the HPS premium by around 10%. A deductible of \$5,000 would reduce the HPS premium by around 22%.*

*Note 2: An expense and profit loading of 43% is assumed in estimating the HPS premium. Please refer to paragraphs 33 and 34.*

11. **Figure 2** depicts the premium change at a number of key ages. The impact is higher for older age groups, particularly ages 50 and above, because many of the new features introduced by HPS affect these age groups to a greater extent.

**Figure 2: Individual market – Estimated impact of HPS on standard premium, key ages**



12. The five key elements of the HPS design which are expected to influence market premiums are now discussed in more detail.

### **New benefit structure**

13. The term ‘benefit structure’ refers to the policy limits and amounts payable in respect of procedures already covered by IHIPs. It includes the limits on amounts paid for daily room and board, attending physicians’ visits, surgical fees and so on. The proposed HPS minimum requirements approach specifies a level of minimum benefits to apply to all products in the market. This reflects minimum benefit limits that are deliberately pitched at levels slightly below average products currently on the market (except chemotherapy and radiotherapy the coverage of which is not very common at present), in order to encourage migration and product innovation through Flexi plans. For this analysis reference is made to current Ward level products on the market and HKFI claims data to provide an indicative benefit structure that would achieve these goals.

14. *The impact of the proposed minimum benefit limits is to reduce the average standard premium by approximately 8% or \$250 per annum.*

15. The proposed benefit structure is set out as in Table 3 below.

**Table 3: Benefit schedule options for HPS**

<b>Benefit (Maximum benefit amount)</b>	<b>HPS Product</b>	<b>Common ward level products</b>
<b>Daily Room &amp; Board</b>	<b>\$650</b> Max 180 days	<b>\$600 – \$750</b> Max 90-270 days
<b>Attending Physician’s Visit</b>	<b>\$750</b> Max 180 days	<b>\$600-\$750</b> Max 90-270 days
<b>Other Specialists’ Visit</b>	<b>\$2,300 / Admission</b>	<b>\$3,500 – \$5,500/ Disability</b>
<b>Surgical Limit (Surgeon, Anaesthetist, OT)</b>	<b>\$58,000 / Procedure</b> and 35% OOP for inpatient, 15% for clinical surgery	<b>\$38,250-\$68,000/ Disability</b> for major surgeries
<b>Miscellaneous Hospital Expenses</b>	<b>\$9,300 / Admission</b>	<b>\$7,480 – \$15,000/ Disability</b>
<b>Chemotherapy and radiotherapy</b>	<b>\$150,000 / Disability</b>	<b>Some products only.</b> <b>\$6,000-\$15,000/ Disability</b> <b>OR</b> <b>\$50,000/ Contract year</b>
<b>Advanced diagnostic tests – MRI, CT &amp; PET</b>	Lump-sum packaged benefit limit (30% co-pay)	Limited products only
<b>Coverage of endoscopy / colonoscopy in ambulatory setting with packaged pricing</b>	Lump-sum packaged benefit limit	Limited products only
<b>HPS average standard premium</b>	<b>\$3,600</b>	<b>\$3,300</b>
<b>Out-of-pocket %</b>	<b>33%</b>	<b>27%</b>

16. Industry claims data allows testing of the impact that this benefit structure would have had on historical claims – in order to estimate the level of insurer and patient costs into the future. Unfortunately available data on surgical fees does not allow us to identify the different levels of surgery commonly defined in the Hong Kong market (eg major, complex, super-major surgery definitions, which differ by insurer) in order to apply sub limits on each component of a claim. Given this limitation, it has been assumed that inpatient surgical fees are reimbursed at 65% subject to a maximum of \$58,000. That is a minimum out of pocket cost of 35% exists to reflect the effect of sub limits that are often present when claiming for surgical benefits. This is broadly consistent with current market practice.

### **Coverage of pre-existing conditions**

17. Guaranteed acceptance under the proposed HPS design implies that all pre-existing conditions be covered under HPS, except for migrants who opt to retain case-based exclusions on existing policies in order to avoid re-underwriting and possible price increases. Under streamlined migration, migrants who were classified as standard risks when first underwritten can migrate to HPS without re-underwriting. They would continue to be treated as standard risks irrespective of whether their health conditions have deteriorated or not over time. This differs from the current market practice to require re-underwriting and introduce case-based exclusions where relevant.

