Annex 1

TO THE COMMISSION STAFF WORKING DOCUMENT

Report on the impact assessment on Information to patients

Summary of public consultation responses

1) The first formal public consultation was conducted between 19 April and June 2007 on a Draft report on current practices with regard to the provision of information to patients on medicinal products, summarising the current state of play without presenting yet any political orientations or proposals.

2) The second public consultation, conducted between 5 February and 7 April 2008, specifically addressed the key ideas of the forthcoming legal proposal on information to patients. Contributions were asked from all stakeholders and interested parties dealing with medicines or with provision of information on medicinal products to citizen. This covered for example information providers, healthcare providers and regulatory authorities. All citizens, civil societies and organisations were also welcomed to contribute to the consultation.

1. Summary of consultation responses on a Draft report on current practices with regard to the provision of information to patients on medicinal products

In total, we were provided with 73 responses. The breakdown of these responses by type of respondent is shown in shown in the Table 1 below.

Table 1: Breakdown of responses

Category	Number of responses
Patients organisations	14
Consumer and citizen organisations	4
Pharmaceutical industry organisations and companies	18
Healthcare professional organisations	16
Regulators	9
Individual citizens	3
Social insurance organisations	22
Media and others	7
Total	**73**

Patients Organisations

Views from patient organisations varied. Many of these responses were broadly supportive of the draft report, although a few were critical. All respondents in this category appeared to be in favour of improving information provision to patients, and nearly all of those that commented on the issue were opposed to direct-to-consumer advertising. An exception was a contribution recommending that direct-to-consumer advertising should be allowed, albeit with a good validation mechanism.

Patient organisations were generally supportive of allowing the pharmaceutical industry a greater role in the provision of information with reasons given including that industry has the best knowledge of its products. However, there were a few respondents who were opposed.

While responses generally recognised the Internet to be an important channel of communication, several highlighted the fact that not everyone has Internet access and that other channels of communication should be considered as well.

Most responses which commented on the issue saw some sort of role for the Commission in improving information provision, although there was no consensus as to whether or not new EU legislation was necessary. Other points made included the importance of health literacy and the potential role that patient organisations could play in providing information.

Consumer and Citizen Organisations

Responses were received from two consumer organisations and two citizen organisations.

All the responses were in favour of improving information provision to patients, and all those who commented on the issue were opposed to direct-to-consumer advertising. In general, consumer organisations did not support the views in the draft report whereas the citizen organisations were neutral or supportive.

The two consumer organisations expressed opposition to the pharmaceutical industry as a source of patient information. In contrast, one of the citizen organisations argued that pharmaceutical companies should be given greater freedom to provide information on the grounds that they have the best knowledge of their products.

In general, responses were cautious about relying on the Internet as the only channel for providing information to patients. One citizen organisation sent the results of a survey of 114 civic organisations from 24 countries which gathered their views on the provision of medicines information to patients.

Pharmaceutical Industry Organisations and Companies

Responses were received from both pharmaceutical industry associations and individual pharmaceutical companies. Responses in this category were generally supportive of the draft report, although a few criticised the absence of concrete proposals for an information strategy. The pharmaceutical industry is strongly in favour of improving information provision to consumers, and sees the pharmaceutical industry as a legitimate source of information. Views expressed by respondents in this category included the view that the quality of information was more important than the source, and that the pharmaceutical industry has greater knowledge of the medicines which it produces than anyone else. On the other hand, all of the respondents in this category which mentioned the issue stated that they were against the introduction of direct-to-consumer advertising in the EU.

Many of the responses from the pharmaceutical industry were in favour of self-regulation, with some responses stating that self-regulation has been proven to be effective. However, one company suggested an alternative approach in which information provision would be monitored by an independent panel.

Views were divided on whether there was a clear distinction between information and advertising, with some suggesting the distinction is something which needs to be clarified.

Generally, responses in this category saw a need for new legislation at EU level. For instance, one company believes that legislative proposals are needed to lift current legal barriers to the provision of health information, and one industry association suggests legislative amendments to allow users to access more information through the outer packaging of non-prescription medicines. However, another industry association argued that there was no need to change European legislation on information provision or advertising but to focus on its implementation.

Healthcare Professionals

Responses were received from a range of bodies, including organisations representing doctors, pharmacists, nurses and medical students. Overall, attitudes to the Commission's draft report were mixed, with some responses offering support and others taking a critical stance.

All responses in this category were in favour of improving information provision and (where the issue was mentioned) against relaxing the prohibition on direct-to-consumer advertising.

Several responses expressed opposition to giving the pharmaceutical industry greater freedom to provide information. Others offered qualified support – for instance, provided that strict regulatory controls were in place. Of those responses which mentioned the issue of industry self-regulation, nearly all were opposed. However, one response accepted a role for self-regulation alongside other enforcement mechanisms.

Generally, healthcare professionals did not think that there was a clear distinction between information and advertising. Responses typically supported the use of the Internet, but saw a

need to use other channels of communication as well, given the fact that not everyone has internet access. Views were fairly evenly divided on whether or not there was a need for new EU legislation.

Other points made by responses in this category included the primacy of the interaction between patients and healthcare professionals, and the role of health literacy. One respondent argued that nurses should have the same access to information as physicians and pharmacists.

Regulators

A few responses in this category consisted purely of suggested corrections to some of the factual information in the Commission's draft report. Others offered more substantive comments on the policy issues raised by the consultation. Among those respondents who addressed the substantive policy issues, there were mixed reactions to the Commission's draft report, ranging from supportive to critical.

There was general agreement that information provision to patients should be improved, while retaining the current prohibition on direct-to-consumer advertising. However, regulators in different Member States had widely differing views on how best to improve information provision. On the one hand, several responses supported greater information provision by the pharmaceutical industry, with one contribution going further and expressing support for industry self-regulation in the case of non-statutory information. On the other hand, some other regulators were opposed to a greater role for industry in providing information to patients.

Generally responses in this category did not comment on whether new EU legislation is needed, although one respondent took the view that no legislative change was necessary.

A Member State stated that it could not accept any form of prior control of information material by national authorities as this would be considered censorship and thereby a constitutional infringement.

Individual Citizens

There were three responses in this category. Two of the respondents are critical of the draft report and argue against considering the pharmaceutical industry as a source of patient information. The third respondent focuses on the pharmaceutical industry as a source of information to doctors rather than patients.

One of responses argues that the draft report is out of line with the position adopted by the European Parliament in 2003 during the revision of European legislation on medicines.

The one the response which commented on the issue was cautious about relying on the Internet to provide information.

Social Insurance Organisations

Only two responses were received in this category, one from a national organisation and another from a European organisation representing 32 organisations in 13 different Member States. One response is very critical of the Commission's draft report, claiming that the draft report is of poor quality, lacks transparency, lacks accessibility and is not unbiased, neutral nor balanced. It argues that the draft report overemphasises the benefits of more information and fails to fulfil the obligation in Article 88a of Directive 2004/27/EC to examine the risks of information. The same respondent is strongly in favour of retaining a strict ban on direct-to-consumer advertising, and does not see any need to change current EU legislation. Instead, it recommends that the Commission should:

- Improve awareness and access to existing sources of high-quality, evidence-based and patient-centred information.
- Set up a network of competent authorities in Member States to exchange good practices and existing information.
- Undertake a feasibility study for setting up a national or European label for good quality information.

The other response in this category criticises the draft report for discussing the provision of health information in general, rather than focusing on the specific question of information on medicines. It also argues that information provided by the pharmaceutical industry is by definition promotional in nature.

Media and Others

This category contained a mix of respondents, comprising five organisations dedicated to the dissemination of health information and two organisations representing magazine publishers.

Responses in this category varied in their attitude on the draft report, with some offering qualified support and others voicing criticism. All responses were supportive of improving information provision to consumers. At the same time, nearly all of the respondents which commented on the issue of direct-to-consumer advertising were opposed to any relaxation of the current ban.

Several of the responses in this category were in favour of the pharmaceutical industry acting as a source of information, with some going further and voicing support for industry self-regulation. Those responses in this category which commented on the issue did not see a clear distinction between advertising and information. The responses from the two organisations representing magazine publishers emphasise the benefits of print media as a channel for communicating information to patients, and argue against relying exclusively on the Internet.

2. Summary of consultation responses on the key ideas for a legal proposal

The second consultation was conducted between 5 February and 7 April 2008. With this public consultation, the Directorate General Enterprise and Industry intended to consult all stakeholders and interested parties on the key ideas for a forthcoming draft legal proposal by the Commission.

We were provided with 185 responses and in addition, we received 8 supportive comments. Total, we were provided with 193 contributions.

The breakdown of the responses by type of respondent is shown in the Table 2.

Table 2: Breakdown of responses

Category	Responses	
	n	%
Healthcare professionals and organisations	59	32
Patient organisations	36	20
Regulators	30	16
Pharmaceutical industry organisations and companies	28	15
Consumer organisations	9	5
Research and others	9	5
Media and patient information organisations	8	4
Social insurance organisations	6	3
Total	**185**	**100**

About a third (32%) of the responses came from healthcare professionals and about a fifth (20%) came from patient organisations. The category "Research and others" covers, for example, responses from research organisations and citizens.

Individual responses varied from short emails or letters to more in-depth papers.

General overview of the responses

There was an overall consensus that there is a need to provide citizens of EU Member States with understandable, objective, high-quality and non-promotional information about the benefits and the risks of their prescription-only medicines. The great majority of the respondents had a view that the ban on direct-to-consumer advertising of prescription-only medicines should be maintained, making sure that there is a clear distinction between advertising and non-promotional information. However, it was agreed that such a distinction is not easy to establish.

The respondents agreed that unnecessary bureaucracy should be avoided, in line with the principles of Better Regulation. It was also acknowledged in general, that there is a need to harmonize the existing situation in Member States in the provision of patient information of prescription-only medicines.

Many of the respondents focused on patient information in general, not only about prescription-only medicines, which was the focus of the public consultation. The problems related in the current situation of patient information were discussed in many responses. Considering information about prescription-only medicines, the two most highlighted issues

were the role of pharmaceutical companies as information providers and the role of TV and radio in disseminating the information.

Information provision

One of the key ideas would be to clarify the rules on information provided by pharmaceutical companies on prescription-only medicines. The respondents had mixed views on this issue (Table 3).

Almost half (47%) of the respondents had a view that pharmaceutical industry is not an appropriate source of prescription-only medicine information in general, mainly because there may be a conflict of interest relating to the financial interests. The payers (social institute organisations) and healthcare professionals were mostly suspicious, while responses from media and patient information organisations and pharmaceutical industry mostly supported pharmaceutical companies as information providers. Some (14%) of the contributors had a view that if there would be a clear distinction between advertising and information, pharmaceutical companies would be a valuable source of prescription-only medicine information, because they know the product.

However, while the majority of the respondents did not accept pharmaceutical companies as information providers in general, they did agree that the companies could be allowed to disseminate information that is approved by authorities (e.g. summaries of product characteristics and patient information leaflets).

Table 3: Overview of the respondents' comments regarding pharmaceutical industry as an information provider about prescription-only medicines.

Category	Pharmaceutical industry as a provider of prescription-only medicine information			
	Yes (%)	No (%)	Mixed (%)	No comment (%)
Healthcare professionals and organisations	7	70	15	8
Patient organisations	25	47	11	17
Consumer organisations	0	56	44	0
Pharmaceutical industry organisations and companies	96	0	0	4
Regulators	10	50	27	13
Media and patient information organisations	63	12	12	13
Social insurance organisations	0	100	0	0
Research and others	22	22	0	56
Total	**27**	**47**	**14**	**12**

*"**Yes**" refers to opinions that highlighted the role of a pharmaceutical company as an information provider, because, for example, nobody knows the product better than its producer*

*"**No**" refers to opinions that declined the role of a pharmaceutical company as an information provider, because, for example, the information that comes from the producer can not be neutral*

***Mixed**" refers to responses that accused that there is a lack of a coherent distinction between advertising and information*

*"**No comment**" refers to responses that did not take out this issue*

"Push" and "pull" information

In the public consultation document, there was a distinction between the cases where the patient was passively receiving the information ("push") or actively searching for the information ("pull"). This came particularly out in an issue to disseminate information on prescription-only medicines through different channels.

TV and radio

Among the responses, only six per cent supported TV and radio as means of disseminating information about prescription-only medicines and 35% did not (Table 4). Inside the categories, a majority of the contributors – including pharmaceutical industry – did not support TV and radio as channels to disseminate information by the pharmaceutical companies. According to their opinions, TV and radio would not be suitable channels because of the nature of the media. Information that passively comes to the patient, for example by TV and radio, would not be beneficial for the individual patient. Consumer and patient organisations highlighted the difficulties to make a distinction between advertising and information and the possibility to misuse TV and radio in information provision.

Respondents from media and patient information organisations supported TV and radio as useful tools to disseminate the information. However, about half (53%) of the respondents did not give their comment on this issue.

Table 4. Overview of the respondents' comments regarding TV and radio as tools to disseminate information about prescription-only medicines.

Category	TV and radio as tools to disseminate information about prescription-only medicines			
	Yes (%)	No (%)	Mixed (%)	No comment (%)
Healthcare professionals and organisations	3	36	2	59
Patient organisations	6	36	6	52
Consumer organisations	0	44	56	0
Pharmaceutical industry organisations and companies	19	50	0	31
Regulators	0	23	24	53
Media and patient information organisations	25	0	12	63
Social insurance organisations	0	67	0	33
Research and others	11	22	0	67
Total	**6**	**35**	**6**	**53**

*"**Yes**" refers to comments that consider TV and radio as a valuable tool in information provision of prescription-only medicines*

*"**No**" refers to comments that TV and radio would not be suitable*

*"**Mixed**" refers to comments that highlighted the advantages of he media but also disadvantages considering their nature*

*"**No comment**" refers to contributions that did not take out this issue*

Printed media and the Internet

In some responses, the printed media as a channel of disseminating information was compared to TV and radio. They can be misused, but also be a valuable source for patients who have no possibilities to use the Internet.

According to the responses, the role of the Internet will increase. Internet offers many advantages from the perspective of availability, reach and price.

It was highlighted that patients in the EU should have the possibility to get good quality information about the treatment, including medicines, also by the Internet. As well, industry should be allowed to provide information on prescription-only medicines to patients who actively seek it. According to the responses, this could mean that information about a specific medicine should be available on the company website in a format that can be downloaded and this should be monitored by relevant authorities. However, especially patient organisations highlighted that it should be ensured that there would not be unnecessary restrictions on people accessing information on the Internet.

Content of the information

It was agreed that pharmaceutical companies should be allowed to publish summaries of product characteristics (SPCs) and patient information leaflets (PILs) for example on their websites. Considering disseminating of other limited medicine-related information, many respondents especially among healthcare professionals and regulators had a view that this information from the industry could be focused on new medicinal products since stronger economic interests exist in these. Information about ongoing studies shall by no means be communicated to the public, as they are likely to create massive uncertainty in patients. Also a further clarification with regards to the content of other-medicine related information, including scientific studies, was applied.

Responses from media and patient information organisations mostly highlighted that information to patients should be able to go beyond the key elements specified in the regulatory documents, as long as this reflects a clear clinical consensus. They questioned the benefit of producing further information if it cannot present anything different than that already contained within PILs.

Pharmaceutical companies proposed the following categorization of the non-promotional information:

1) "Pro-active information" ("Push"), which is provided unsolicited to the public, should be limited to general information on diseases, e.g. covering awareness, prevention etc. but not mentioning specific medicines.
2) "Reference information" on diseases and medicines ("Pull"), which is sought by patients and citizens as in a library, e.g. through the Internet.
3) "Reactive Information" on medicines, which is supplied in response to spontaneous enquiries received from patients and citizens.
4) "Support information", which is supplied with or subsequent to a prescription for a specific medicine, e.g. to support concordance with the prescribed medicine.

Views considering the comparisons between products were mixed. On the one hand, pharmaceutical industry should not be allowed to provide information that compares different products, but on the other hand, comparisons could be very useful for patients and help them to take more responsibility of their health care.

Quality criteria

There was a consensus that criteria for ensuring a good quality of the information are needed. All the information provided to patients, not depending on the provider of the information, should fulfil the criteria.

Some additions to the criteria were proposed. Many responses highlighted that the criteria "unbiased" should be included. Consumer and patient organisations presented that the one of the most important criteria is that the information should be patient friendly. The criteria “understandable – can people find and understand the information they need” was proposed by healthcare professionals. As well, there should be a very clear reference to the source of the information.

Monitoring mechanism

It was suspected by regulators that the proposed mechanism for monitoring would create an amount of a new regulatory work. The system with co-regulatory mechanism can be costly and lead to different codes of conduct in the different Member States. As well, the significance of the competent authorities in monitoring was highlighted. Nevertheless, Member States should be free to decide what form, composition and executive powers the co-regulatory body – or any type of body – would have.

One of the most important tasks of the EU Advisory Committee could be to provide a model code of conduct using the quality criteria, upon which national models could be based. This came out mainly by consumer and patient organisations.

The EU Advisory Committee should be composed of key stakeholders, including in particular the representatives of the target users themselves – patients. However, especially according to responses by pharmaceutical industry, the proposed model could potentially lead to a "patchwork" of very different interpretations and implementations in national laws.

Other issues

It was agreed by the majority of the responses that healthcare professionals are and should be the first source of information to patients. Dialogue between health professionals and patients remain the central point. However, information about environmental issues considering medicinal products should also be available for patients.

Examples about ongoing public private partnerships in patient information were provided. Public private partnerships – were for example authorities and pharmaceutical industry are included – have been created for example in Sweden and in United Kingdom. It was also suggested that other medicine-related information that could supplement the information by SPCs could be provided by public private partnerships where the overseeing bodies may define acceptable additional sources of evidence.

Annex 2

TO THE COMMISSION STAFF WORKING DOCUMENT

Information to Patients

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SECTION 1: DETAILED COST- BENEFIT CALCULATIONS

A1.1 This annex explains how the cost-benefit figures presented in the impact assessment report were calculated. The following sections cover each of the following in turn:

(a) Cost of information provision;

(b) Health benefits and additional healthcare expenditure;

(c) Costs to regulatory bodies;

(d) Administrative costs;

(e) Overall impact of policy options.

A1.2 For the costs of information provision, the costs to regulatory bodies and administrative costs, we present high and low estimates. By contrast, for impacts on health and healthcare expenditure (and for the overall policy impact) we present pessimistic, medium and optimistic scenarios. This difference in labelling is explained by the fact that the pessimistic, medium and optimistic scenarios all make use of the high estimates of the costs of information provision (as well as the high estimates for the costs to regulatory bodies and for administrative costs). The reason for this is that the most optimistic scenario which can be conceived involves high spending on information provision leading to a positive impact, whereas the most pessimistic scenario which can be conceived involves high spending on information provision leading to a negative impact.