18. This pricing analysis considers the hypothetical long term impact of HPS in an indicative sense, based on the 2012 market. Thus, the analysis assumes all case based exclusions are covered under HPS. The projection results allow for the short- to mid-term reality that this effect will phase in over time depending on the number of migrating policyholders who chose to keep existing case based exclusions on their HPS policies. Coverage of case based exclusions leads to an increase in claim costs for the proportion of current policyholders who are expected to have a health condition excluded through their policy. Projection results also test the impact if significantly more people with health conditions take up IHIPs.

19. ***The impact of covering pre-existing condition for all current members is to increase the average standard premium by approximately 5% or \$150 per annum.***

## **Chemotherapy and radiotherapy treatments for patients with cancer**

20. It is quite rare for Ward level products currently on the market to contain adequate chemotherapy and / or radiotherapy cover for cancer patients. Under the proposed HPS minimum benefits, this would be added subject to a yearly limit of \$150,000.

21. *Including chemotherapy and radiotherapy in the minimum requirements increases the average standard premium by approximately 8% or \$250 per annum.*

22. Hospital Authority (HA) data has been used to predict the overall required rate of treatment for people with cancer. The high and low Scenarios then consider what proportion of a policyholder's treatment will be covered by HPS and take place in the private sector. A range from 35% to 70% has been assumed for the low and high Scenarios respectively. The cost per treatment has been conservatively estimated as HA cost data grossed up for additional cover of self-financed drugs plus an additional buffer related to international comparisons (Australia and the UK).

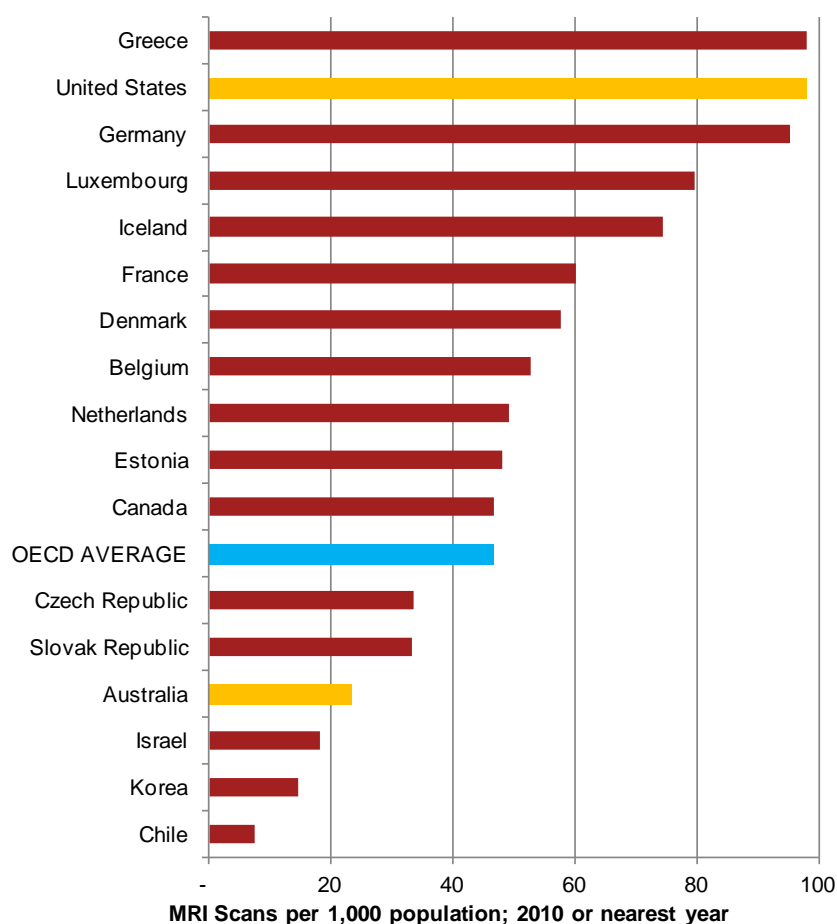
## **Advanced diagnostic testing - MRI, CT and PET tests**

23. *Covering MRI, CT and PET scans with a 30% patient co-payment increases the average standard premium by approximately 17% or \$550 per annum.*

24. International experience suggests that coverage of advanced diagnostic tests must be closely monitored and controlled due to the substantial risk of over servicing. Scenarios are used to emphasise the risks present if strong cost control measures are not in place. As such it is recommended that these benefits only be included with a significant co-payment (30%) and on a packaged pricing basis. The mid-point estimate assumes per-person usage of advanced diagnostic services will be consistent with the Organisation for Economic Co-operation and Development (OECD) average, and costs per test in line with Australian experience, which is amongst the lowest in OECD countries. However, as **Figure 3** shows, utilisation patterns vary considerably across the OECD and experience from the US shows that both high usage and high per-test costs - as much as three to five times Australian costs - could arise if implementation is poorly managed.



**Figure 3: MRI usage rates – OECD data**



Source: OECD Health Data 2012

25. The range of Scenarios tested is shown in **Table 4** below.

**Table 4: MRI, CT and PET scans - summary of pricing Scenarios**

Scenario	Utilisation rate	Average cost
<b>Low</b>	Australia	Specified price of an advanced diagnostic MRI / CT scan covered by Australian Medicare <b>plus lower bound</b> levels of out of pocket costs.
<b>Mid</b>	OECD average	Specified price of an advanced diagnostic MRI/CT scan covered in Australia by Medicare <b>plus common</b> levels of out of pocket costs.
<b>High</b>	United States	Specified price of an advanced diagnostic MRI/CT scan covered in Australia by Medicare <b>plus upper bound</b> levels of out of pocket costs.

26. A small but growing proportion of Ward level products implicitly cover advanced diagnostic testing. However, consultation with the industry indicates that this activity is often covered only on an inpatient basis, which is significantly more expensive than an ambulatory setting. This has been allowed for in the estimation of base market premium but some savings have also been realised from shifting this activity to an outpatient setting under HPS.

### **Coverage of endoscopy and colonoscopy in an ambulatory setting with packaged pricing**

*27. Covering endoscopy & colonoscopy through packaged pricing in ambulatory settings would decrease the average standard HPS premium by approximately 12% or \$400.*

28. Analysis performed on the HKFI database (over 2006 to 2010) indicated that more than 70% of endoscopy and colonoscopy procedures covered by individual IHIPs were provided on an inpatient basis. While many insurers now offer products which encourage greater use of same day and clinic facilities, there remains significant inpatient utilisation of these procedures.

29. Given the cost of an inpatient endoscopy procedure can be several times more expensive than in an ambulatory setting, the potential cost savings of shifting the location of activity are enormous. As a benchmark, analysis of Australian Hospital Statistics shows that just 10% of these procedures were performed as inpatient overnight procedures in 2010-11. It has been assumed that inpatient procedures reduce from 70% to 15% of endoscopies and colonoscopies in HPS. Packaged benefit limits, set consistent with the price of these services in ambulatory settings, has been recommended as a tool to drive this behaviour change.

30. Given so little of the current activity in the individual market occurs in an ambulatory setting it is likely that covering these services in an ambulatory setting would increase overall demand for these services. Any increase in demand will moderate the level of savings available to the market under HPS. A 35% increase in the volume of services covered by insurance has been allowed for in the mid-point estimate. There would also likely be an increase in the volume of advanced diagnostic tests performed in the overall private Hong Kong market. However given limited data on current activity it is difficult to quantify the future increase.

## Other items

### *Guaranteed Renewal*

31. The impact of Guaranteed Renewal on HPS premiums is not reflected in the current estimation. This is because the impact will occur only gradually and modestly in the long term when there could be offsetting factors through improved market dynamics (e.g. keener price competition in a more transparent environment; economies of scale). Hence this aspect is not considered material to the analysis.

### *Deductible*

32. The potential impact of a range of deductibles has been tested on historical claims data from the HKFI. The deductible is defined as being per claim, and acts on top of any existing out of pocket costs above pre-determined insurance cover limits. A deductible of \$2,000 would reduce the average standard HPS premium by 10% or \$350 per annum. Deductibles have a far more pronounced impact on younger policyholders, because they have smaller claims on average than older people, and so the deductible represents a far bigger amount compared to their claim.