A1.3 Some of the costs are one-off in nature, whereas other costs and benefits are ongoing. In order to assess the overall impact of the policy, we have calculated the net present value of policy impacts over a ten-year period (at the discount rate of 4 per cent recommended in the EC Impact Assessment guidelines).

A1.4 Given that many of the numbers presented in this annex represent the results of interim calculations, in most cases we present the precise figures which were used rather than rounded figures.

Cost of Information Provision

A1.5 Drawing on some of our interviews with pharmaceutical companies, we have assumed that information provision would fall into the following three categories:

(a) Reference information on drugs available to patients who actively seek it, including on websites and in the form of printed leaflets available on request or in appropriate locations (e.g. doctors' surgeries).

(b) Information provided to patients who already have been given a prescription in order to support concordance or compliance with the prescribed regime (e.g. leaflet available from pharmacists alongside prescription drug, telephone helpline).

(c) Information provided to individual patients in response to enquiries.

A1.6 A more difficult question is whether there is any "push" information provision which companies would be able to provide to the general public without breaching the ban on direct-to-consumer advertising. To illustrate the potential impact of push information, we have considered the possibility that, if the above notification procedure were applied to disease awareness campaigns, it would lead to a higher number of such campaigns taking place across a broader range of media.[1]

A1.7 The tables below present the assumptions which we made for incremental industry spending resulting from the policy in each of these areas. These assumptions were informed by input from some pharmaceutical companies.

Disease awareness campaigns

	Low (options 2, 3 and 4)	High (option 2)	High (options 3 and 4)
Number of additional national campaigns across EU per year	81	326	407
Cost per campaign (€)	70,000	1,000,000	1,000,000
Total annual cost in EU (€m)	6	326	407

Note: the number of additional campaigns across the EU was based on estimates for the UK (of 10, 40 and 50 respectively for the three columns) scaled up in line with population.

Reference websites

	Low	High
Set up cost of national company website (€)	22,500	165,000
Maintenance cost of national company website (€)	18,000	135,000
Assumed number of national affiliates	2,500	2,728
Total set-up cost across EU (€m)	56	450
Total annual cost across EU (€m)	45	368

The assumption behind the table is that following the policy change each pharmaceutical company would produce a more enhanced website in each Member State in which it has a national affiliate. Hence, the total set-up and annual costs across the EU (shown in the last two rows of the table) are simply calculated as the assumed set-up and maintenance cost of each website (shown in the first two rows) multiplied by the assumed number of national affiliates (shown in the third row).

The cost of setting up and maintaining a new website can vary and hence this uncertainty is captured by the use of a range. The low and high estimates are based on ranges for monetary and staff time costs estimated by industry interviewees. The same hourly wage rate as for administrative cost modelling was used for monetising of staff time.

[1] In practice, we understand that the proposed policy relates only to information on medicinal products, and hence the proposed notification procedure would not in fact apply to disease awareness campaigns.

Material to support concordance

	Low	High
Annual cost per product per country (€)	120,000	120,000
Number of products for which produced	50	450
Number of markets for which produced	5	5
Total annual cost across EU (€m)	30	270

The total annual cost in the last row is calculated by multiplying the annual cost per product per country, the number of products and the number of markets for which produced. The assumptions were informed by input from pharmaceutical industry. The cost assumption in the first row is based on producing 4 pieces of information material for newly diagnosed patients and 4 pieces for patients on the therapy, at a cost 15,000€ each. Our contact suggested they would produce such material for five key markets. In order to take account of the high degree of uncertainty involved in extrapolating from these figures to total industry spend, a high scenario was constructed in which similar spending occurs for 450 products (corresponding to the number of centrally authorised products) and a low scenario in which such spending is restricted to a smaller set of 50 key drugs.

Answers to patient enquiries

	Low	High
Assumed number of enquiries per company per year	10	40
Cost per answer (€)	350	480
Cost per company per year (€)	3,500	19,200
Total annual cost across EU (€m)	9	52

The third row gives the annual cost of answering patient enquiries per national affiliate of each pharmaceutical company, based on multiplying the assumptions in the previous two rows (i.e. number of enquiries per company per year multiplied by the cost per answer). The last row gives the total annual cost across the EU and is calculated by multiplying the annual cost per national affiliate in the third row by our assumptions on the number of national affiliates (set out in our earlier table on reference websites)

The assumptions for the number of enquiries per year are based on estimates provided by different national affiliates within a pharmaceutical company. The cost of preparing a response to a patient enquiry would of course depend on the complexity of the query and whether the answer needs to be checked with doctors, the legal department etc. Our cost assumptions are based on a low estimate of 7.2 hours per enquiry and a high estimate of 10 hours, again based on responses national affiliates. These time estimates were monetised using the same hourly wage rate as for modelling of administrative costs.

Total cost of information provision (€m)

	Low (options 2, 3 and 4)	High (option 2)	High (options 3 and 4)
One-off costs	56	450	450
Online reference information			
Annual costs			
Disease awareness campaigns	6	326	407
Online reference information	45	368	368
Information to support concordance	30	270	270
Information in response to enquiries	9	52	52
Total annual costs	89	1,017	1,098

A1.8 The table below presents the present value (PV) of these costs over a ten-year period.

Total cost of information provision (€m, PV over 10 years)

	Low (options 2, 3 and 4)	High (option 2)	High (options 3 and 4)
Disease awareness campaigns	46	2,644	3,305
Online reference information	419	3,419	3,419
Information to support concordance	243	2,190	2,190
Information in response to enquiries	71	425	425
Total (without disease awareness campaigns)	**733**	**6,034**	**6,034**
Total (with disease awareness campaigns)	**780**	**8,678**	**9,339**

Health Benefits and Additional Healthcare Expenditure

Introduction

A1.9 As discussed in the impact assessment report, we analysed impacts on human health by considering the following mechanisms whereby information to patients may affect patient behaviour:

(a) *Preventative effect* – information on disease risk factors may lead to patients taking action (e.g. making changes to their diet or lifestyle) which prevents them getting a disease.

(b) *Awareness effect* – information on diseases and their symptoms may lead to patients with diseases becoming aware of their health problem. In turn, this could lead to them receiving treatment which they might not otherwise have received, or being diagnosed and starting treatment earlier than otherwise.

(c) *Anxiety effect* – information on diseases and their symptoms may create unnecessary anxiety among citizens who in fact do not have the diseases they become worried about.

(d) *Interaction effect* – information about diseases and treatment options could allow patients to have a more informed discussion with healthcare professionals (e.g. better sharing of relevant information about their symptoms), potentially leading to improved prescription decisions.

(e) *Prescription distortion effect* – Information about diseases and prescription drugs could lead to citizens asking healthcare professionals to prescribe them specific drugs, even when the prescription is not actually necessary or is not the best treatment for their health problem.

(f) *Compliance effect* – Information about prescription drugs and the diseases they treat could affect the extent of patient compliance (or concordance) with prescriptions. For

instance, compliance might improve if information led to better understanding of prescription instructions or the reasons why compliance was important; or compliance might deteriorate if information made patients more concerned about possible side-effects.

A1.10 Impacts on healthcare expenditure were considered alongside impacts on human health, as any changes in healthcare expenditure would be driven by the same changes in patient behaviour. For example, if a citizen becomes aware that they have a disease due to information provision and receives treatment as a result (the awareness effect), this may lead to a health benefit, but it would also tend to increase healthcare expenditure.

A1.11 The healthcare provider survey provided estimates of the size of these effects, in terms of the number of patients who might respond in different ways. However, survey respondents were given no indication of the potential scale of information provision by industry, and hence little weight can be attached to the absolute level of the response which they estimated. Instead, the survey estimates should be seen as providing an indication of the ***relative size*** of the various effects on patient behaviour. The absolute numbers estimated by healthcare professionals will need to be scaled to ensure consistency with the above assumptions on the scale of information provision by industry.

A1.12 Below, we present in turn:

- The unscaled numbers derived from the survey of healthcare providers, which relate to Option 2 (regulation by medicines regulatory authorities);
- The scaling factors used to adjust the above numbers to ensure consistency with the assumed scale of information provision by industry;
- Other key data and assumptions used in our calculations;
- Our scaled estimates of the impacts arising from each type of patient response under Option 2;
- The overall impact of Option 2 on health outcomes and healthcare expenditure;
- A breakdown of the above impacts by type of information provision;
- Estimates of the impacts of Option 3 (self-regulation) and Option 4 (co-regulation) on health outcomes and healthcare expenditure.

Unscaled data from healthcare provider survey

A1.13 Several of the questions in the survey of healthcare providers asked respondents to indicate a percentage range (from a choice of "virtually none", 1–20 per cent, 21–40 per cent, 41–60 per cent, 61–80 per cent, and 81–100 per cent). For these questions, the medium scenario is based on averaging the mid-points of the ranges specified by respondents. The pessimistic scenario uses the first quarter-point of the range for positive impacts and the third quarter-point for negative impacts, whereas the optimistic scenario is based on the reverse.

Unscaled estimates of preventative effect under Option 2

	Pessimistic	Medium	Optimistic
Percentage of patient diseases/conditions which could be prevented or substantially alleviated by a lifestyle or dietary change	30.8	35.5	40.3
Percentage of the above people who would actually make the necessary lifestyle or dietary change as a result of this new policy initiative	16.8	20.4	23.9
Percentage of diseases which might be prevented by policy	5.2	7.2	9.6

Unscaled estimates of awareness effect under Option 2

	Pessimistic	Medium	Optimistic
Percentage of cases in which health outcomes for patients would have been significantly better if the patient had contacted a healthcare provider earlier (e.g. as a result of knowing more about the symptoms)	25.4	29.8	34.3
Percentage of the above cases in which patients would actually have contacted healthcare services sooner as a result of this new policy initiative	12.5	16.7	20.8
Percentage of diseases for which health outcomes may significantly improve as a result of the policy, due to earlier diagnosis	3.2	5.0	7.1

Unscaled estimates of anxiety effect under Option 2

	Pessimistic	Medium	Optimistic
Percentage of consultations with healthcare professionals thought to arise as a result of patients being anxious about diseases which in fact they do not have	23.3	18.5	13.8
Percentage change in number of instances in which patients request consultations with healthcare professionals because they are anxious about diseases which in fact they do not have	30.0	12.0	0.0

Note: the last row of the table was constructed as follows: the pessimistic scenario represents the highest estimate made by any of the respondents (albeit with a number of respondents estimating a similar figure of 25 per cent); the medium scenario is based on the mean of all of the estimates; and the optimistic scenario is based on a low estimate of zero which was given by a significant number of respondents.

Unscaled estimates of interaction effect under Option 2

	Pessimistic	Medium	Optimistic
Percentage of cases in which prescription decisions would have been improved significantly if the patient had shared additional relevant information with their doctor	18.3	23.0	27.8
Percentage of the above cases in which patients would actually have shared the additional relevant information with their doctor as a result of this new policy initiative	12.7	16.0	19.2
Percentage of prescriptions which would be improved significantly as a result of the policy, through patient sharing of information	2.3	3.7	5.3

Unscaled estimates of prescription distortion effect under Option 2

	Pessimistic	Medium	Optimistic
Existing prescription distortions			
Percentage of patients who request particular drugs during consultations with healthcare professionals	27.3	22.5	17.8
Where such a request is made, percentage of cases in which the medicine requested is actually prescribed	40.6	35.8	31.1
Where such requests are granted, percentage of cases where this is probably sub-optimal in terms of the anticipated health outcome	22.2	19.0	15.8
Percentage of cases in which prescription decisions are currently distorted by patient requests	2.5	1.5	0.9
Impact of new policy initiative			
Percentage change in the number of prescriptions distorted by patient requests	40.0	19.0	0.0

Note: because the prescription distortion effect is a negative impact, the highest estimate is used for the pessimistic scenario and the lowest estimates for the optimistic scenario.

Unscaled estimates of compliance effect under Option 2

	Pessimistic	Medium	Optimistic
Existing compliance problems			
Percentage of patients who are prescribed drugs who do not receive the full benefit because they do not satisfactorily comply with their prescriptions	27.0	31.8	36.5
Impact of new policy initiative			
Percentage change in number of instances in which patients satisfactorily comply with their prescriptions	0.0	13.0	50.0

Note: the last row of the table was constructed as follows: the pessimistic scenario is based on a low estimate of zero which was given by a significant number of respondents; the medium scenario is based on the mean of all of the estimates; and the optimistic scenario is based on the average of the highest three estimates.

A1.14 The calculations later in this annex suggest that improved compliance may be the biggest single impact of the policy. Confirmation that information provision can improve

compliance is provided by Hawe and Higgins (1990), who evaluated an in-hospital program of medication education aimed at improving compliance among the elderly.[2] The program provided patients with both oral information (an hour group education session followed by approximately 15 minutes of pre-discharge individual counselling) and written information (an information leaflet). The percentage of patients who were broadly compliant with essential drugs was around 21 per cent higher in the group of patients receiving the program than in a control group, although this difference was not large enough to be statistically significant at the 5 per cent level.[3] For a sub-group of patients taking four or more drugs, the increase in patients who were compliant with essential drugs was 51 per cent, which passed the test for statistical significance.[4]

Key assumptions

A1.15 Estimates derived from the survey for the percentage of patients who respond to information in various ways need to be multiplied by the total number of patients in order to estimate the absolute size of the impact. In addition, the survey questions on the anxiety effect were phrased in terms of the GP consultations, and hence a figure is needed for the total number of GP consultations in the EU. Estimated values for these inputs are set out in the table below.[5]

Incidence of diseases and GP consultations

	Estimated value in millions
Incidence of disease in EU	65
Number of GP consultations in EU	1,989

Note: the incidence of a disease is the number of new cases in the population under consideration in a specified time period (in this case, a year). The incidence of disease was estimated using a WHO projected DALY figure for 2015 (taken as a proxy for the average in the 10 year period over which policy impacts were estimated) and an incidence to DALY ratio estimated across all those diseases for which both types of data were provided by the WHO in its detailed 2002 burden of disease figures (with the exception of a minor illness with a very high incidence to DALY ratio which would have distorted the calculations). The number of GP consultations was estimated by multiplying the population of the EU by a figure of 4 consultations per year per person, based on data for some Member States presented in http://ec.europa.eu/health/ph_information/dissemination/echi/echi_23_en.pdf.

A1.16 Not all diseases, however, will be treated with pharmaceutical drugs. For instance, some diseases can be treated with non-drug treatments (e.g. surgery, radiotherapy). We were unable to obtain any data on the proportion of diseases which are treated with drugs. Given that the percentage must lie in the range 0 to 100 per cent, we assumed a mid-point figure of 50 per cent in our calculations.

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2 Hawe, Penelope and Higgins, Gwen, "Can medication education improve the drug compliance of the elderly? Evaluation of an in hospital program", *Patient Education and Counselling*, 16 (1990) 151-160

3 The figures quoted in the paper are that the percentage of patients classed as "severely non-compliant with an essential drug" was 26 per cent in the group receiving the program compared with 39 per cent in the control group.

4 The figures quoted in the paper are that the percentage of patients in this sub-group classed as "severely non-compliant with an essential drug" was 55 per cent in the group receiving the program compared with 32 per cent in the control group.

5 For presentational purposes, these are rounded figures rather than the precise values used in the calculations.

A1.17 To quantify and monetise impacts on human health, we employed the concept of Quality-Adjusted Life Years (QALYs), which are widely used for estimating the cost-effectiveness of pharmaceutical drugs and other healthcare treatments. QALYs combine effects on life expectancy and quality of life within a single measure, with 1 QALY being equal to one year of life expectancy in full health.

A1.18 Disability Adjusted Life Years (DALYs) are a similar concept and represent a combined measure of lost years of life and lost quality of life resulting from disease. Our calculations for the preventative effect used data on DALYs from the World Health Organisation. We assumed that the value of a saved DALY is equivalent to the value of the QALY.[6]

A1.19 The table below sets out the assumptions which were used for the average change in QALYs for each instance in which patients respond to information provision. With the exception of unnecessary patient anxiety (discussed below), these figures are derived from the case study on heart disease in annex 6. There is particular uncertainty about the extent to which these figures can be extrapolated and treated as average figures across all diseases, and hence the use of ranges is especially important.

Assumed average change in QALYs for each instance in which patients respond to information provision

	Pessimistic	Medium	Optimistic
Awareness / early diagnosis effect	0.025	0.035	0.050
Unnecessary patient anxiety	-0.008	-0.002	0.000
Interaction effect	0.100	0.170	0.250
Prescription distortion effect	-0.250	-0.170	-0.100
Compliance effect	0.050	0.100	0.150

Note: with the exception of unnecessary patient anxiety, the above assumptions were informed by the heart disease case study

A1.20 The assumed change in QALYs for each case in which unnecessary patient anxiety leads to an additional GP consultation was derived in a bottom-up manner from assumptions on health utilities and the length of time anxious states might last, as shown in the table below. The health utilities attached to anxiety are substantially higher than the health utilities estimated by Saarni et al (2007) for anxiety-related psychiatric disorders – in other words, we are assuming relatively low-level anxiety.[7]

[6] WHO Burden of Disease data, http://www.who.int/healthinfo/bodestimates/en/index.html

[7] Samuli I. Saarni, Jaana Suvisaari, Harri Sintonen, Sami Pirkola, Seppo Koskinen, Arpo Aromaa and Jouko Lönnqvist, "Impact of psychiatric disorders on health-related quality of life: general population survey", British Journal of Psychiatry (2007), 190, 326-332.

Derivation of assumed QALY loss per case of unnecessary patient anxiety

	Pessimistic	Medium	Optimistic
Health utilities while in anxious state	0.90	0.95	0.98
Average number of weeks that anxious state lasts	4	2	1
Implied loss of QALYs per anxious person	0.008	0.002	0.000

*Note: The implied loss of QALYs per anxious person is calculated as the difference between the health utility assumed for anxiety and a health utility of 1 (representing full health), multiplied by the proportion of a year for which the anxious state lasts. To illustrate, the calculation for the pessimistic scenario was (1 – 0.9) * 4 /52 = 0.008*

A1.21 To convert changes in the number of QALYs into a monetary cost or benefit, an assumption is required for the monetary value of a QALY.

A1.22 Unfortunately, at the time of writing there is no agreement on the value of a QALY, especially at the EU27 level. EU funded research is currently been carried out at the University of Newcastle but the project has only recently begun (March 2007) and the final results are not expected earlier than 2010.

A1.23 However, there is some useful evidence on the value of a QALY from the UK. In a recently completed study Mason et al (2006) have estimated that the societal value of a QALY for the UK lies in the region of £45,000 to £63,000.[8] In assessing the cost-effectiveness of pharmaceutical drugs, the UK National Institute for Health and Clinical Excellence (NICE) uses a somewhat lower value for a QALY of £30,000.

A1.24 The table below shows the assumptions we have used for the monetary value of a QALY, based on the three figures given above, but converted into euros and rounded.

Assumed value of a QALY

	Pessimistic	Medium	Optimistic
Assumed value of a QALY (€)	40,000	60,000	80,000

A1.25 The assumptions used to estimate the impact of changes in patient behaviour on healthcare expenditure are shown below.

[8] Helen Mason, Andrew Marshall, Michael Jones-Lee and Cam Donaldson, "Estimating a monetary value of a QALY from existing UK values of prevented fatalities and serious injuries", Department of Public Health and Epidemiology, University of Birmingham, 2006

Assumed healthcare expenditure per change in QALY (€)

	Pessimistic	Medium	Optimistic
Preventative effect	0	0	0
Awareness / early diagnosis effect	40,000	30,000	20,000
Interaction effect	40,000	30,000	20,000
Prescription distortion effect	0	0	0
Compliance effect	0	0	0

A1.26 The reasoning behind each row of the table is discussed in the following paragraphs.

A1.27 The preventative effect could actually lead to savings in healthcare expenditure, which would imply the use of negative assumptions in this row. At the same time, however, there may be costs associated with lifestyle and dietary changes required to avoid disease (e.g. reduced utility as a result of not eating certain foods which a person previously enjoyed).[9] We have factored in this offsetting cost by assuming a zero net effect in this row.[10]

A1.28 The cost per QALY from treating disease with pharmaceutical drugs varies considerably from one drug to another. Hence, our scenarios consider a plausible range of possibilities for what the average might be.

A1.29 The interaction effect relates to the benefits from healthcare professionals identifying a better drug for the individual concerned. Here, the relevant figure is the *incremental* cost per QALY of switching to better treatments. Again, this will vary considerably from one drug to another, and hence our scenarios consider a plausible range of possibilities for what the average might be.

A1.30 The prescription distortion effect relates to an inferior drug being prescribed as a result of patient requests. We have made the assumption that on average the inferior drug will cost the same amount per prescription as the drug the doctor would otherwise have prescribed, thus leading to a zero impact on healthcare expenditure.[11]

A1.31 The compliance effect could have two impacts on healthcare costs. First, it could increase drug costs in the short run as a result of patients needing to fill prescriptions

[9] These costs may not be as insignificant as it might appear at first sight. If people already know how they could prevent illness through lifestyle or dietary change but they choose not to do so, then the concept of revealed preference implies that the costs of such lifestyle or dietary change must outweigh the expected health benefits.

[10] Of course, the offsetting cost is not an impact on healthcare expenditure, and hence this approach will tend to over-estimate the overall impact of the policy on healthcare expenditure (since potential savings are not being factored in). However, as discussed later, we consider it unlikely that the policy will lead to any significant preventative effect, which suggests that any over-estimation resulting from this approach will not be material.

[11] If, in fact, the prescription distortion effect leads to patient requests for more expensive drugs (e.g. branded rather than generic), then there would be an increase in healthcare expenditure through this mechanism.

more frequently. Second, it could reduce healthcare costs in the longer run by improving the clinical effectiveness of treatment (e.g. better compliance with statin therapy could avoid a future heart attack along with the associated costs for healthcare systems). We assume that on average these two effects will balance out. This assumption would appear to be plausible – for instance, it is broadly supported by illustrative modelling presented in a paper by the International Society for Pharmacoeconomics and Outcomes Research (IPSOR).[12]

A1.32 Separately, we used the assumptions shown below for the unit cost of unnecessary GP consultations resulting from the anxiety effect.

Unit cost of unnecessary GP consultations due to anxiety effect

	Pessimistic	Medium	Optimistic
Assumed number of hours that consultation lasts	0.25	0.17	0.17
Average hourly wage rate for GPs across EU (€)	31	31	31
Cost of each extra consultation (€)	7.75	5.16	5.16

Note: the wage rate for GPs was estimated using OECD data for four EU Member States on the ratio of the remuneration of salaried GPs to GDP per capita, Eurostat data on GDP per capita across the EU, and assumptions on working days and hours. The wage rate includes a 25 per cent mark-up for overheads, as using in the Standard Cost Model when estimating administrative costs.

Scaling factors

A1.33 The table below shows the scaling factors which were used to scale the healthcare provider estimates to make them consistent with our assumptions regarding the scale of information provision by the pharmaceutical industry.

Scaling factors to adjust healthcare provider estimates of impacts on patient behaviour

	Pessimistic	Medium	Optimistic
Preventative effect	0	1	2
Awareness effect	20	20	20
Anxiety effect	20	20	20
Interaction effect	20	20	20
Prescription distortion effect	20	20	20
Compliance effect	20	20	20

A1.34 The 20 per cent scaling factor applied to most of the healthcare provider estimates was derived by considering what would be a reasonable relationship between industry spending on information provision and the effect which it has on expenditure on pharmaceutical drugs. Rosenthal et al (2003) estimated that direct-to-consumer

[12] IPSOR Medication Compliance and Persistence Special Interest Group (MCP), Economics of Medication Compliance Working Group, "Methods for Integrating Medication Compliance and Persistence in Pharmacoeconomic Evaluations"

advertising in the US led to an additional $4.20 in sales for every dollar spent on advertising.[13] The ratio of additional spending on prescription drugs to industry spending on information provision is likely to be lower in the EU, since direct-to-consumer advertising will not be permitted. (By contrast, use of the unscaled estimates from the survey of healthcare providers along with key assumptions described earlier would have suggested a significantly *higher* ratio.) Hence, we used Excel solver to find the scaling factor required to bring the ratio of additional spending on prescription drugs to spending on information provision to roughly half the US figure of 4.2.[14]

A1.35 The preventative effect was treated separately, as there are reasons for thinking that the proposed policy would not lead to any significant preventative effect. This is because:

- The proposed policy focuses on information on medicinal products and the diseases which they treat, rather than information on how patients can take preventative action.
- Pharmaceutical companies would appear to have little commercial incentive to spend money telling the public how to prevent disease through changes in diet or lifestyle.
- If pharmaceutical companies do wish to spend money on such information provision, our understanding is that they are free to do so under the current regime (since it does not represent advertising of a prescription drug), and hence it seems unlikely that the policy will lead to any incremental expenditure.

A1.36 In our view, the healthcare provider questionnaire may have misled respondents as to the type of information which the industry would provide, as the above points were not explained.[15]

A1.37 For the purpose of our impact assessment, we have adopted the conservative assumption that the policy would not lead to a preventative effect in the pessimistic scenario, and that there would be a small preventative effect of 1 per cent or 2 per cent of that estimated by healthcare providers in the medium and optimistic scenarios.

Scaled estimates of impacts on health and healthcare expenditure

A1.38 The tables below show the scaled estimates of the impacts on health outcomes and healthcare expenditure for each of the mechanisms of effect.

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[13] Rosenthal, M., Berndt, E., Donohue, J., Epstein, A. and Frank, R. "Demand effects of recent changes in prescription drug promotion", *Kaiser Family Foundation Report*, June 2003.

[14] This solver procedure was carried out using medium scenario estimates for Option 2 and the high estimate for industry spending on information provision. The precise figure found by the solver was 23 per cent, which was then rounded to 20 per cent.

[15] On the other hand, it could be argued that if companies undertake disease awareness campaigns, then regulatory pressure might force them to include information on disease prevention as well as information about the disease itself. Alternatively, companies might provide more information on prevention as part of a broader strategy to develop a company brand-name under the new regime. However, it is unclear how significant these effects would be.

Preventative effect for Option 2

	Pessimistic	Medium	Optimistic
Reduction in DALYs across EU per year	0	42,364	112,860
Annual benefit (€m)	0	2,542	9,029
PV of benefit over 10 years (€m)	**0**	**20,616**	**73,232**
Additional annual treatment cost (€m)	0	0	0
PV of cost over 10 years (€m)	**0**	**0**	**0**
Net benefit from policy over ten years (€m)	0	20,616	73,232

Awareness effect for Option 2

	Pessimistic	Medium	Optimistic
Number of disesases diagnosed earlier each year as a result of the policy	413,094	646,585	928,135
Change in QALYs per year	10,327	22,630	46,407
Annual benefit (€m)	413	1,358	3,713
PV of benefit over 10 years (€m)	3,351	11,013	30,112
Additional annual treatment cost (€m)	413	679	928
PV of cost over 10 years (€m)	3,351	5,507	7,528
Net benefit from policy over ten years (€m)	**0**	**5,507**	**22,584**

Anxiety effect for Option 2

	Pessimistic	Medium	Optimistic
Number of additional consultations resulting from unnecessary anxiety	27,743,690	8,830,250	0
Change in QALYs per year	-221,950	-17,660	0
Annual benefit (€m)	-8,878	-1,060	0
PV of benefit over 10 years (€m)	-72,008	-8,595	0
Additional annual cost of consultations (€m)	1,075	228	0
PV of cost over 10 years (€m)	8,716	1,849	0
Net benefit from policy over ten years (€m)	**-73,752**	**-8,964**	**0**

Interaction effect for Option 2

	Pessimistic	Medium	Optimistic
Number of incident cases treated better	150,496	238,424	346,491
Change in QALYs per year	15,050	40,532	86,623
Annual benefit (€m)	602	2,432	6,930
PV of benefit over 10 years (€m)	4,883	19,725	56,207
Additional annual treatment cost (€m)	602	1,216	1,732
PV of cost over 10 years (€m)	4,883	9,863	14,052
Net benefit from policy over ten years (€m)	**0**	**9,863**	**42,155**

Prescription distortion effect for Option 2

	Pessimistic	Medium	Optimistic
Number of incident cases in which treatment is distorted by policy	63,654	18,894	0
Change in QALYs per year	-15,913	-3,212	0
Annual benefit (€m)	-637	-193	0
PV of benefit over 10 years (€m)	-5,163	-1,563	0
Additional annual treatment cost (€m)	0	0	0
PV of cost over 10 years (€m)	0	0	0
Net benefit from policy over ten years (€m)	**-5,163**	**-1,563**	**0**

Compliance effect for Option 2

	Pessimistic	Medium	Optimistic
Number of incident cases in which health outcomes improve due to better compliance	0	575,966	2,061,079
Change in QALYs per year	0	57,597	309,162
Annual benefit (€m)	0	3,456	24,733
PV of benefit over 10 years (€m)	0	28,030	200,606
Additional annual treatment cost (€m)	0	0	0
PV of cost over 10 years (€m)	0	0	0
Net benefit from policy over ten years (€m)	**0**	**28,030**	**200,606**

Overall impact on health and healthcare expenditure for Option 2

A1.39 The following tables summarise, respectively, the overall impact on health outcomes, the overall effect on healthcare costs, and the net benefit (or cost) when both are taken into account.

Health benefits under Option 2 (€m, PV over ten years)

	Pessimistic	Medium	Optimistic
Preventative effect	0	20,616	73,232
Awareness effect	3,351	11,013	30,112
Anxiety effect	-72,008	-8,595	0
Interaction effect	4,883	19,725	56,207
Prescription distortion effect	-5,163	-1,563	0
Compliance effect	0	28,030	200,606
Overall health impact	**-68,938**	**69,227**	**360,157**

Additional healthcare costs under Option 2 (€m, PV over ten years)

	Pessimistic	Medium	Optimistic
Preventative effect	0	0	0
Awareness effect	3,351	5,507	7,528
Anxiety effect	1,743	370	0
Interaction effect	4,883	9,863	14,052
Prescription distortion effect	0	0	0
Compliance effect	0	0	0
Overall health impact	**9,976**	**15,739**	**21,580**

Health benefits less additional healthcare costs under Option 2 (€m, NPV over ten years)

	Pessimistic	Medium	Optimistic
Preventative effect	0	20,616	73,232
Awareness effect	0	5,507	22,584
Anxiety effect	-73,752	-8,964	0
Interaction effect	0	9,863	42,155
Prescription distortion effect	-5,163	-1,563	0
Compliance effect	0	28,030	200,606
Overall health impact	**-78,914**	**53,488**	**338,577**

Breakdown by category of information provision

A1.40 The table below shows the assumptions made regarding which category of information provision drives each of the different effects on patient behaviour. For example, the first row should be interpreted as meaning that 50 per cent of the estimated preventative effect results from disease awareness campaigns and the other 50 per from reference websites.

A1.41 The assumptions in this table inevitably involve an element of judgment. The assumed values reflect the following considerations:

- The preventative effect arises from information on disease prevention provided to the general public, which could happen either through disease awareness campaigns or reference websites.
- The anxiety and awareness effects arise from the provision of information on diseases to the general public, and hence are likely to be driven primarily by disease awareness campaigns. However, to a lesser extent these effects may also arise from members of the public finding information on reference websites.
- The prescription distortion effect (and possibly the interaction effect as well) arise from the provision of information on medicinal products to people suffering from an illness who may not yet have a prescription. These effects are assumed to be driven by reference websites, since disease awareness campaigns cannot mention specific drugs and material to support concordance and answers to enquires are likely to relate mostly to patients who already have a prescription.
- The compliance effect is likely to arise from material provided to patients who already have a prescription, and hence is attributed to material to support concordance and answers to enquiries. However, it seems likely that more patients will be reached by distributed material to support concordance than through individual enquiries and answers and hence most of the effect is attributed to the former.

Assumptions on which type of information drives each effect

	Percentage of effect driven by			
	Disease awareness campaigns	**Reference websites**	**Material to support concordance**	**Answers to enquiries**
Preventative effect	50	50		
Anxiety effect	80	20		
Awareness effect	80	20		
Interaction effect		100		
Prescription distortion effect		100		
Compliance effect			80	20

A1.42 Applying these assumptions to the estimated impacts arising from each effect on patient behaviour gives the following estimates for the impact of each category of information provision. The breakdown appears intuitive, since it suggests that the greatest risks are attached to push information to the general public, there are smaller risks attached to information on the internet, and there are clear-cut benefits associated with providing information to patients with prescriptions to support concordance.

Breakdown of impacts by category of information provision (NPV of health benefits less healthcare costs over 10 years, €m)

	Pessimistic	Medium	Optimistic
Disease awareness campaigns	-59,001	7,542	54,683
Reference websites	-19,913	17,916	83,288
Material to support concordance	0	22,424	160,485
Answers to enquiries	0	5,606	40,121

A1.43 The table below shows how we have classified the different types of information provision into push information and pull information. However, we would emphasise that the distinction is not always clear-cut. For instance, material to support concordance may be actively distributed to patients who have prescriptions, and hence may involve an element of push. Further, while reference internet sites fall into the pull category (since people can choose whether they visit the site), there are nonetheless ways in which companies can promote their websites to increase the number of visits (e.g. by paying for inclusion in online directories).

Categorisation of type of information provision

Type of information provision	Categorisation (push or pull)
Disease awareness campaigns	Push
Reference websites	Pull
Material to support concordance	Pull
Answers to enquiries	Pull

A1.44 The table below shows the effect of including or excluding push information, under Option 2. The inclusion of push information leads to slightly higher benefits in the medium scenario. However, it also leads to greater uncertainty about the impact of the policy, as shown by the wider range between the pessimistic and optimistic scenarios, with the possibility of a larger negative impact in the pessimistic scenario.

Impact of inclusion or exclusion of push information (NPV of health benefits less healthcare costs over 10 years, €m)

	Pessimistic	Medium	Optimistic
Pull information only	-19,913	45,946	283,894
Pull and push information	-78,914	53,488	338,577

A1.45 Separately, we also compared the benefits and risks of push and pull information by considering the scores given to different channels of communication in survey responses from healthcare providers and medicines regulatory authorities.

A1.46 The table below shows our classification of different channels of communication into push channels and pull channels. Again, however, we would emphasise that the distinction is not always clear-cut.

Categorisation of different media channels

Channel of communication	Classification
Generalist printed media (e.g. books, articles in newspapers, general magazines)	Push
Magazines dealing predominantly with health issues	Push
Unsolicited posting, e-mails or telephone calls	Push
Internet pop-ups	Push
TV programmes with factual content	Push
Short TV slots, not linked to the content of the programme	Push
Radio programmes with factual content	Push
Short radio slots, not linked to the content of programmes	Push
Posters or billboards	Push
Mobile phone text messages	Push
Solicited written communication (e.g. post, e-mails, answers to questions)	Pull
Solicited telephone information (e.g. telephone help lines)	Pull
Internet sites	Pull
Seminars or oral presentations to patients or the general public, organised by the pharmaceutical industry	Pull
Leaflets (other than PILs) freely available e.g. in pharmacies	Pull
DVDs or videos	Either

A1.47 Our survey asked respondents to assess the possible benefits and risks of different channels of communication on a scale of 1 to 5. In relation to benefits, a score of 1 was defined as "no benefits for patients" and a score of 5 as "very high benefits for patients". In relation to risks, a score of 1 was defined as "low risk, requiring minimal monitoring" and a score of 5 as "high risk, requiring extensive monitoring".

A1.48 The table below shows the average scores given by respondents to push and pull media respectively. The figures show that both healthcare providers and regulators viewed push media as giving rise to lower benefits and higher risks than pull media.

Average score given to benefits and risks of "push" and "pull" media

	Healthcare providers		Regulators	
	Benefits	**Risks**	**Benefits**	**Risks**
"Push" media	2.0	4.1	2.2	4.1
"Pull" media	2.5	3.7	2.7	3.6

Note: we considered DVDs or videos could be represent either "push" or "pull" information depending on the context, and hence the scores given to this channel were excluded from the above calculations.

Source: Survey of medicines regulatory authorities and healthcare providers in the EU

Health impacts under Options 3 and 4

A1.49 The following scaling factors were used to adjust impacts on health outcomes and healthcare expenditure under Option 2 so as to obtain estimates for Options 3 and 4.

A1.50 In most cases, these scaling factors are informed by estimates provided by some of the medicines regulatory authorities and payers responding to our surveys. The exception is the scaling factors for the awareness effect, where survey respondents suggested that co-regulation or self-regulation would lead to a lower awareness effect. In our view, this is unlikely since industry would have an incentive to make use of any greater freedom to encourage more (not less) disease awareness and early diagnosis. In the light of this, we used the same scaling factors for the awareness effect as for the anxiety effect, since both are related to the provision of information on diseases.