**Table 5: Estimated impact of deductibles on average standard premiums – Individual market**

Deductible amount	% Reduction in premium	Reduction to average HPS premium
\$2,000	10%	\$350
\$5,000	22%	\$800
Co-payment of 10% for the first \$100,000 of a claim capped at \$10,000	9.5%	\$350

### *Expense and profit loadings*

33. According to HKFI industry statistics the average insurer loading for expenses and profit across the entire individual market is 43% of premiums. This figure includes costs to the insurer from, among others:

- Commissions and broker fees
- Profit and solvency margins

- Direct expenses e.g. claims handling costs
- Indirect overhead expenses e.g. accounting

34. For the purposes of estimating indicative HPS premiums, this loading has been left unchanged. The projection analysis includes consideration of the impact that improved efficiencies may have on the market going forward.

## **Findings and Analysis of Consultant on Health Protection Scheme**

### **High Risk Pool**

The key parameters used to cost the High Risk Pool (HRP) are:

- a) Entry premium is 3x standard premium (including expense/profit loadings)
  - b) The cost of a HRP member is assumed to be 6x that of an average risk
    - The difference between an average risk (1x) and a high risk (6x) is primarily related to the coverage of pre-existing conditions
  - c) The policy would be equivalent to a HPS Standard plan meaning that no case-based exclusions would exist
  - d) Waiting periods exist for coverage of pre-existing conditions:
    - 0% coverage in the first year
    - 25% cover in the second year
    - 50% cover in the third year
    - 100% cover from year four on
  - e) Care management costs are assumed to be 5% of gross claim costs. These costs are already included in the 6x factor noted above, and during the waiting period, the additional costs of care coordination are included from year one onwards such that the actual cost of a person in the HRP in year 1 is equivalent to 1.3 times that of an average risk.
2. A brief analysis of the likely health conditions present in the HRP has been included in **Annex**.

## Financial results

3. **Table 1** summarises the expected costs of operating the HRP with Group “Conversion option only”<sup>1</sup>. Finances are categorised by source (policyholder versus Government contributions) and type (claims versus administration costs). All dollar figures cover the entire HPS projection period from 2016 to 2040 and are presented in constant 2012 values. In addition, no discounting of future cash flows has been applied.

**Table 1: Summary of HRP cost, 2016-2040**

<b>2016 – 2040 (in 2012 dollars)</b>	<b>Current Proposal</b>
<b>Admin cost – 12.5% of claim costs to operate the scheme</b>	\$2.0 bn
<b>Cost of claims (6x average cost; including net benefit of care management)</b>	\$15.8 bn
<b>Total cost to operate</b>	\$17.8 bn
<b>Premiums collected (3x standard risk)</b>	\$13.5 bn
<b>Cost to Government</b>	<b>\$4.3bn</b>
<b>Members in 2016 (as a % of total PHI)</b>	69,800 (3.6%)
<b>Members in 2040 (as a % of total PHI)</b>	10,900(0.5%)
<b>Total cost per member per annum</b>	\$29,700
<b>Cost to Government per member per annum</b>	\$7,200

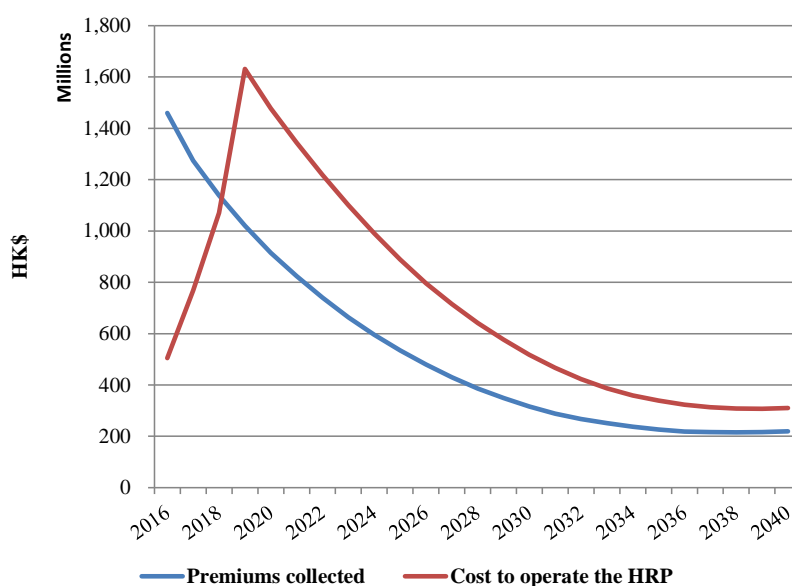
4. Between 2016 and 2040, the total cost to operate the HRP tallies to approximately HK\$17.8 billion, of which HK\$15.8 billion represents the cost of claims. The remaining HK\$2.0 billion is the expected administrative cost of running the HRP. As premiums are capped at 3x a standard premium, total premiums collected by the HRP total only HK\$13.5 billion. The required

<sup>1</sup> Expected costs of operating the HRP under Scenario B with Full Group HPS are not materially different

Government funding injection is thus HK\$4.3 billion to finance the HRP over the period.