Scaling factors to adjust impacts for Option 2 to obtain estimates for Options 3 and 4

	Central scaling factors		Sensitivity – low differential		Sensitivity – high differential	
	Option 3	**Option 4**	**Option 3**	**Option 4**	**Option 3**	**Option 4**
Preventative effect	75	90	100	100	50	70
Awareness effect	150	120	100	100	200	150
Anxiety effect	150	120	100	100	200	150
Interaction effect	75	90	100	100	50	70
Prescription distortion effect	150	120	100	100	300	150
Compliance effect	90	90	100	100	70	80

A1.51 The application of the central set of scaling factors generates the following estimates for the impact of Options 2, 3 and 4 on health and healthcare expenditure. In all cases, estimated outcomes are better under Option 2 than under the other two policy options.

Comparison of outcomes under Options 2, 3 and 4
(NPV of health benefits less healthcare costs over 10 years, €m)

	Pessimistic	Medium	Optimistic
Option 2 (medicines regulatory authorities)			
Pull information only	-19,913	45,946	283,894
Pull and push information	-78,914	53,488	338,577
Option 3 (self-regulation)			
Pull information only	-29,870	36,973	246,399
Pull and push information	-118,372	40,554	300,962
Option 4 (co-regulation)			
Pull information only	-23,896	40,675	256,860
Pull and push information	-94,697	46,633	311,495

Note: the table is based on the central scaling factors.

A1.52 The table below shows estimated impacts under Options 3 and 4 for the "low differential" and "high differential" sensitivities.

Sensitivity analysis
(NPV of health benefits less healthcare costs over 10 years, €m)

	Pessimistic	Medium	Optimistic
Option 2 (medicines regulatory authorities)			
Pull information only	-19,913	45,946	283,894
Pull and push information	-78,914	53,488	338,577
Sensitivity - low differential			
Option 3 (self-regulation)			
Pull information only	-19,913	45,946	283,894
Pull and push information	-78,914	53,488	338,577
Option 4 (co-regulation)			
Pull information only	-19,913	45,946	283,894
Pull and push information	-78,914	53,488	338,577
Sensitivity - high differential			
Option 3 (self-regulation)			
Pull information only	-44,989	23,634	188,844
Pull and push information	-162,992	23,255	243,286
Option 4 (co-regulation)			
Pull information only	-29,870	33,161	222,400
Pull and push information	-118,372	36,227	275,132

A1.53 In the "low differential" sensitivity, all three options lead to the same effects on patient behaviour, representing a situation in the choice of regulatory regime does not affect the quantity or type of information which industry provides to patients. By contrast, in the

"high differential" sensitivity the choice of regulatory regime has a substantial impact, with Option 2 yielding better outcomes than the other two policy options.

Cost to Regulatory Bodies

Number of notifications

A1.54 Both the cost of the policy to regulatory bodies and the administrative costs imposed on companies will depend on the number of different information materials which are notified to regulatory bodies. This will partly depend on whether companies:

- Tailor information materials for individual Member States (in which case the materials will need to be notified separately, although not necessarily to the regulator in the Member State where the information is disseminated); or
- Use the same information materials across the EU, albeit translated into different languages (in which case only one notification will be required for each set of materials).

A1.55 The tables below make use of the same assumptions as our earlier figures on the cost of information provision. Additionally, however, they make assumptions concerning the number of Member States covered by each set of information materials in order to derive assumptions for the number of notifications.

Disease awareness campaigns

	Low	High (option 2)	High (option 3 and 4)
Number of national disease awareness campaigns across EU	81	326	407
Assumption concerning number of Member States covered by each disease awareness campaign	8	1	1
Number of notifications required	10	326	407

Note: As noted in the section on the cost of information provision, the low figure of 81 disease awareness campaigns across the EU was calculated by scaling up a figure of 10 disease awareness campaigns for the UK in line with population. Hence, in order to ensure consistency, the assumed number of Member States covered by each disease awareness campaign in the low scenario was selected so as to give a figure of 10 for the number of notifications.

Reference websites

	Low	High
Number of reference websites across EU (assuming one per national affiliate)	2,500	2,728
Assumptions concerning number of Member States covered by same website design	27	1
Number of registrations required	93	2,728

Information to support concordance

	Low	High
Total number of pieces across EU	2,000	18,000
Assumptions concerning number of Member States covered by same design	27	1
Number of notifications required	74	18,000

A1.56 The policy does not require notification for information provided in response to patient requests. Instead, monitoring would be based on responding to complaints. The table below shows the assumptions used for the number of complaint investigations.

Complaint investigations relating to information provided on request

	Low	High
Assumed number of patient enquiries per national affiliate per year	10	40
Number of national affiliates	2,500	2,728
Total number of instances in which information is provided in response to a patient enquiry	25,003	109,104
Assumed percentage leading to complaints	5	5
Number of complaint investigations	1,250	5,455

Other assumptions for costs to regulatory bodies

A1.57 The ongoing costs to regulatory bodies are likely to depend on the scale of information provision. The one-off costs of preparing for the new regime may also depend on the anticipated scale of information provision (e.g. a higher anticipated volume might necessitate more formal systems and larger one-off recruitment and training costs).

A1.58 In order to estimate costs to regulatory bodies we multiplied the volume assumptions presented above by the unit cost assumptions given in the table below (which are per case of information provision dealt with by regulatory bodies). These unit cost assumptions are derived from survey responses by three medicines regulatory authorities who stated the volume assumptions on which their cost estimates were based. Cost estimates from these respondents have been adjusted to be consistent with the average EU wage in the pharmaceutical sector (given that *a priori* it is not possible to say which Member State's regulatory body will be chosen by companies for notification purposes).

Costs to regulatory bodies per case (or anticipated case) of information provision dealt with by regulatory bodies (euros)

	One-off set-up costs	Ongoing costs
Option 2 (direct regulation)	850	860
Option 3 (self-regulation)	80	630
Option 4 (co-regulation)	150	840

Estimated costs to regulatory bodies

A1.59 The tables below present estimates of the one-off and annual running costs of the policy to regulatory bodies in the EU, and the PV of these costs over a 10-year period.

A1.60 The estimates suggest that self-regulation would be less costly to run than either direct regulation by medicine regulatory authorities or co-regulation. However, the absolute size of the costs to regulatory bodies is much smaller than the impacts on health and healthcare expenditure estimated earlier, suggesting that the policy decision should not place too much weight on these costs.

Estimated one-off costs of setting up regulatory regime (€m)

	Low	High
Option 2 (direct regulation)	1.2	22.5
Option 3 (self-regulation)	0.1	2.1
Option 4 (co-regulation)	0.2	4.0

Estimated annual costs of running regulatory regime (€m)

	Low	High
Option 2 (direct regulation)	1.2	22.8
Option 3 (self-regulation)	0.9	16.8
Option 4 (co-regulation)	1.2	22.3

Estimated PV of regulatory costs over 10 years (€m)

	Low	High
Option 2 (direct regulation)	11	207
Option 3 (self-regulation)	7	137
Option 4 (co-regulation)	10	185

A1.61 The table below shows how the estimated PV of costs to regulatory bodies varies depending on whether the policy relates to pull information only or whether it also includes

push information. The relatively small number of additional disease awareness campaigns assumed in our calculations means that the inclusion of push information does not make much difference to these costs.

Effect of inclusion or exclusion of push information on costs to regulatory bodies (€m)

	Low	High
Option 2 (medicines regulatory authorities)		
Pull information only	11.0	204
Pull and push information	11.1	207
Option 3 (self-regulation)		
Pull information only	7.4	135
Pull and push information	7.4	137
Option 4 (co-regulation)		
Pull information only	9.8	182
Pull and push information	9.9	185

Note: to show the small incremental cost to regulatory bodies associated with push information, the low estimates are presented to 1 decimal place.

Administrative Costs

1.2 The policy proposals would create administrative costs for marketing authorisation holders. In particular, pharmaceutical companies would be required to inform the regulatory body before engaging in any "push" information provision, and would have also have to notify the regulatory body of information dissemination through websites or verbal communication. In addition, marketing authorisation holders would presumably need to provide information to the regulatory body to assist with investigations into any complaints which arise from answers they have provided to citizen enquiries.

1.3 The Standard Cost Model (SCM) has been used to calculate estimates of these administrative costs, drawing on views from industry, some publicly available data and the use of assumptions where necessary. Completed versions of the SCM template spreadsheet will be provided to DG Enterprise and Industry, and hence the assumptions used in these calculations are not presented below.

1.4 The table below presents low and high scenarios to represent a range of possible outcomes for administrative costs. The figures represent annual costs (including one-off administrative costs incurred in the first year of the policy), as calculated by the SCM template spreadsheet (full spreadsheets are shown for Option 2 only).

Estimates of annual administrative costs (€m)

	Low	High
Option 2 (direct regulation)	1.1	32.5
Option 3 (self-regulation)	1.0	28.6
Option 4 (co-regulation)	1.1	29.1

A1.62 For the purpose of comparison with other policy costs and benefits, the table below presents the net present value (PV) of administrative costs over the first ten years of the policy.

PV of administrative costs over first 10 years (€m)

	Low	High
Option 2 (direct regulation)	7	216
Option 3 (self-regulation)	6	194
Option 4 (co-regulation)	6	194

A1.63 The administrative costs associated with the policy are estimated to be in the range €6–194m. These cost estimates are of a much smaller order of magnitude than the possible impacts on human health and healthcare expenditure discussed earlier.

A1.64 The table below shows how the estimated PV of administrative costs varies depending on whether the policy relates to pull information only or whether it also includes push information. As with the costs to regulatory bodies, the relatively small number of additional disease awareness campaigns assumed in our calculations means that the inclusion of push information does not make much difference to these costs.

Effect of inclusion or exclusion of push information on administrative costs (€m)

	Low	High
Option 2 (medicines regulatory authorities)		
Pull information only	6.5	214
Pull and push information	6.6	216
Option 3 (self-regulation)		
Pull information only	5.8	191
Pull and push information	5.9	194
Option 4 (co-regulation)		
Pull information only	5.9	192
Pull and push information	6.1	194

Note: to show the small incremental administrative costs associated with push information, the low estimates are presented to 1 decimal place.

Standard Cost Model: Option 2 (direct regulation) – low estimate

Insert here the name and reference of the regulatory act assessed If the act assessed is the transposition of an act adopted at another level, insert here the name and reference of that 'original' act						Tariff (€ per hour)		Time (hour)		Price (per action or equip)	Freq (per year)	Nbr of entities	Total nbr of actions	Total cost
No.	Ass. Art.	Orig. Art.	Type of obligation	Description of required action(s)	Target group	i	e	i	e					
1	1§1		Notification of (specific) activities	Familiarising with the information obligation	Pharmaceutical marketing authorisation holders	48		1.00		48.1	*1.00*	2,500	2,500	120,339
2			Notification of (specific) activities	Training members and employees about the information obligations	Pharmaceutical marketing authorisation holders	48		1.00		48.1	1.00	2,500	2,500	120,339
3			Notification of (specific) activities	Retrieving relevant information from existing data	Pharmaceutical marketing authorisation holders	48		0.50		24.1	0.0336	2,500	84	2,023
4			Notification of (specific) activities	Filling forms and tables	Pharmaceutical marketing authorisation holders	48		1.00		48.1	0.0336	2,500	84	4,046
5			Notification of (specific) activities	Holding meetings	Pharmaceutical marketing authorisation holders	48		2.00		96.3	0.0336	2,500	84	8,093
6			Notification of (specific) activities	Inspecting and checking (including assistance to inspection by public authorities)	Pharmaceutical marketing authorisation holders	48		1.00		48.1	0.0336	2,500	84	4,046
7			Notification of (specific) activities	Copying (reproducing reports, producing labels or leaflets)	Pharmaceutical marketing authorisation holders	48		0.50		24.1	0.0336	2,500	84	2,023
8			Notification of (specific) activities	Submitting the information (sending it to the designated recipient)	Pharmaceutical marketing authorisation holders	48		0.50		24.1	0.0336	2,500	84	2,023
9			Notification of (specific) activities	Filing the information	Pharmaceutical marketing authorisation holders	48		0.50		24.1	0.0336	2,500	84	2,023
10			Registration	Familiarising with the information obligation	Pharmaceutical marketing authorisation holders	48		1.00		48.1	*1.00*	2,500	2,500	120,339
11			Registration	Training members and employees about the information obligations	Pharmaceutical marketing authorisation holders	48		1.00		48.1	1.00	2,500	2,500	120,339
12			Registration	Retrieving relevant information from existing data	Pharmaceutical marketing authorisation holders	48		0.50		24.1	0.0370	2,500	93	2,229
13			Registration	Filling forms and tables	Pharmaceutical marketing authorisation holders	48		1.00		48.1	0.0370	2,500	93	4,457
14			Registration	Holding meetings	Pharmaceutical marketing authorisation holders	48		2.00		96.3	0.0370	2,500	93	8,914
15			Registration	Inspecting and checking (including assistance to inspection by public authorities)	Pharmaceutical marketing authorisation holders	48		1.00		48.1	0.0370	2,500	93	4,457
16			Registration	Copying (reproducing reports, producing labels or leaflets)	Pharmaceutical marketing authorisation holders	48		0.50		24.1	0.0370	2,500	93	2,229
17			Registration	Submitting the information (sending it to the designated recipient)	Pharmaceutical marketing authorisation holders	48		0.50		24.1	0.0370	2,500	93	2,229
18			Registration	Filing the information	Pharmaceutical marketing authorisation holders	48		0.50		24.1	0.0370	2,500	93	2,229
19			Other	Familiarising with the information obligation	Pharmaceutical marketing authorisation holders	48		1.00		48.1	*1.00*	2,500	2,500	120,339
20			Other	Training members and employees about the information obligations	Pharmaceutical marketing authorisation holders	48		1.00		48.1	1.00	2,500	2,500	120,339
21			Other	Retrieving relevant information from existing data	Pharmaceutical marketing authorisation holders	48		0.50		24.1	0.50	2,500	1,250	30,085
22			Other	Filling forms and tables	Pharmaceutical marketing authorisation holders	48		1.00		48.1	0.50	2,500	1,250	60,170
23			Other	Holding meetings	Pharmaceutical marketing authorisation holders	48		2.00		96.3	0.50	2,500	1,250	120,339
24			Other	Inspecting and checking (including assistance to inspection by public authorities)	Pharmaceutical marketing authorisation holders	48		1.00		48.1	0.50	2,500	1,250	60,170
25			Other	Copying (reproducing reports, producing labels or leaflets)	Pharmaceutical marketing authorisation holders	48		0.50		24.1	0.50	2,500	1,250	30,085
26			Other	Submitting the information (sending it to the designated recipient)	Pharmaceutical marketing authorisation holders	48		0.50		24.1	0.50	2,500	1,250	30,085
27			Other	Filing the information	Pharmaceutical marketing authorisation holders	48		0.50		24.1	0.50	2,500	1,250	30,085

One-off administrative costs	361,018
Total administrative costs (€)	**1,134,076**

Standard Cost Model: Option 2 (direct regulation) – high estimate

Insert here the name and reference of the regulatory act assessed If the act assessed is the transposition of an act adopted at another level, insert here the name and reference of that 'original' act						Tariff (€ per hour)		Time (hour)		Price (per action or equip)	Freq (per year)	Nbr of entities	Total nbr of actions	Total cost
No.	Ass. Art.	Orig. Art.	Type of obligation	Description of required action(s)	Target group	i	e	i	e					
1	1§1		Notification of (specific) activities	Familiarising with the information obligation	Pharmaceutical marketing authorisation holders	48		17.00		818.2	*1.00*	2,728	2,728	2,231,749
2			Notification of (specific) activities	Training members and employees about the information obligations	Pharmaceutical marketing authorisation holders	48		17.00		818.2	1.00	2,728	2,728	2,231,749
3			Notification of (specific) activities	Retrieving relevant information from existing data	Pharmaceutical marketing authorisation holders	48		2.00		96.3	6.7187	2,728	18,326	1,764,059
4			Notification of (specific) activities	Filling forms and tables	Pharmaceutical marketing authorisation holders	48		2.00		96.3	6.7187	2,728	18,326	1,764,059
5			Notification of (specific) activities	Holding meetings	Pharmaceutical marketing authorisation holders	48		5.00		240.6	6.7187	2,728	18,326	4,410,147
6			Notification of (specific) activities	Inspecting and checking (including assistance to inspection by public authorities)	Pharmaceutical marketing authorisation holders	48		3.00		144.4	6.7187	2,728	18,326	2,646,088
7			Notification of (specific) activities	Copying (reproducing reports, producing labels or leaflets)	Pharmaceutical marketing authorisation holders	48		1.00		48.1	6.7187	2,728	18,326	882,029
8			Notification of (specific) activities	Submitting the information (sending it to the designated recipient)	Pharmaceutical marketing authorisation holders	48		1.00		48.1	6.7187	2,728	18,326	882,029
9			Notification of (specific) activities	Filing the information	Pharmaceutical marketing authorisation holders	48		1.00		48.1	6.7187	2,728	18,326	882,029
10			Registration	Familiarising with the information obligation	Pharmaceutical marketing authorisation holders	48		17.00		818.2	*1.00*	2,728	2,728	2,231,749
11			Registration	Training members and employees about the information obligations	Pharmaceutical marketing authorisation holders	48		17.00		818.2	1.00	2,728	2,728	2,231,749
12			Registration	Retrieving relevant information from existing data	Pharmaceutical marketing authorisation holders	48		2.00		96.3	1.0000	2,728	2,728	262,559
13			Registration	Filling forms and tables	Pharmaceutical marketing authorisation holders	48		2.00		96.3	1.0000	2,728	2,728	262,559
14			Registration	Holding meetings	Pharmaceutical marketing authorisation holders	48		5.00		240.6	1.0000	2,728	2,728	656,397
15			Registration	Inspecting and checking (including assistance to inspection by public authorities)	Pharmaceutical marketing authorisation holders	48		3.00		144.4	1.0000	2,728	2,728	393,838
16			Registration	Copying (reproducing reports, producing labels or leaflets)	Pharmaceutical marketing authorisation holders	48		1.00		48.1	1.0000	2,728	2,728	131,279
17			Registration	Submitting the information (sending it to the designated recipient)	Pharmaceutical marketing authorisation holders	48		1.00		48.1	1.0000	2,728	2,728	131,279
18			Registration	Filing the information	Pharmaceutical marketing authorisation holders	48		1.00		48.1	1.0000	2,728	2,728	131,279
19			Other	Familiarising with the information obligation	Pharmaceutical marketing authorisation holders	48		17.00		818.2	*1.00*	2,728	2,728	2,231,749
20			Other	Training members and employees about the information obligations	Pharmaceutical marketing authorisation holders	48		17.00		818.2	1.00	2,728	2,728	2,231,749
21			Other	Retrieving relevant information from existing data	Pharmaceutical marketing authorisation holders	48		2.00		96.3	2.00	2,728	5,455	525,117
22			Other	Filling forms and tables	Pharmaceutical marketing authorisation holders	48		2.00		96.3	2.00	2,728	5,455	525,117
23			Other	Holding meetings	Pharmaceutical marketing authorisation holders	48		5.00		240.6	2.00	2,728	5,455	1,312,794
24			Other	Inspecting and checking (including assistance to inspection by public authorities)	Pharmaceutical marketing authorisation holders	48		3.00		144.4	2.00	2,728	5,455	787,676
25			Other	Copying (reproducing reports, producing labels or leaflets)	Pharmaceutical marketing authorisation holders	48		1.00		48.1	2.00	2,728	5,455	262,559
26			Other	Submitting the information (sending it to the designated recipient)	Pharmaceutical marketing authorisation holders	48		1.00		48.1	2.00	2,728	5,455	262,559
27			Other	Filing the information	Pharmaceutical marketing authorisation holders	48		1.00		48.1	2.00	2,728	5,455	262,559

One-off administrative cos 6,695,247

Total administrative costs (€) 32,528,507

Overall Impact of Policy Options

A1.65 The tables below show the overall impact of the policy. The first table shows results using the central set of scaling factors, whereas the second table shows the "low differential" and "high differential" sensitivities discussed earlier.

Overall impact of each policy option (€m, NPV over 10 years)

	Pessimistic	Medium	Optimistic
Option 2 (medicines regulatory authorities)			
Pull information only	-26,365	39,494	277,443
Pull and push information	-88,016	44,386	329,476
Option 3 (self-regulation)			
Pull information only	-30,886	35,956	245,383
Pull and push information	-128,041	30,885	291,292
Option 4 (co-regulation)			
Pull information only	-30,303	34,267	250,452
Pull and push information	-104,416	36,914	301,777

Sensitivity analysis (€m, NPV over 10 years)

	Pessimistic	Medium	Optimistic
Option 2 (medicines regulatory authorities)			
Pull information only	-26,365	39,494	277,443
Pull and push information	-88,016	44,386	329,476
Sensitivity - low differential			
Option 3 (self-regulation)			
Pull information only	-26,273	39,586	277,534
Pull and push information	-88,584	43,818	328,908
Option 4 (co-regulation)			
Pull information only	-26,321	39,538	277,487
Pull and push information	-88,633	43,769	328,859
Sensitivity - high differential			
Option 3 (self-regulation)			
Pull information only	-51,349	17,273	182,484
Pull and push information	-172,662	13,585	233,616
Option 4 (co-regulation)			
Pull information only	-36,277	26,754	215,992
Pull and push information	-128,090	26,509	265,414

SECTION 2: SURVEY OF HEALTHCARE PROVIDERS

Introduction

A2.1 Twenty two survey responses were received from healthcare providers. Of these 20 are usable (two were anonymous and answered only one or two questions). However, most questions received around 14 responses.

A2.2 The responses have been from a mix of associations representing different types of healthcare professional. The majority have been from associations of either doctors or pharmacists. All bar one are national (as opposed to EU-wide) associations. The associations vary considerably in size.

A2.3 The healthcare professionals view the current state of information provision to patients as being broadly good. This is discussed more fully in the section on cross-survey comparisons.

A2.4 There is a range of views on what the current trends in information provision – in isolation – will have on the quality of healthcare received by patients. However, over half of the respondents to this question (ten out of 17) anticipated a substantial improvement. Only two respondents anticipated some degree of deterioration. The views on the trend in the number of prescriptions are similar. Views on these topics are compared to those of the payers in the section on cross-survey comparisons.

Healthcare benefits of the proposed policy

A2.5 In the survey, we asked a series of questions exploring the potential for behavioural change and the extent to which the policy options might cause this to happen. The questions asked healthcare professionals to express their views with reference to particular bandings (e.g. 1–20 per cent). The following tables have been calculated with reference to the mid-point of these bands (i.e. 1–20 per cent would count as 10.5 per cent). The average of respondents' answers has then been calculated.

Preventative effect

A2.6 The survey indicates that healthcare professionals see significant scope for preventative action by patients/citizens. This is particularly marked for chronic illnesses. There is also support for the view that the new policy initiative would have a positive behavioural effect. This is set out below.

Table A2.1: The potential for disease prevention

The percentage of patient diseases/conditions that could be prevented or substantially alleviated by a lifestyle or dietary change	
For all patients	**35.5**
For those with chronic illnesses	38.0
For those with acute illnesses	17.3

A2.7 Of fifteen respondents to the question relating to all patients, seven selected the 21–40 per cent banding, with a further third of the respondents opting for 41–60 per cent. Three respondents believed the potential lay in the region of 1–20 per cent. One considered the potential to be in the range 61–80 per cent.

Table A2.2: The behavioural impact of the new policy in terms of prevention

The percentage of these patients that would be prompted to make the change as a result of the new policy initiative	
For all patients	**20.4**
For those with chronic illnesses	16.6
For those with acute illnesses	11.5

A2.8 Four respondents (25 per cent) believed the policy initiative would capture virtually none of this potential when considering all patients. Another four believed the effect would be quite limited (1–20 per cent of the potential might be realised). However, seven anticipated that between 21–40 per cent of the potential could be realised through the new policy initiative. One felt that between 61–80 per cent of the potential could be realised in this way.

A2.9 In the above table, the "all patients" effect is greater than for those with either chronic or acute illnesses. This applies to a number of responses in this question, and indeed to the results for a number of the questions.

Table A2.3: The preventative effect of the new policy initiative

The percentage of all patients where a dietary or lifestyle change prompted by the new policy initiative would prevent or substantially alleviate the disease/condition	
For all patients	**7.2**
For those with chronic illnesses	6.3
For those with acute illnesses	2.0

Anxiety effect

A2.10 The healthcare professionals surveyed believe that a significant proportion of patients who have consultations do not have the disease they are worried about. This is set out below. (It is noted that this may overstate the seriousness of this effect, in that a patient may have an alternative condition or disease — i.e. the symptoms are real enough, even if the self-diagnosis is faulty.)

Table A2.4: The scale of unnecessary anxiety

Percentage of consultations with healthcare professionals that arise as a result of patients being anxious about diseases which in fact they do not have	
For all patients	**18.5**
For those with chronic illnesses	13.8
For those with acute illnesses	13.7

A2.11 Eleven out of the fifteen respondents (seventy-three per cent) answering to the question relating to all patients believed that the answer lay in the band 1–20 per cent. Two each considered that 21–40 per cent or even 41–60 per cent of consultations arose in this way.

A2.12 Seven out of sixteen respondents expressing a view (44 per cent) felt this effect would increase as a result of the new policy initiative. An equal number did not foresee a change, with two respondents expecting a decrease (i.e. more information would result in less unnecessary anxiety).

A2.13 The average scale of this effect was estimated at about 5.3 per cent (this was partly because one respondent expecting a reduction expected a very significant one). In the case of all patients, this would mean that the anxiety effect would increase to 19.3 per cent of the (increased) number of cases, ignoring all other factors. The increase in consultations would be 1.0 per cent of the pre-initiative total. (It is assumed that the preventative effect would not be relevant in reducing unnecessary anxiety.)

Awareness effect

A2.14 Again, the survey indicates that healthcare professionals see significant potential for earlier intervention to have a positive health benefit. There is also support for the view that the new policy initiative would have a positive behavioural effect. This is set out below.

Table A2.5: The potential for the awareness effect

The percentage of cases where health outcomes for patients would have been significantly better if the patient had contacted a healthcare provider earlier	
For all patients	**29.8**
For those with chronic illnesses	28.0
For those with acute illnesses	21.6

A2.15 In the results analysed in Table A2.5, for all patients, seven out of sixteen (i.e. 44 per cent) opted for the range 1–20 per cent of cases. One believed that the potential here was virtually nothing. The other respondents were relatively even spread across the bandings: 21–40 per cent (two), 41–60 per cent (four) and 61–80 per cent (two).

Table A2.6: The behavioural impact of the new policy in terms of awareness

The percentage of these cases where patients would actually have contacted healthcare services sooner as a result of this new policy initiative	
For all patients	**16.7**
For those with chronic illnesses	14.1
For those with acute illnesses	12.8

A2.16 Looking at all patients, over two thirds (69 per cent) of the respondents believed that the new policy might realise 1–20 per cent of the potential identified in Table A2.5. Two felt that virtually none of the potential would be realised by the new policy. Two were each much more optimistic, opting for the bandings 41–60 and 61–80 per cent.

Table A2.7: The awareness effect of the new policy initiative

The percentage of all patients where the new policy initiative would have resulted in an earlier contact, with healthcare services with a significantly better health outcome	
For all patients	**5.0**
For those with chronic illnesses	4.0
For those with acute illnesses	2.8

The interaction effect

A2.17 The survey reveals the sharing of additional relevant information by a patient can improve health outcomes in a significant minority of cases. There is limited support for the new policy in improving this situation.

Table A2.8: The potential for the interaction effect

The percentage of cases where the prescription decision would have been improved significantly if the patient had shared additional relevant information with their doctor	
For all patients	**23.0**
For those with chronic illnesses	18.6
For those with acute illnesses	21.7

A2.18 Seventy-five per cent of the respondents (12 out of sixteen) believed that the potential for the interaction effect was between one and twenty per cent of all cases seen. Two felt the potential was 41–60 per cent of all cases with two as high as 61–80 per cent.

Table A2.9: The behavioural impact of the new policy

The percentage of these cases where patients would actually have shared the additional relevant information with their doctor as a result of this new policy initiative	
For all patients	**16.0**
For those with chronic illnesses	11.0
For those with acute illnesses	10.9

A2.19 Just under one third (31 per cent) of respondents believed the effect of the new policy initiative in this area would be virtually none. The same proportion placed the effect at 1–20 per cent of all cases. Five of the sixteen respondents believed the policy would lead to a behavioural change in 21–40 per cent of all cases. One placed the potential effect at 41–60 per cent.

Table A2.10: The potential interaction effect of the new policy initiative

The percentage of all cases where interaction effect as a result of new policy initiative could significantly improve health outcome	
For all patients	**3.7**
For those with chronic illnesses	2.0
For those with acute illnesses	2.4

The prescription distortion effect

A2.20 The following tables analyse the extent to which patients make drug-specific requests to health professionals, the extent to which these are granted and the frequency with which those granted requests result in sub-optimal treatment.

Table A2.11: Drug-specific patient requests

The percentage of patients who request particular drugs during consultations with healthcare professionals	
For all patients	**22.5**
For those with chronic illnesses	27.8
For those with acute illnesses	17.6

A2.21 Over half of the respondents (eight out of fifteen) estimated that 1–20 per cent of all patients requested a particular drug. Another five estimated that 21–40 per cent of all patients made such a request. Two stated that between 41 and 60 per cent of all patients fell into this category.

Table A2.12: The percentage of drug-specific requests that are granted

The percentage of these cases where the medicine requested is actually prescribed	
For all patients	**35.8**
For those with chronic illnesses	42.5
For those with acute illnesses	31.9

A2.22 Six out of fifteen respondents (i.e. forty per cent) believed that 1–20 per cent of such requests were granted. Another six believed that 41–60 per cent of all such requests would be granted. Two believed that the impact could be as high as 61–80 per cent of all such cases. One placed it in the category 21–40 per cent.

Table A2.13: The proportion of requests granted that are sub-optimal

The percentage of granted requests that are viewed as probably sub-optimal in terms of the anticipated health outcome	
For all patients	**19.0**
For those with chronic illnesses	21.7
For those with acute illnesses	18.9

A2.23 Five respondents (one third of the total) felt that in virtually no cases was the outcome medically sub-optimal (i.e. the request would only be granted where it was either the best treatment or equivalent to it). Another four felt that 1–20 per cent of granted requests might be sub-optimal. Other respondents were more pessimistic: three selected the category 21–40 per cent and another three selected 41–60 per cent.

Table A2.14: The current scale of the prescription distortion effect

The percentage of all cases where the prescription distortion effect currently has a sub-optimal effect on anticipated health outcomes	
For all patients	**1.5**
For those with chronic illnesses	2.6
For those with acute illnesses	1.1

A2.24 On balance, the new policy initiative is expected to increase this effect. Thirteen of the seventeen respondents – 76 per cent – held this view, with just two anticipating a decrease and another two anticipating no change.

A2.25 Thirteen respondents estimated the scale of this effect. The average effect was estimated at 12 per cent. All four of the respondents who did not provide an estimate expected an

increase. This would increase the prescription distortion effect across all patients to about 1.7 per cent.

The compliance effect

A2.26 The table below shows the level of unsatisfactory compliance that resulted in the patient not receiving the full benefit of the prescribed treatment.

Table A2.15: The level of unsatisfactory compliance causing sub-optimal health outcomes

The percentage of all cases where unsatisfactory compliance results in the patient not receiving the full therapuetic benefit	
For all patients	**31.8**
For those with chronic illnesses	30.5
For those with acute illnesses	20.5

A2.27 Seven respondents out of sixteen (i.e. 44 per cent) believed that poor compliance leads to less favourable health outcomes in 21–40 per cent of patients seen. Four believed the effect was less (1–20 per cent) and five believed it was greater (41–60 per cent).

A2.28 Of sixteen respondents expressing an opinion, nine (56 per cent) expected that the new policy would make no difference. Six (37.5 per cent) expected an increase in the satisfactory compliance by patients with prescriptions. One anticipated a reduction in compliance.

A2.29 Thirteen respondents estimated this effect (this includes all who stated that there would be no change, which has been taken as nil). The average improvement in compliance was estimated at 13.1 per cent. The three respondents who did not provide an estimate included the one anticipating a worsening in compliance. This would imply that, looking across all patients, about 4.2 per cent of all cases seen could experience an incremental health benefit stemming from the new policy initiative.

Summary of the effect on health

Life expectancy

A2.30 Overall, the expectation was that there would be a positive effect upon the life expectancy of patients due to the new policy initiative. Looking at all patients, half of respondents expected a positive impact (although all but one of these expected the positive effect to be small). Seven respondents (forty-four per cent) expected no change. However, one respondent foresaw a very large negative impact.

A2.31 Views in relation to patients with chronic illnesses were marginally more positive (one less respondent expected no change, one now expected a very large positive impact). More

than two thirds of the respondents expected no change in the life expectancy of those patients with acute illnesses.

Quality of life

A2.32 The expectation was that there would be a positive effect upon the quality of life of patients due to the new policy initiative. Looking at all patients, half of respondents expected at least a small positive impact (with thirteen per cent expecting the positive impact to be significant). One respondent expected a small negative impact.

A2.33 Again, patients with chronic illnesses were expected to benefit more than patients suffering from acute ones — however, the effect was less than for life expectancy.

Prescription volumes

A2.34 Fifty six per cent of respondents (nine out of 16) expected the volume of prescriptions to increase as a result of the new policy initiative. Two respondents expected the volume to decrease. The average estimate was a 7.5 per cent increase in the number of prescriptions.

A2.35 The balance between branded and generic drugs was also expected to be affected. Forty seven per cent of respondents (eight out of 17) expected that the proportion of prescriptions which are for branded drugs would increase, and a further 36 per cent foresaw no change. Three of the respondents thought that the proportion of prescriptions which are for generic drugs would increase.

Other healthcare costs

A2.36 Just over one third of respondents expected other healthcare costs (i.e. excluding the cost of prescription drugs) to increase as a result of the policy initiative. Just under half expected no change (eight out of seventeen answering this question). Just three (18 per cent) expected a decline in other healthcare spending.

A2.37 The reasons cited for an increase in spending included:

- "Disease mongering" resulting in supply-induced demand.
- The experience of the USA (the respondent cited the view that medicine-related information provision to patients was a "pseudonym" for direct-to-consumer advertising).

A2.38 On the other hand, a decrease in other healthcare spending could be due to:

- Better compliance resulting in better health outcomes
- Reduction in iatrogenic errors.

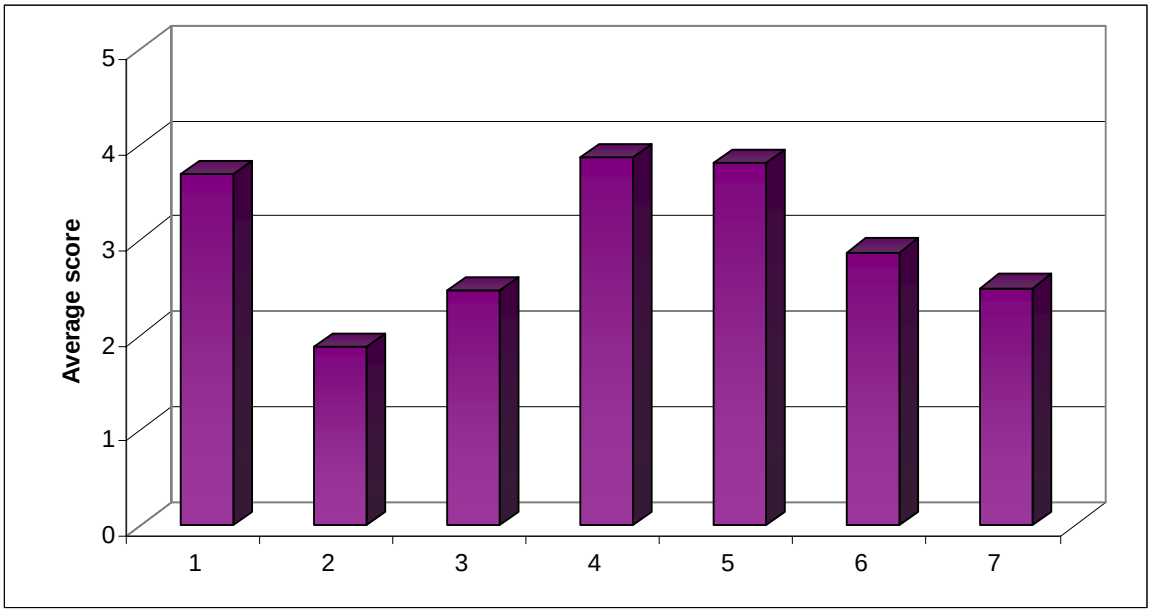
– A reduction in problems related to drug therapy, which are responsible for about five per pent of hospital admissions.

Types of information

A2.39 One of the questions in the survey asked respondents to rate the following types of information, giving them a score of one if they thought it was of no value to patients, and a top score of five if they thought it was of very high value to patients:

1. Information that is compatible with the approved SPCs and PILs, neither contradicting nor going beyond the key elements in them, but presented in a different form;
2. Information about ongoing scientific studies;
3. Information about completed scientific studies;
4. Information about prevention of disease;
5. Information about accompanying measures to medicinal treatment;
6. Information about prices;
7. Other.

Figure A2.1



A2.40 The greatest support is for information about the prevention of disease, information about accompanying measures to medicinal treatment and, to a slightly lesser extent, information that compatible with the SPCs and PILs. On the other hand, there is little support for including *ongoing* scientific studies.