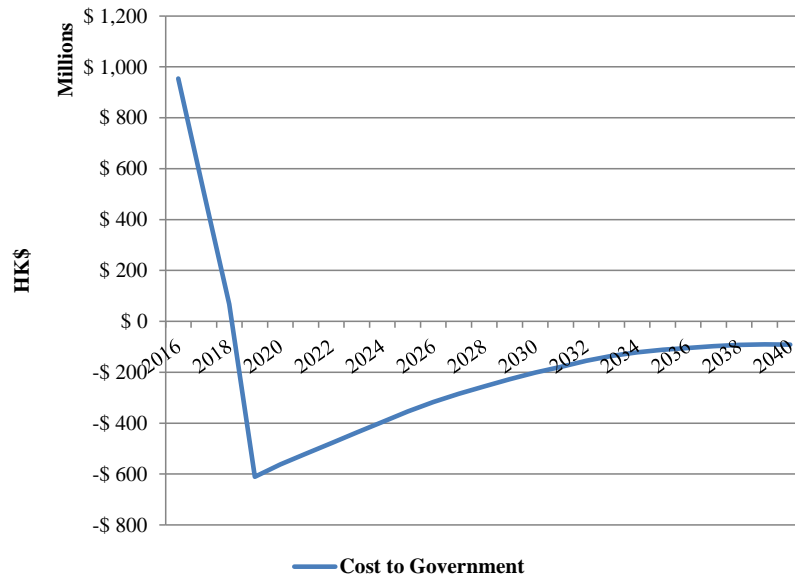
5. **Figure 1** plots total premiums collected and costs paid from the HRP. During the first three years of the HRP, total premiums collected are greater than the costs of the HRP. This is due to waiting periods for pre-existing conditions, which severely restrict claims costs in the first few years after a new policyholder enters the Pool. Costs increase quickly between 2016 and 2020 as the large number of new entrants in 2016 will have served their waiting periods and become eligible for full benefits by 2020. Costs peak in 2020 when the influx of new entrants in 2016 become eligible for full benefits, and start to decline thereafter, consistent with a gradual decline in Pool membership.

**Figure 1: Yearly total premiums collected and costs paid from the HRP, 2016-2040**



6. **Figure 2** shows the yearly cash flow to Government from underwriting the HRP. Cash flow is equal to the difference between total premiums collected and costs paid from the HRP as shown above.

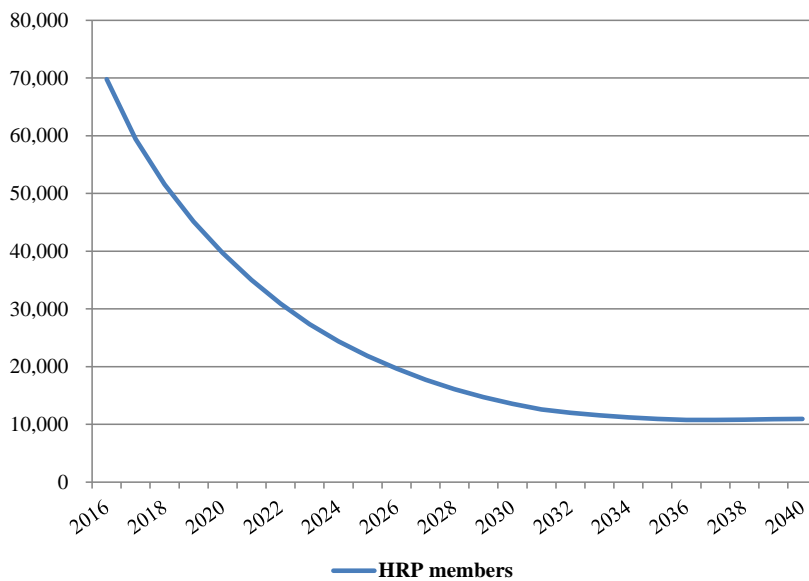
**Figure 2: Government’s yearly cashflow position relative to the HRP, 2016-2040**



**Number of people covered by the HRP**

7. **Figure 3** identifies the total number of HRP members by year. All migrants are eligible for the HRP in year one, as are all new entrants regardless of age, and so a large influx results. In the long run, only new HPS members aged 40 or below can join the HRP, and so new entrants and total HRP membership decline rapidly to a stable level of around 11,000 people.