A2.41 The channels of information are commented upon in the annex on cross-survey comparisons.

Forms of Regulation

A2.42 Nine respondents expressed either strong opposition to, or considerable scepticism about, self-regulation, while one respondent expressed support. In addition, one further respondent strongly advocated retaining the current approach used in its country which includes the provision of information regulated by the public authorities and also information prepared by industry on a self-regulatory basis.

A2.43 Three respondents specifically noted that under self-regulation, responses would have been more negative (one in terms of the likely impacts of the policy initiative, the other in terms of the benefits and risks of the particular channels of communication i.e. that with self-regulation the benefits would be less, and the risks greater.

A2.44 Fewer respondents had a view on co-regulation. However, five were strongly opposed, or at least sceptical about its efficacy. Three were supportive of the concept — however, in one of these cases, the support was very conditional. One supporter noted that "co-regulation with the regulatory authorities would probably keep the borderline between advertising and information more clear" than self-regulation.

Basis of Estimates

A2.45 There are a few references that compare the policy and direct-to-consumer advertising, particularly with reference to the difficulty in information from advertising. These comments include:

- "information is always promotional, depending on how and when it is presented. The borderline between advertising and information is very thin."
- "it is very difficult to make a real distinction between information and advertising. It is clear for us that direct to consumer provision of information would, in many cases, be impossible to distinguish from advertising."
- "More information from the pharmaceutical industry implies more advertisement for their products, and this will increase the patient's demand for medical care and medicinal products."
- "the main problem is that it is very difficult to make the difference between direct to consumer information and advertising. The main reason why the pharmaceutical industry would like to communicate more is to have more consumers."

SECTION 3: SURVEY OF HEALTHCARE PAYERS

Introduction

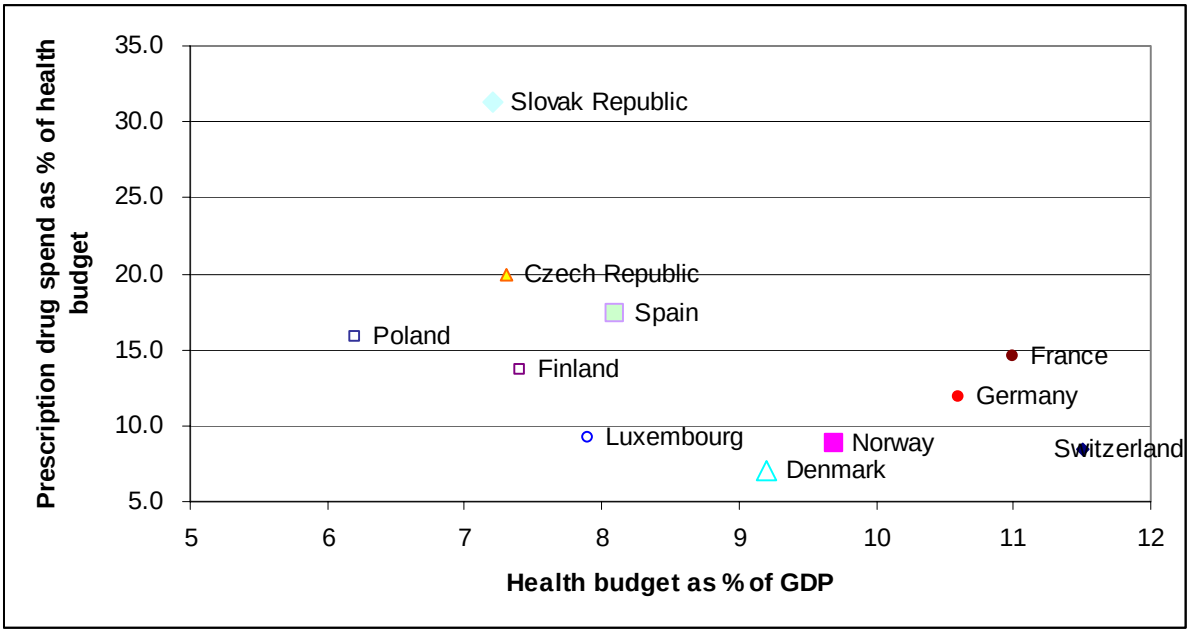
A3.1 Thirteen usable responses were received by the time the survey closed on 14 February. Healthcare payers from Belgium, Malta, Cyprus, France, Germany, the Netherlands, Slovak Republic, Ireland, Slovenia and Austria responded.

The Status Quo

A3.2 Of the 13 Payers, 8 have national coverage (over 60 per cent of the total population). The budgets of the organisations for 2007 ranged from €8m to €30bn, although comparisons are not valuable due to the different coverage of each.

A3.3 The percentage of the budgets allocated to paying for prescription medicines ranged from 10 per cent to 32 per cent of the healthcare budget. These estimates are rather higher than the broader sample available from OECD Health Indicators, which are presented below.

Figure A3.1: Spending on healthcare and prescriptions (2004 data)



Source: OECD Health Indicators

A3.4 For the majority of the payers, a far larger percentage of this allocation was spent on branded medicines than generics. Of 10 respondents on this question, nine estimated the proportion of the prescriptions budget spent on branded drugs to be between 65 per cent and 89 per cent. The other estimated spending on branded drugs to be a mere 28 per cent of the prescriptions budget.

A3.5 The results for a number of questions regarding the quality and accessibility of patient information can be found in the section on cross-survey comparisons.

A3.6 Payers see useful information as coming overwhelmingly from healthcare professionals and package leaflets (with a small role for the internet).

Effects of Current Trends

A3.7 The majority of Payers responding to the relevant question (50 per cent) feel that current trends in patient information will tend to reduce average prescription costs (in real terms) per person. Twenty-five per cent feel current trends will have no impact of average prescription costs, and another 25 per cent feel trends will tend to increase costs.

A3.8 However, answers to another question indicate that when all factors are taken into account (not just information provision), payers overwhelmingly expect prescription costs to increase over the next five years.

A3.9 Only four payers responded to a question on the estimated percentage change in the average cost of prescription medicines after 5 years. Two respondents said costs would be increase by 31-35 per cent, one estimated an 11-15 per cent increase, and the other estimated a 6-10 per cent increase.

A3.10 Of the changes quoted in response to this question, 60 per cent of respondents attributed only a small role to expected trends in available patient information. Twenty per cent said that none of the change would be due to information trends.

Changes under the New Policy

A3.11 Liberalising information provision by the pharmaceutical industry is seen as more likely to have a negative than positive impact upon patient health outcomes, even with a prohibition on direct-to-consumer advertising. This is particularly marked under self-regulation (where all respondents expected some form of negative impact). Under public regulation a significant minority anticipated improvements.

A3.12 Most respondents expected the volume of prescriptions to increase under the new policies (all respondents under self-regulation). Estimated percentage increases in the volume of prescriptions range from 10-25 per cent for self-regulation, 8-15 per cent for co-regulation and 5 per cent for public regulation.

A3.13 The Payers estimated their answers for the preceding two questions from a range of sources. Their comments are summarised here.

- B. Mintzes et al, ”How does direct-to-consumer advertising affect prescribing? A survey in primary care environments with and without legal DTCA”, CMAJ, 2003. This Canadian study suggests that more advertising leads to more requests for advertised medicines and more prescriptions. If direct-to-consumer advertising opens a conversation between patients and physicians, that conversation is highly

likely to end with a prescription, often despite physician ambivalence about the choice of treatment.

- B. Mintzes, "What are the Public Health Implications? Direct-to-Consumer Advertising of Prescription Drugs in Canada", Jan. 2006. Supporters of direct-to-consumer advertising claim that it benefits public health by: educating the public; leading to earlier diagnosis and needed care of important illnesses; improving patient compliance in taking prescribed medication. This paper examines these claims in light of evidence from research and international experience – and concludes that there is no reliable evidence to support them.

- Surveys on prescribing decisions lead to the conclusion that more advertising leads to more requests for advertised medicines and to more prescriptions, even when physicians are ambivalent about the choice of treatment.

- Literature (studies conducted in New Zealand and the US) has shown that there is a strong association between increased drug costs and advertising to consumers. It can be predicted that the same impact would be seen in Europe.

- Any change to the current legal framework would have an impact on the quality of information (which would become more biased) and the quantity of information (which would increase). This would lead to more patient pressure on physicians and consequently more prescribing.

- The pharmaceutical industry would create new markets by playing on people's concern about their health, thus creating a demand for medical treatment when it is not actually necessary, as seen in the negative example of the US.

A3.14 The majority of payers believed that the new policy would also favour branded drugs over generics and would increase the price of individual drugs. The balance of respondents citing these effects was typically greater for self-regulation than for the other regulatory options.

A3.15 Four respondents provided quantified estimates of the impact of the new policy initiative on overall expenditure on prescription drugs. These estimates are significant and are as follows:

Table A3.1: Percentage increase in expenditure on prescription drugs over next five years due to new policy

	Public regulation	Self-regulation	Co-regulation
Respondent 1	10	30	20
Respondent 2	40	60	50
Respondent 3	15	30	25
Respondent 4	5	10	8

Note: the number given to each respondent may not correspond to the numbering in other tables.

A3.16 At least one respondent anticipated changes equivalent to a case where direct-to-consumer advertising was permitted. One respondent also claimed that in addition to creating a higher demand for medical treatment, the policy would result in higher costs to pharmaceutical companies which would be passed on to the consumer.

A3.17 The cost of other healthcare expenditure (i.e. excluding that on prescription medicines) was also expected to increase as a result of the new policy. The estimated increase was greatest under self- and co-regulation.

A3.18 The main cause of this increase in other healthcare costs (e.g. cost of hospitalisations) cited by the respondents is the increased misuse and inappropriate therapies resulting from advertising/too much information.

Regulatory Options

A3.19 Only one payer saw any advantages in allowing the pharmaceutical industry to provide more information to patients. These advantages were due to more information being available to patients on specific treatment of the specific conditions and on the range of possible treatments.

A3.20 Respondents saw numerous disadvantages to the policy. These included:

- Misleading information being provided to patients, leading to irrational use of drugs and an increase in costs and side-effects.
- People using alternative routes to obtain drugs (e.g. the internet).
- An increase in unnecessary visits to physicians and unnecessary healthcare consumption.
- Over-awareness of disease and unnecessary feelings of discomfort and uncertainty over health-status and risks.
- Additional costs being added to the supply chain.

A3.21 The payers' opinions on the advantages of regulation by medicines regulatory authorities (public regulation) were quite positive. For instance, a stated advantage was that public regulation would allow for control of what the industry provides to patients and would thus reduce the potential for misuse of the system.

A3.22 The main disadvantages of this kind of regulation which were cited by payers include administration costs and possible legal difficulties; the rigidity of the regulatory framework, and the extent of the resources needed.

A3.23 The only cited advantage of self-regulation was that it would be cheaper than public regulation and that it could enable information provision prior to the launch of a product in that market.

A3.24 Cited disadvantages of self-regulation include the absence of any guarantee that information will be unbiased; the lack of external quality assurance; a low degree of acceptance; and the inability to enforce sanctions.

A3.25 The few advantages of co-regulation cited by payers are that the authorities are at least involved, and compared to self-regulation it offers a more independent and thorough check on the quality of the information.

A3.26 The cited disadvantages of this kind of regulation are that it is more time-consuming and expensive than the other options, and more likely to be subject to practical difficulties. Furthermore, it seems difficult to ensure that all stakeholders have the same level of influence. The process itself might be slow and complex due to conflict management amongst the stakeholders.

A3.27 Payers took the view that, if a stakeholder body were set up to monitor information provision and conduct co-regulation, the following groups should be represented: pharmacists, doctors, medicine regulatory authorities, ministries of health, academic experts, and patient groups.

Other Comments

A3.28 The payers were invited to make additional comments. Views put forward included the following:

- *Ex post* review of advertising does not work – in France forty per cent of advertising documents for healthcare professionals reviewed *ex post* by the French regulatory authority are either prohibited or are required to be changed.
- A European quality label is an idea that might be explored.
- Information should be channelled through a non-regulatory body (such as the Irish Health Information Quality Body).
- No change from current policy is required.
- In the absence of any clear distinction between advertising and information, the pharmaceutical industry should not be allowed to provide information to patients.

SECTION 4: SURVEY OF MEDICINES REGULATORY AUTHORITIES

Introduction

A4.1 Fifteen useable replies were received from medicines regulatory authorities.

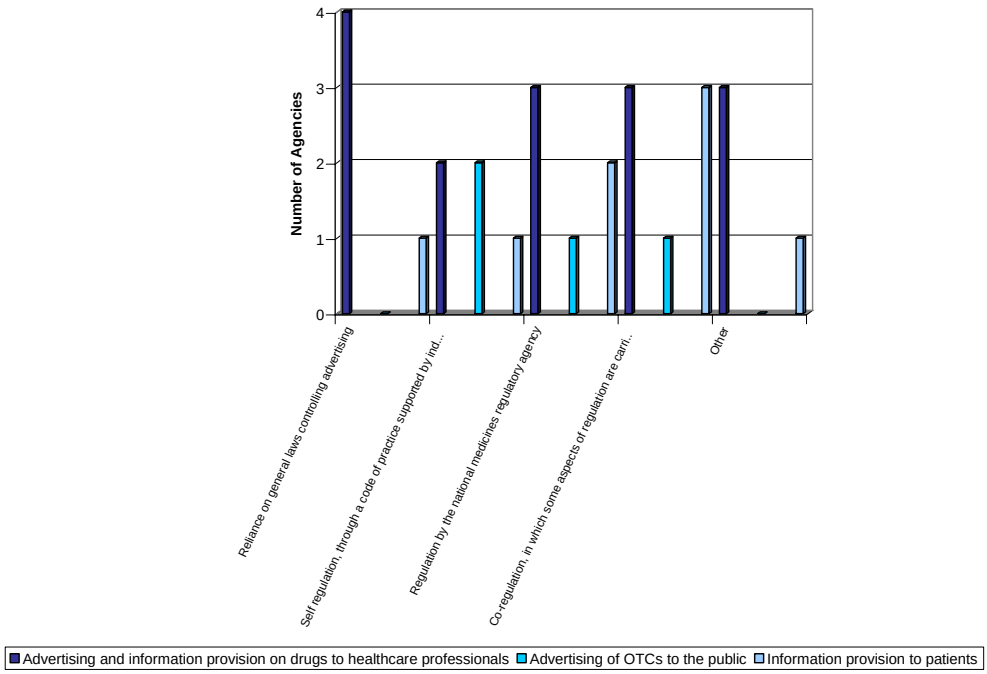
The Status Quo

A4.2 Medicines regulators currently police

- Advertising and information provision by pharmaceutical companies on drugs to healthcare professionals
- The advertising of over-the-counter medicinal products (OTCs) to the public
- The provision of information to patients by the pharmaceutical industry.

A4.3 The current regulatory approach taken in these three areas is summarised below.

Figure A4.1: The current regulatory approach



A4.4 The financial cost of this is relatively small, both relative to the regulators' own budgets and in absolute terms (i.e. of 12 useable responses, the average number of full time staff dealing with these areas totalled four per regulator).

Figure A4.2: FTEs employed in regulating information provision

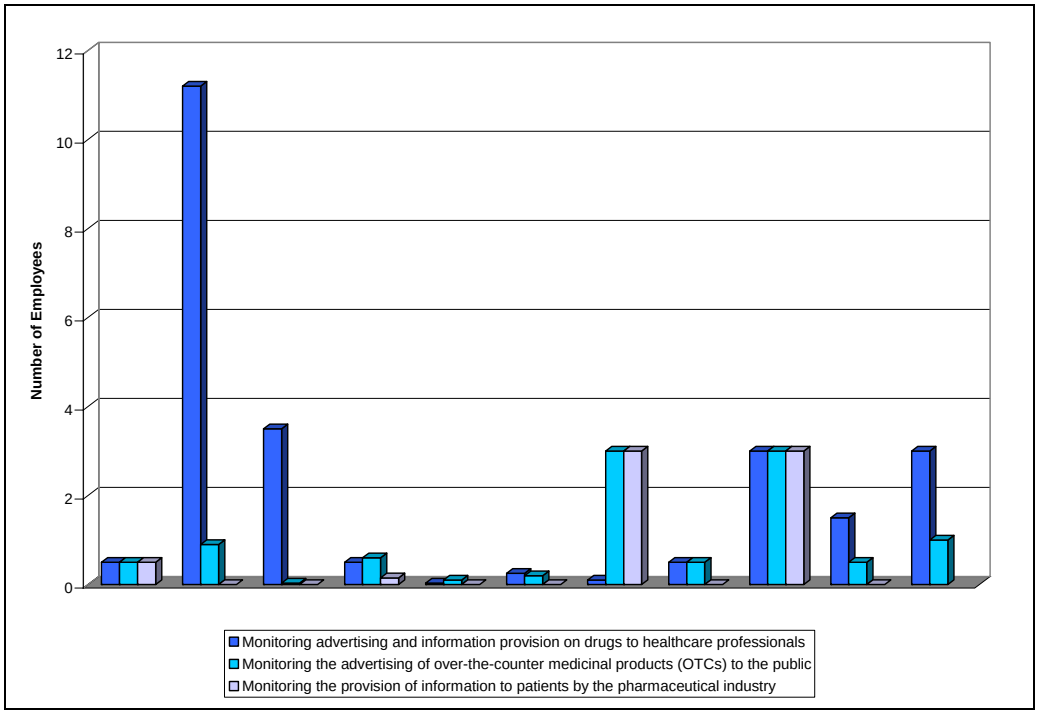
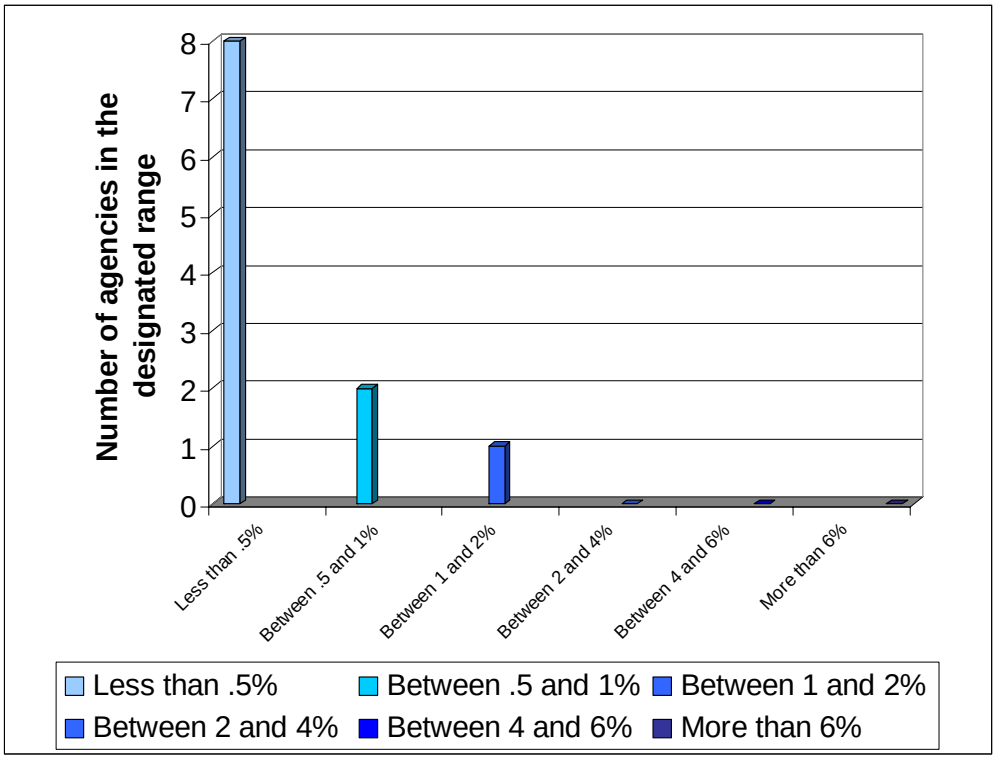


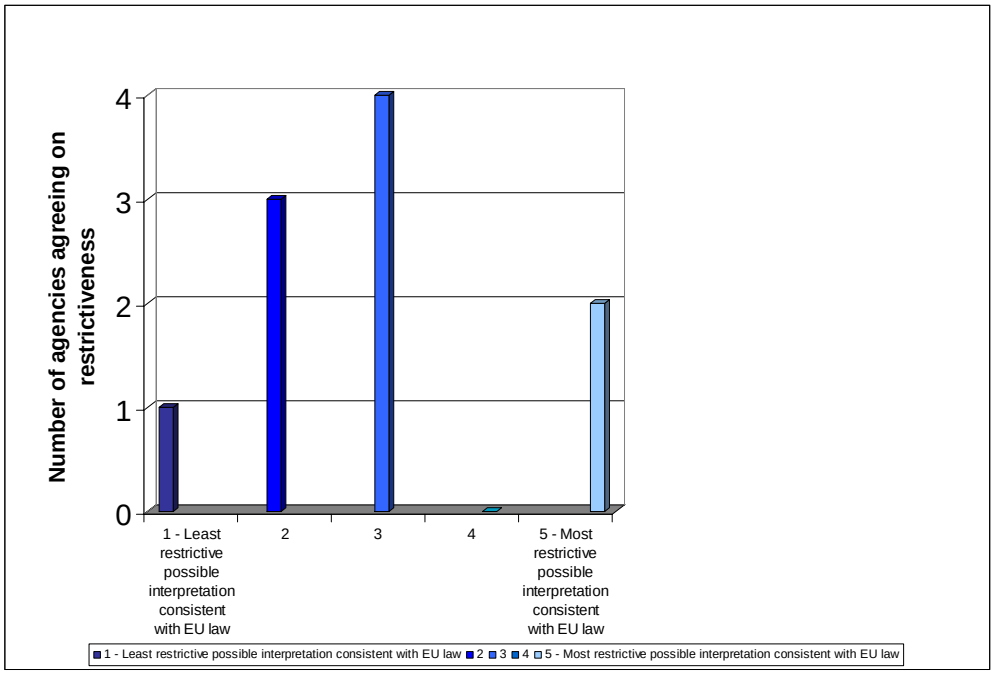
Figure A4.3: Proportion of regulator's budget used on regulating information provision



Attitude adopted to interpreting EU legislation

A4.5 Ten respondents ranked themselves in terms of the relative restrictiveness of the interpretation adopted to Article 86 of 2001/83/EC. Only two described themselves as adopting the most restrictive possible interpretation. The results are summarised overleaf in Figure A4.4.

Figure A4.4: Regulator's interpretation of Article 86 of 2001/83/EC



A4.6 Respondents were asked which aspects of EU legislation they believed to be unhelpful. The examples given were:

- If the legislation is interpreted as restricting the ability of companies to provide non-promotional disease awareness information or post-prescription support materials
- Article 86 of Directive 2001/83/EC concerns "information relating to human health or diseases, provided that there is no reference, even indirect, to medicinal products". The level of "no reference, even indirect" is viewed as very difficult to regulate.
- Whilst Article 86 of Directive 2001/83/EC gives the industry the possibility of providing a certain level of information, the interpretation of this article varies from one Member State to another.

The current information load

A4.7 The quantity of material seen by the regulators varies markedly across the Member States represented by respondents.

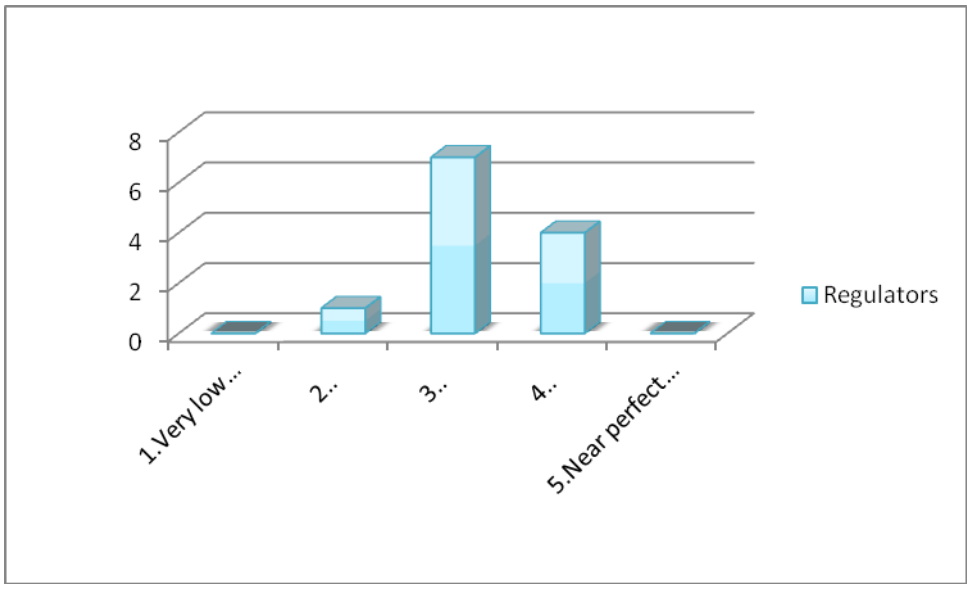
Table A4.1: Instances of information or advertising currently seen by medicines regulators

	Information to healthcare professionals	Advertising of OTCs	Information to patients
Respondent 1	800	100	40
Respondent 2	20	75	5
Respondent 3	0	5	6
Respondent 4	80	80	12
Respondent 5	400	400	400
Respondent 6	100	50	50
Respondent 7	213	408	11
Respondent 8	60	40	0
Respondent 9	9,500	950	55
Respondent 10	2	4	0
	Range: 0–9,500	Range: 4–950	Range: 0–400

Note: the number given to each respondent may not correspond to the numbering in other tables.

A4.8 The compliance by the pharmaceutical industry with the existing regime across these three areas is seen as being of a broadly acceptable standard.

Figure A4.5: Current compliance by industry



A4.9 On average, complaints are a relatively low proportion of information seen, with information to patients having the highest proportion of complaints (by a small margin). Where a complaint is received, it is typically investigated, and most cases investigated are found to involve a violation (so that the rate of violations – as opposed to complaints – is significant). These points are illustrated below.

Figure A4.6: Complaints as percentage of information seen (average)

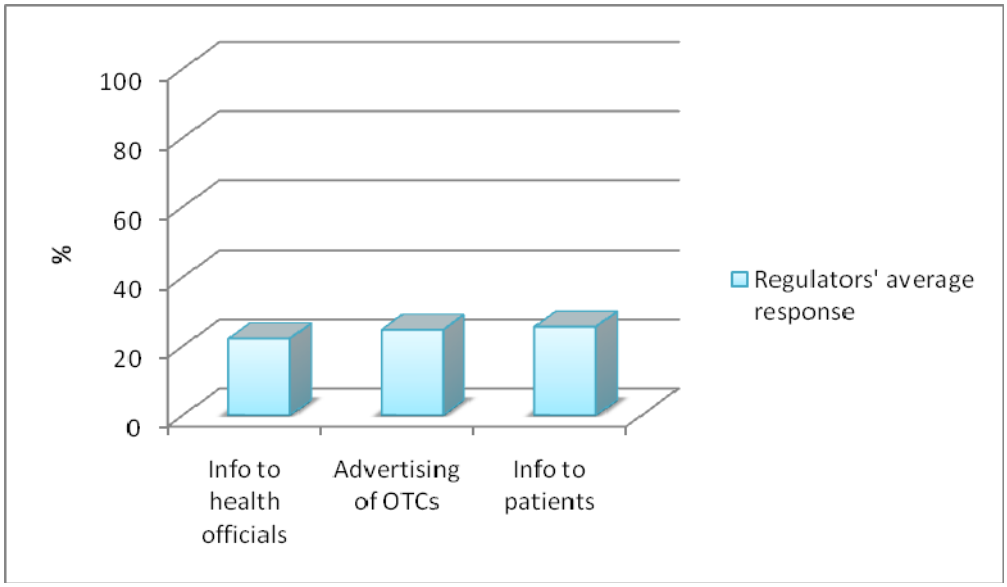
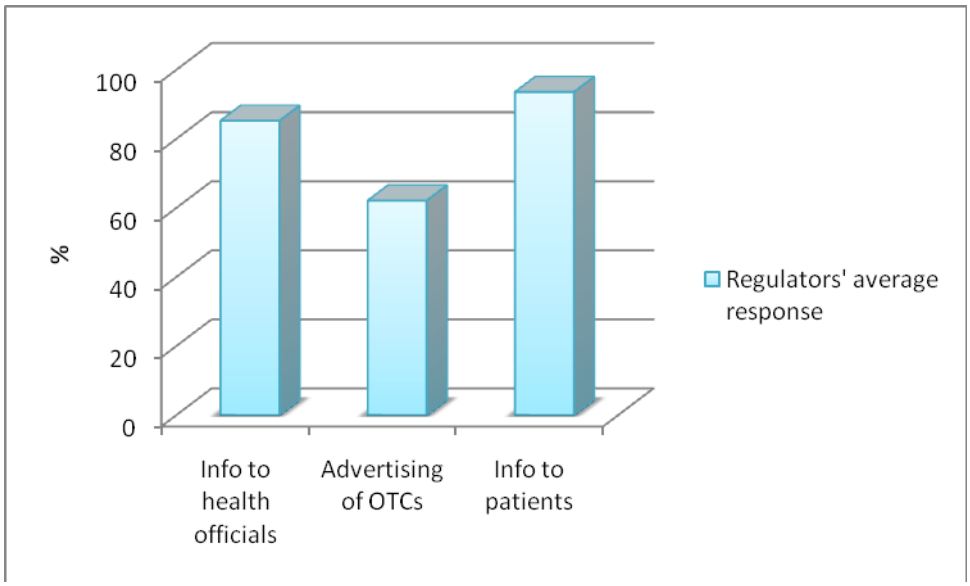


Table A4.2: Typical investigations launched

	Information to health officials	Advertising of OTCs	Information to patients
Respondent 1	115	5	12
Respondent 2	10	10	0
Respondent 3	1	0	0
Respondent 4	1	0	4
Respondent 5	36	7	5
Respondent 6	5	5	5
Respondent 7	10	5	5
Respondent 8	20	15	20
Respondent 9	60	30	30
Respondent 10	2	4	0
	Range: 1–115	Range: 0–30	Range: 0–30

Note: the number given to each respondent may not correspond to the numbering in other tables.

Figure A4.7: Average percentage of complaints investigated



A4.10 It is noted that behind the averages, the results are highly dispersed.

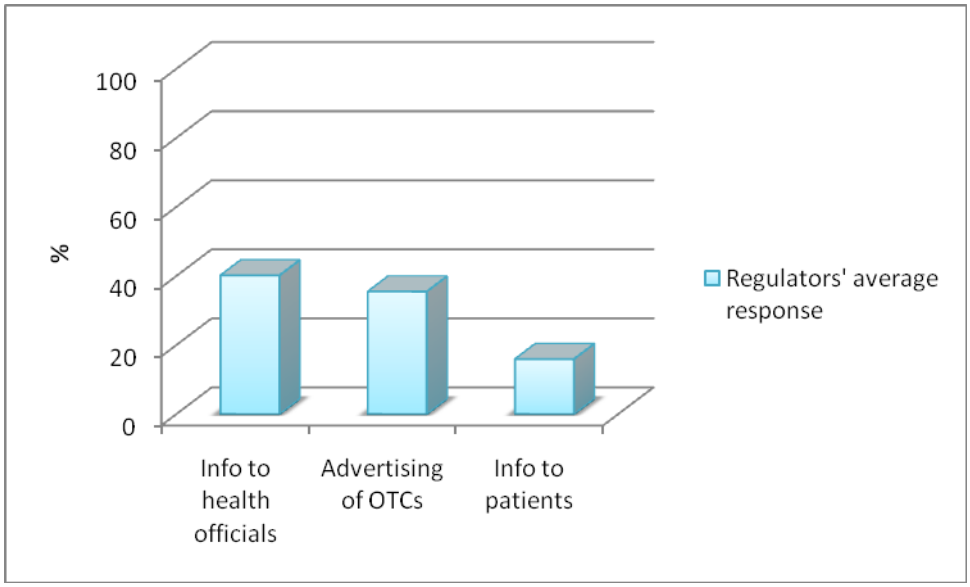
A4.11 The relative likelihood of a violation appears highest in the provision of information to healthcare professionals.

Table A4.3: Typical violations

	Information to health officials	Advertising of OTCs	Information to patients
Respondent 1	95	3	7
Respondent 2	40	100	0
Respondent 3	10	0	1
Respondent 4	0	0	3
Respondent 5	20	5	1
Respondent 6	50	50	50
Respondent 7	30	40	0
Respondent 8	3	3	0
Respondent 9	1,500	0	0
Respondent 10	2	4	0
	Range: 0–1,500	Range: 0–100	Range: 0–50

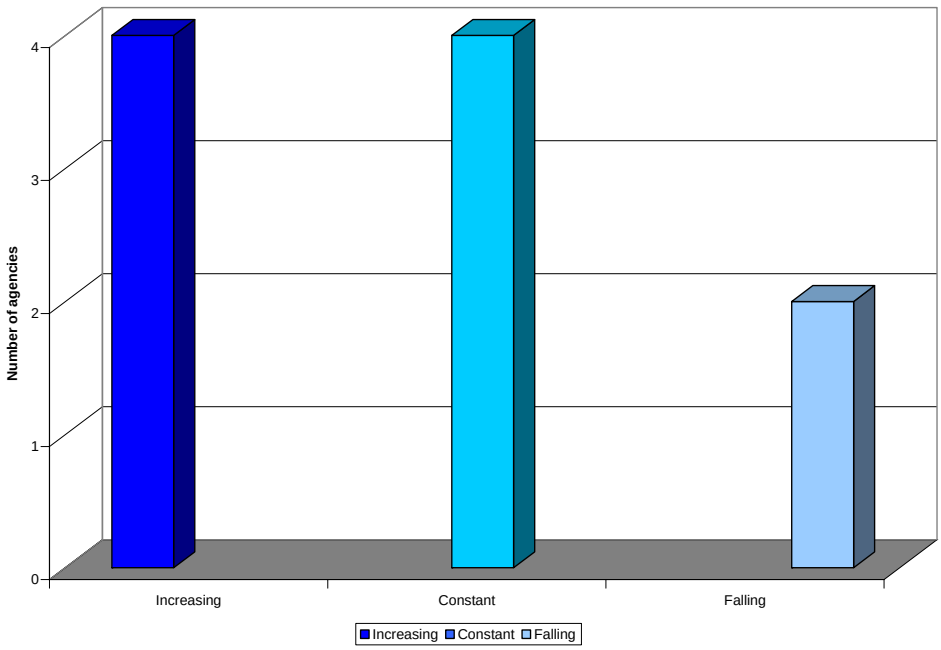
Note: the number given to each respondent may not correspond to the numbering in other tables.

Figure A4.8: Violations as percentage of information seen (average)



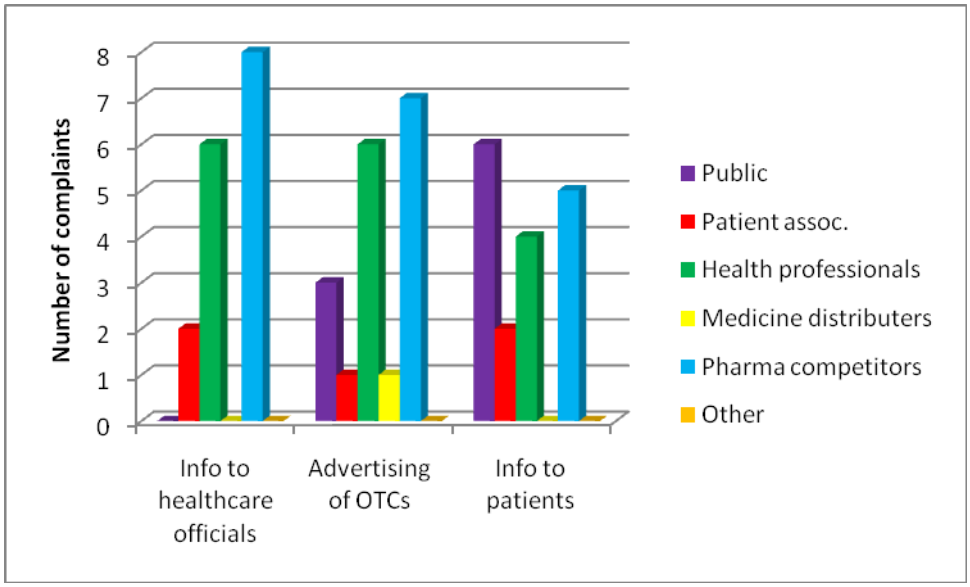
A4.12 Most respondents either thought that violations had remained the same over the last five years or that they had increased.

Figure A4.9: Trend in violations over the past five years



A4.13 The majority of complaints came from pharmaceutical competitors, particularly regarding advertising to health professionals and the advertising of OTCs. The public were the most vocal when it came to information to patients. Patient associations do not seem to a common source of complaints.