**Figure 3: HRP membership, 2016-2040**





8. In the first year of HPS operation insurers are likely to be quite risk averse when pricing individuals with significant health conditions. In particular smaller insurers will have little or no data on which to accurately price these individuals. Thus it is likely a high proportion of people, both migrating and new to HPS, will be priced at 3x standard premiums.

9. Around 30,000 of the year 1 HRP membership are expected to migrate from existing policies. This is estimated based on the assumption that most current policyholders with cancer (around 8,000 people<sup>2</sup>) will automatically join the HRP as they are unlikely to receive affordable chemotherapy or radiotherapy coverage. Over 210,000<sup>3</sup> policyholders are expected to migrate to HPS with significant health conditions, and some 22,000<sup>4</sup> of these are assumed to be eligible for the HRP.

10. A further 40,000 of year 1 HRP members are assumed to join as new members. There were over 440,000<sup>5</sup> people in Hong Kong in 2009 (THS data, figure will be materially higher in 2016) with cancer or other high severity health conditions. 80,000 of them had monthly income above \$30,000 and represent a likely pool of HRP entrants<sup>6</sup>.

### **The average claims cost of a high risk individual**

11. The claims cost of a person in the High Risk Pool is assumed to be approximately seven times that of a 'standard risk' in the HPS market and, if effective care co-ordination is put in place, this would reduce to six times the cost of a 'standard risk'. The pattern of claims costs of people currently insured in Hong Kong has informed this estimate, and international experience has also been reviewed.

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<sup>2</sup> The figure of 8,000 is estimated from the number of insured people with cancer (10,362) as reflected in the THS 2009 results (Table 4 of Annex), taking into account the adjustment factors of (a) organic growth from 2009 to 2016 (when HPS is assumed to be implemented); and (b) the estimated insured persons with cancer who choose to be grandfathered.

<sup>3</sup> The figure of 210,000 is estimated from the number of insured people with health conditions other than cancer (376,782) as reflected in the THS 2009 results (Table 4 of Annex), taking into account the adjustment factors of (a) organic growth from 2009 to 2016 (when HPS is assumed to be implemented); and (b) the estimated insured persons with non-cancer health conditions who choose to be grandfathered.

<sup>4</sup> Assuming 22,000 people have severe health conditions and choose to remove their existing case-based exclusions when migrating to HPS.

<sup>5</sup> The figure of 440,000 is different from the figure of 510,864 in Table 4 of Annex due to the need to take out double-counted cases with more than one health condition.

<sup>6</sup> Assuming half of the 80,000 (i.e. 40,000) will choose to join HPS and the HRP in the first year of HPS implementation.

### ***Analysis of Hong Kong IHIP market claims experience***

12. The HKFI claims database was analysed to consider the distribution of claims and claim costs per person across the entire dataset. The top 2% of claimants were considered the “high risk claimants”. This is broadly consistent with the 2% of policyholders across the projection period who are assumed to be eligible for the High Risk Pool (3% in the short term and 0.5% in the long term).

13. The claim rate of claimants in the top 2% was 5.8 times the claim rate of the bottom 80%. The claim cost relativity of claimants in the top 2% was 6.6 times the average claim cost for the bottom 80%. This analysis allows for the fact that the benefit limits and caps of the HPS product would limit the upside risk of high cost claims.

### ***Analysis of US market experience***

14. A similar approach was used to analyse US claims data looking at claims cost per person as well. The data was from 1990 and sourced from Yen (1994). Analysis of this data suggests that high cost claimants comprised the top 5% of policyholders and had claims experience of 12 times the average for the whole group.

### ***Experience from the US Pre-existing Condition Insurance Program***

15. Around 135,000 people are covered by the US Pre-existing Condition Insurance Program (PCIP), in addition to roughly 200,000 people covered by state-run high-risk pools which existed prior to the PPACA law. In PCIP’s 2011 annual report (CCIIO, 2012) a comparison between enrollees in a typical federal employee health benefits plan and those enrolled in the Federally-administered PCIP was discussed. The comparison showed that PCIP enrollees had much greater health care needs. Compared to the benchmark plan, PCIP enrollees:

- Had more than 1.5 times as many claims, office visits, emergency room visits, and procedures.
- More than 5 times as many hospital admissions.
- Were about 3.5 times more likely to have claims exceeding \$10,000.

16. Between those highest-cost enrollees in both plans, the differences were even more striking:

- More than 3 times as many emergency room visits
- More than 3.5 times as many claims, office visits, and procedures
- More than 8 times as many hospital admissions
- Almost twice the average cost per claim.

17. The evidence relating to hospital costs suggests high risk claimants have costs of perhaps ten times the average.

18. Translating this experience suggests that these estimates are an ‘upper bound’ for Hong Kong:

- Since 1990, claims costs have become ‘less concentrated’ in the top groups (Berk M.L. & Monheit A.C., 2001). So the 12x estimated for the US market in 1990 may now be lower.
- The care being financed through the US schemes and the PCIP is only partly relevant to Hong Kong’s HRP. PCIP has no waiting period for coverage of pre-existing conditions, and people entering the US PCIP had a ‘backlog’ of treatment needs which had built up prior to entering the PCIP because there was no public health system to fall back on. This would have significantly increased the PCIP’s relative claims cost.

19. The role of Hong Kong’s private hospitals is narrower than US private hospitals, and it is reasonable to expect the highest cost and emergency hospitalisations to continue to fall on Hong Kong’s public hospital system – whereas the US PHI system funds all types of care.

### **The role of the HRP in the long term**

20. The number of people with health conditions who are covered by insurance will continue to grow as Hong Kong’s population ages. Initially, many will be covered through the High Risk Pool, as a result of guaranteed acceptance at all ages in the first year of operation. Gradually, HRP membership will decline, and the proportion of people with health conditions in the regular insurance market will grow. The new entrants who joined HPS

Standard plans early to take advantage of guaranteed acceptance (aged 40 or below) will gradually age and develop health conditions.

21. By this time the HRP will have been in operation for some time and will have collected substantial data on the drivers of claims costs for these individuals. Sharing this improved data across the industry will allow insurers to more accurately predict future claims costs and thus appropriately price standard products for this longer term risk as well as manage costs more effectively.

### **Administration costs**

22. Administration costs relate to the expenses required to operate the HRP, including claims management and an allowance to insurers for administration and acquisition costs. It does not include care coordination costs, which are included already within claims costs. There are several reasons why the cost of operating the HRP is significantly lower than expense/profit loading currently charged by insurers in the individual market (43% of premiums as at 2011):

- The HRP is not profit-making.
- The financial risk is borne by Government who, unlike private insurers managing similar portfolios, will not maintain risk margins to cover the risk of higher than expected costs.
- Cost of sale will reduce significantly as the HPS Standard plan is the only product option for high risk individuals and the fee for sale will be set by Government.
- Claims management is proposed to be outsourced to a single claims manager and the tender process for such a large single pool of claimants should yield some efficiencies.

23. Administration costs are assumed to be 12.5% of claims cost (11% of total HRP cost to operate) based on a review of international benchmarks and comparable Hong Kong experience.

**Table 2: Local and international benchmarking of administration costs for the HRP**

<b>Scheme</b>	<b>Administration cost (% of claims)</b>	<b>Comments</b>
<b>US PCIP</b>	<b>9%</b>	Significantly larger than HRP (100,000 members) and administered by GEHA, which insures more than 1 million lives.
<b>US Medicaid</b>	<b>6%-7%</b>	Government scheme covering low income earners, so members are relatively higher risk. Medicaid is much larger (50 million members) and as a Government manager, makes no profit. Hence, expect HRP costs to be higher.
<b>US HMO's</b>	<b>8%-12%</b>	Comparable use of 'in network' doctors, but operating in a very competitive market.
<b>Hong Kong Group PHI Market</b>	<b>23%</b>	Expect HRP to be lower as this figure includes underwriting costs and commissions.
<b>Hong Kong Network Provider</b>	<b>8%-10%</b>	Estimate of third party administration cost across both outpatient and inpatient claims.

**Indicative impact of the Guaranteed Acceptance age on the cost to Government of the High Risk Pool**

24. Rules around guaranteed acceptance age directly impact cost estimates of the HRP. A higher guaranteed acceptance age would increase the number of people entering the HRP at older ages, likely with significant health conditions. In contrast, under a lower guaranteed acceptance age scenario some of these very high risk individuals would have purchased cover younger and healthier and never entered the HRP (that is, they would be covered by their insurer and possibly pay a premium loading less than 2x the standard premium). An indicative estimate of the impact of changing the guaranteed acceptance age is shown below.

**Table 3 Indicative impact of the Guaranteed Acceptance age on the cost to Government of the High Risk Pool**

<b>Guaranteed Acceptance age</b>	<b>40</b>	<b>45</b>	<b>50</b>	<b>55</b>	<b>60</b>	<b>65</b>
<b>Cost of the HRP to Government</b>	\$4.3 bn	\$4.6 bn	\$5.3 bn	\$6.4 bn	\$8.0 bn	\$11.9 bn

25. A lower guaranteed acceptance age limit has the advantage of encouraging more people to enroll in HPS when they are young and healthy. At a young age, a policyholder is more likely to be healthy and thus may be able to lock in an underwriting risk class which attracts a lower premium. The policyholder can maintain the same underwriting risk class without re-underwriting even when he develops health conditions at a later age. In comparison, with a higher guaranteed acceptance age limit, a policyholder is likely to enroll in HPS at an older age when he may have already developed health conditions. The policyholder would then need to pay a higher premium than he would otherwise have to pay if he enrolls in HPS earlier.

26. For those who choose to subscribe to HPS after the guaranteed acceptance age limit (40), they can still enjoy all the benefits of HPS Standard Plan except for guaranteed acceptance (their applications may be declined by insurers) and premium loading cap. This will be the same as the current market situation where insurers can decide whether to accept a health insurance application as well as its premium loading.

## Likely Health Conditions of High Risk Pool Members

The 2009 THS asked a number of questions related to health condition status including:

- Have you been previously diagnosed with any specified health conditions?
- How many times has each person been admitted to hospital over the previous 12 months?

2. People who identified themselves as having been previously diagnosed with cancer had the highest average number of hospital admissions. This was 16 times higher than for a person who identified themselves as having no health conditions.

3. The health conditions associated with the highest average number of hospital admissions are shown in **Table 4**. This can be used to give an idea of what health conditions might be common for people in the High Risk Pool. The average numbers of hospital admissions shown are age-standardised and cover all HK hospitals.

**Table 4 Top 10 health conditions ranked by average number of hospital admissions per person with that health condition**

Health Condition	Relativity to people with no health conditions - by hospital admissions	Number of insured people with indicated health condition	Number of uninsured people with indicated health condition
Cancer	16.3	10,362	53,007
Diseases of the Nervous System	12.9	1,345	16,653
Complications of Previous Injury	12.5	0	10,503
Heart Diseases	11.4	14,389	121,539
Kidney or Reproductive System Disease	11.2	8,820	46,272

<b>Health Condition</b>	<b>Relativity to people with no health conditions - by hospital admissions</b>	<b>Number of insured people with indicated health condition</b>	<b>Number of uninsured people with indicated health condition</b>
<b>Stroke</b>	10.9	462	37,293
<b>Liver Disease</b>	6.5	15,503	35,783
<b>Mental Disorder</b>	6.3	6,858	72,381
<b>Respiratory Diseases</b>	6.2	11,082	44,610
<b>Stomach &amp; Intestinal Disease</b>	5.9	15,159	72,823
<i>Sub total</i>		<b>83,978</b>	<b>510,864</b>
<b>Any Health Condition</b>	<b>4.2</b>	<b>376,782</b>	<b>1,448,714</b>
<b>No Reported Health Conditions</b>	<b>1.0</b>	<b>1,428,427</b>	<b>3,384,007</b>

*Source: THS 2009*

4. Most people previously diagnosed with cancer will join the High Risk Pool if they join the HPS. This is because of their high average number of hospital admissions and the high cost of treatment. The exception will be those who currently have cancer excluded as a pre-existing condition, migrate to HPS and elect to keep this exclusion. This group is expected to be small as cancer treatments are not common under current insurance policies and so exclusions for cancer should be rare.

5. For the top six health conditions listed, a high proportion of the population are not currently covered by PHI. This represents a group of people who would benefit from the protection offered by the HRP, subject to affordability constraints. Most health conditions in the table above are likely to be prevalent in the HRP.