Figure A4.10: Sources of complaints



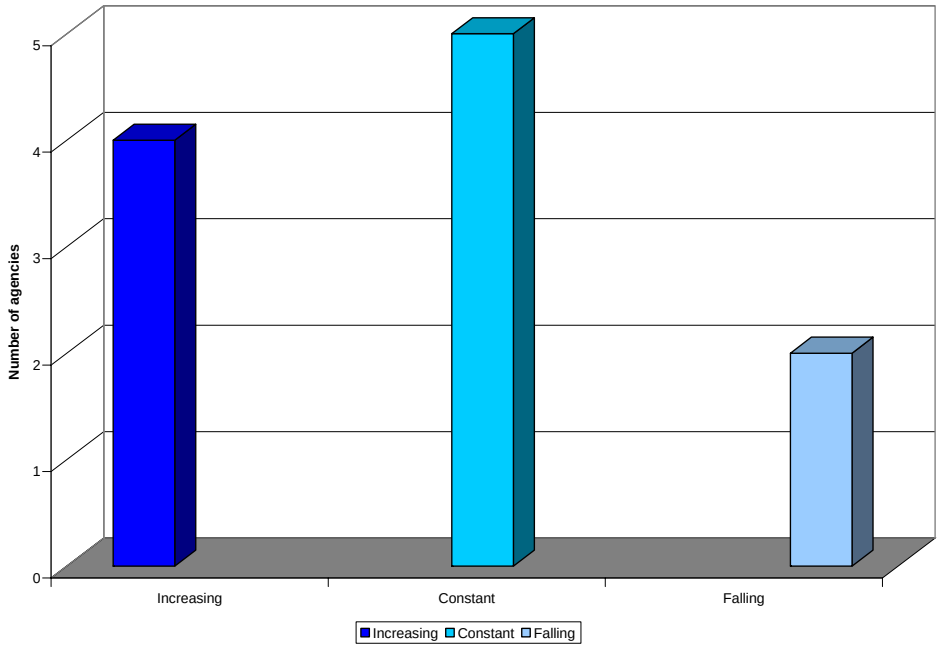
A4.14 One respondent identified three other sources of complaints, including two consumer organisations.

A4.15 The most common types of violations of the existing rules were cited as:

- Marketing prescription medicines to general public
- Content of information is not the same as in SPC, e.g. exaggeration of effects, safety information is not complete
- Unbalanced risk/benefit information
- Incorrect reimbursement information
- Unfavourable comparison with other treatments
- Advertising under the cover of information
- Errors in labelling/patient information

A4.16 The expected trend in violations, in the absence of the new policy, broadly mirrors the experience of the last five years.

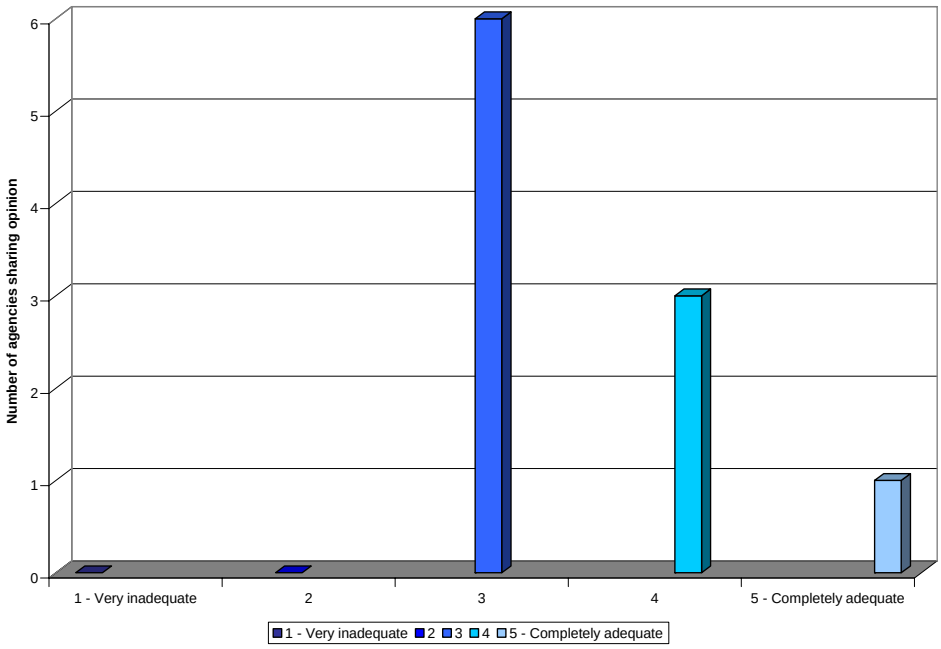
Figure A4.11: Expected trend in violations over the next five years



The Impact of Current Trends on Patients

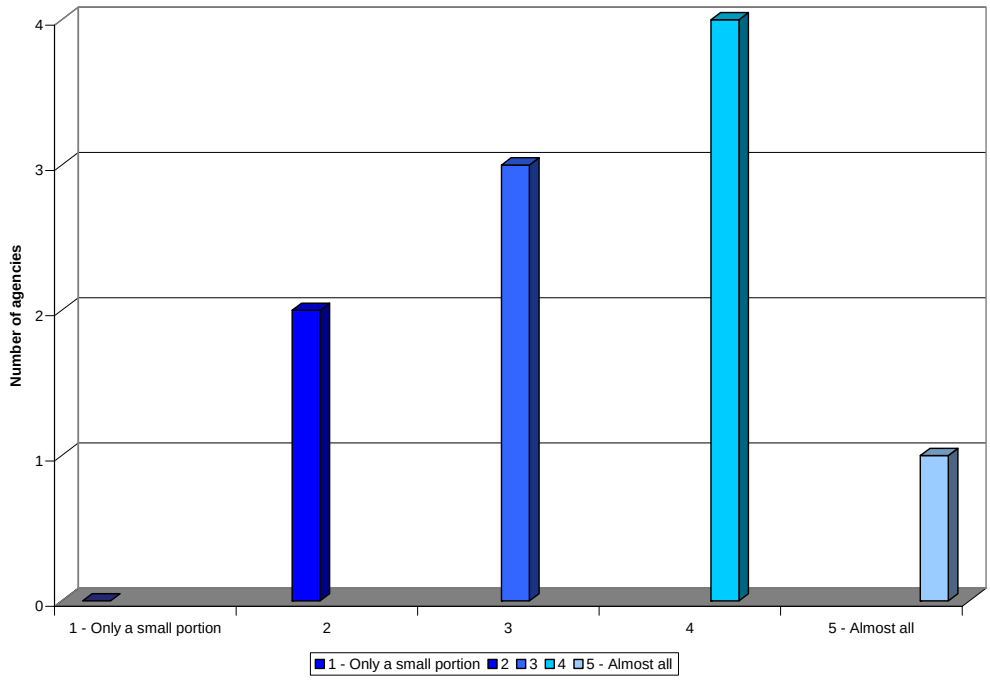
A4.17 The regulators see the current state of information provision to patients to be at least adequate.

Figure A4.12: Adequacy of current state of information provision to patients



A4.18 The regulators are broadly positive about the extent to which existing initiatives in information provision will achieve the potential benefits available.

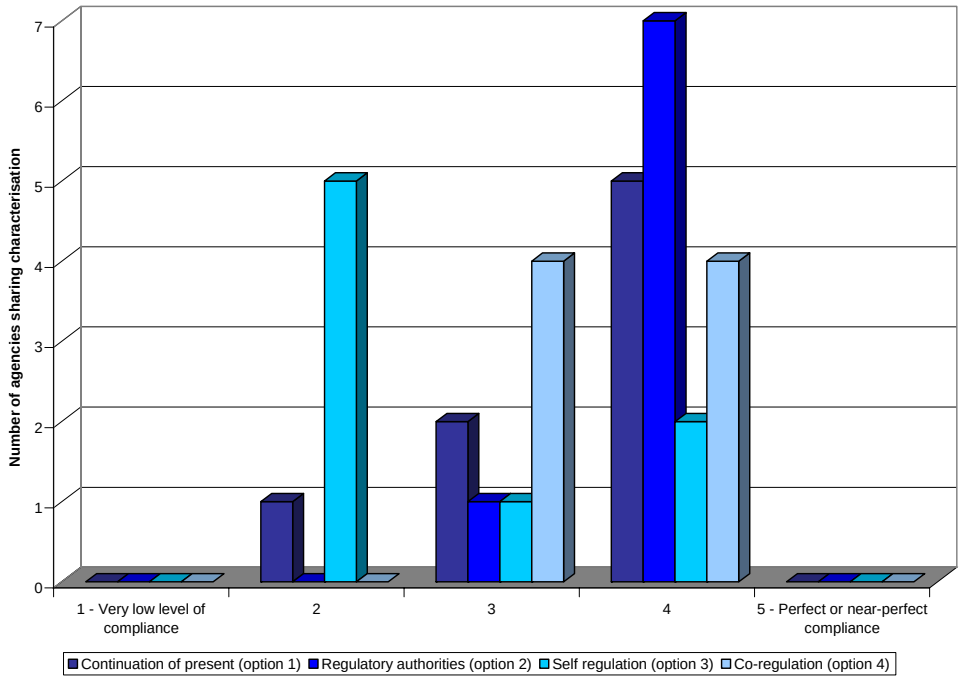
Figure A4.13: Proportion of potential benefits that current initiatives will achieve



The New Policy Options

A4.19 The regulators were asked to characterise the likely level of compliance by pharmaceutical companies with the rules on information under the status quo and the new policy options. It is clear from the following chart that the regulators believe that compliance would be strongest if they were responsible for regulation, and weakest with self-regulation.

Figure A4.14: The expected compliance by pharmaceutical companies



A4.20 Regulators think that, if co-regulation were adopted, then the following stakeholders should be represented in the co-regulatory body:

- Pharmacists
- Doctors
- The pharmaceutical industry
- Academic experts
- Patient Groups
- Medicines Regulators

The Cost of the New Policy Options

A4.21 Between four and six of the regulators estimated the incremental cost of the different regulatory options (the answer varies according to each option). The raw results are summarised below. (These numbers include the impact upon pre-existing structures, e.g. public sector regulation would include any savings anticipated in the costs incurred by existing self-regulatory bodies).

Table A4.4: Cost comparison of regulatory options (raw results of survey)

	Total annual ongoing costs (€000)	Average annual ongoing costs (€000)	Useable replies
Public sector regulation	2,022	272	6
Self-regulation	1,490	223	4
Co-regulation	1,538	334	4

A4.22 Again, these numbers are relatively small. However, to provide context, the six respondents who estimated the impact of the new policy options with regulation by medicines regulators (i.e. themselves) had an average annual budget of just over €86,000 for monitoring information provision. For instance, one regulator stated that it currently allocates just 0.1 FTE to this area at present, but anticipates that between four and five new FTEs would be required under the new regime. The significant scale of the increases means that the estimates should be treated with additional caution.

A4.23 One-off costs were cited by only some respondents.

The relative effects of the new policy options

A4.24 In addition to differences in the costs to regulatory bodies, the different policy options may lead to different impacts on patient behaviour (e.g. because they affect the scale or nature of the information provided to patients by industry).

A4.25 Respondents were asked to provide an indication of relative size of the impacts on patient behaviour that might be expected under each policy option. In particular, they were asked to estimate how many patients would respond in specified ways under self-regulation and co-regulation, *for every 100 patients would respond in this way under regulation by medicines regulatory authorities*. For instance, a reply of 200 would imply an effect which was twice as big as that under regulation by medicines regulatory authorities, while a reply of 50 would imply an effect only half the size.

A4.26 Five regulators responded to these questions. The maximum, minimum and average of these responses are given below. Co-regulation is seen as broadly comparable in effect; self-regulation as markedly inferior.

Table A4.5: Relative magnitude of impacts on patient behaviour

	Self-regulation			Co-regulation		
	Min	Max	Average	Min	Max	Average
Take preventative action to avoid disease	100	60	85	100	90	97
Identify symptoms of disease earlier, leading to earlier diagnosis	100	80	90	100	90	97
Become anxious about diseases which in fact they do not have	200	100	160	120	100	110
Become better informed about the information that they need to share with healthcare professionals during consultations (e.g. family history of disease)	100	80	90	100	80	92
Request inappropriate drug from healthcare professional	200	100	150	120	100	110
Comply better with their prescription	100	70	88	100	80	92
Comply worse with their prescription	150	100	118	120	100	110

SECTION 5: CROSS-SURVEY COMPARISONS

Information to Patients: The Status Quo

A5.1 The following charts compare the views of each of the three categories of stakeholder covered by the surveys on the current situation with regard to the provision of information to patients in their own Member State.

Figure A5.1: Quantity of information

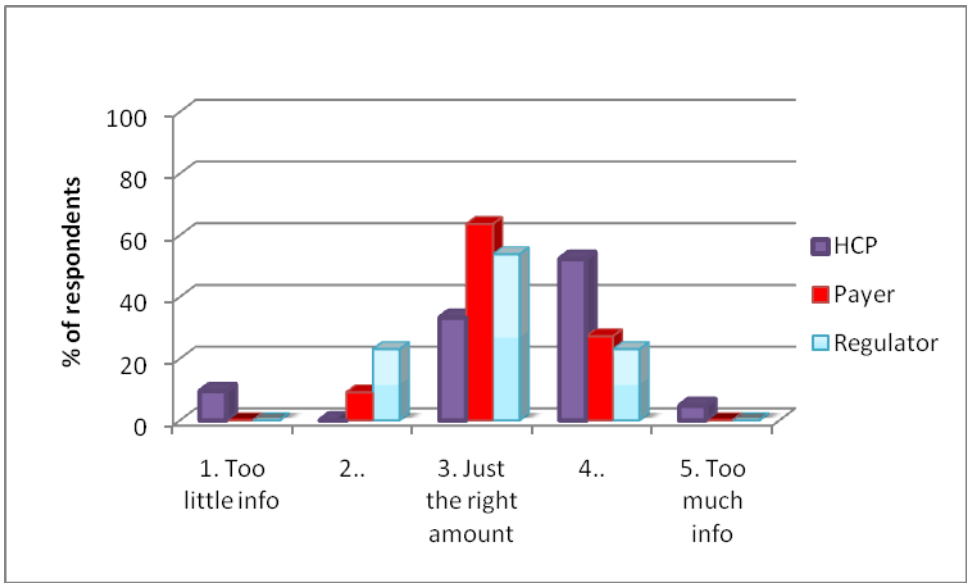


Figure A5.2: Quality of information

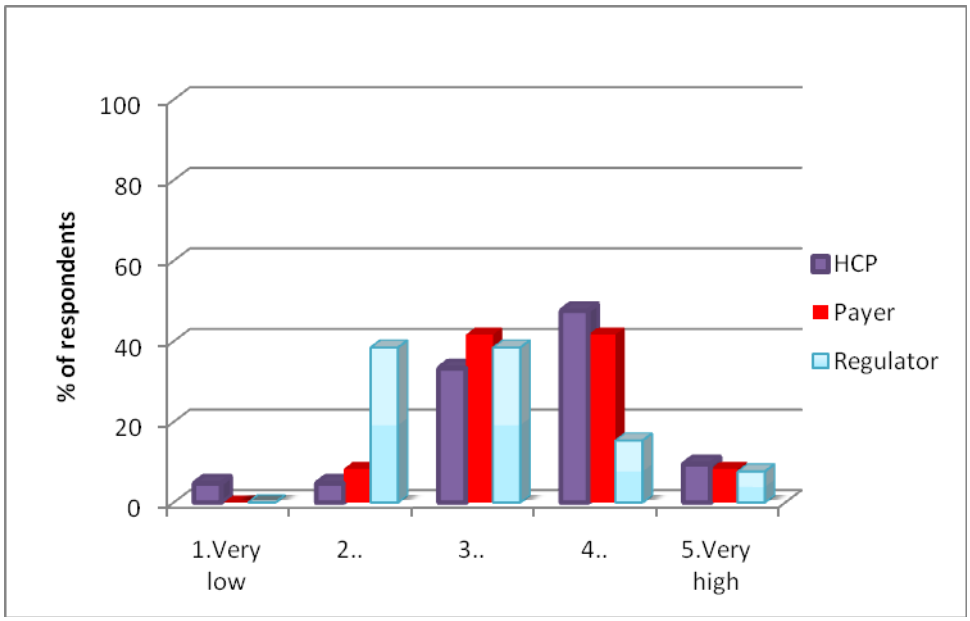
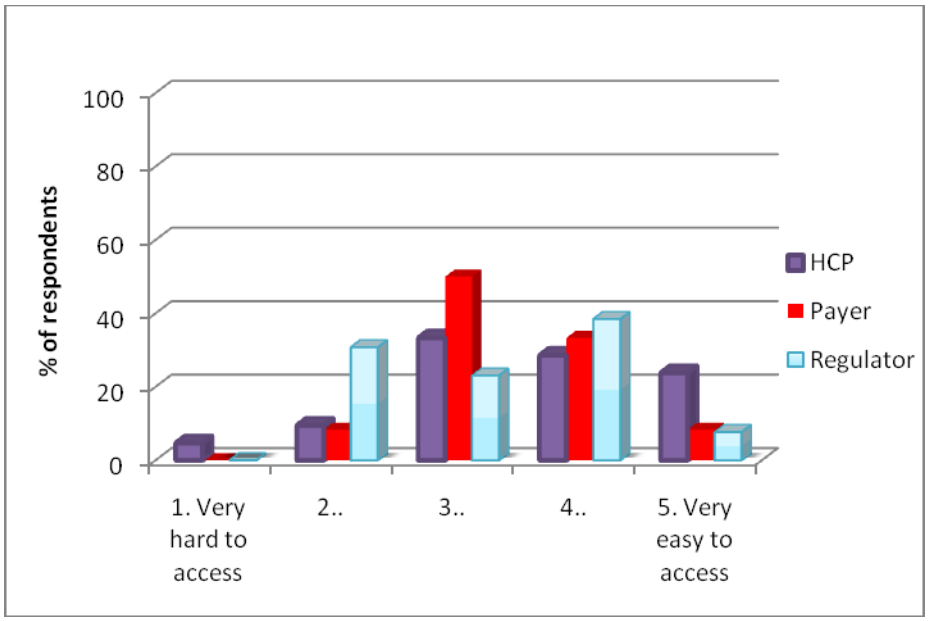


Figure A5.3: Accessibility of information



A5.2 In particular it is noted that:

- The views of the different stakeholders do not differ greatly along these three dimensions.
- An appropriate quantity of information appears to be available (with a slight emphasis on too much being available rather than too little).
- The quality of information available only appears to be of concern to the regulators.
- The regulators see accessibility as a greater issue than either the payers or the healthcare professionals.

A5.3 There is more detail in the payer and the healthcare provider surveys on the current situation, specifically with regard to expected changes in information provision over the next five years, based upon current policy. These are summarised in the charts below.

Figure A5.4: Expected change in quantity of information provided

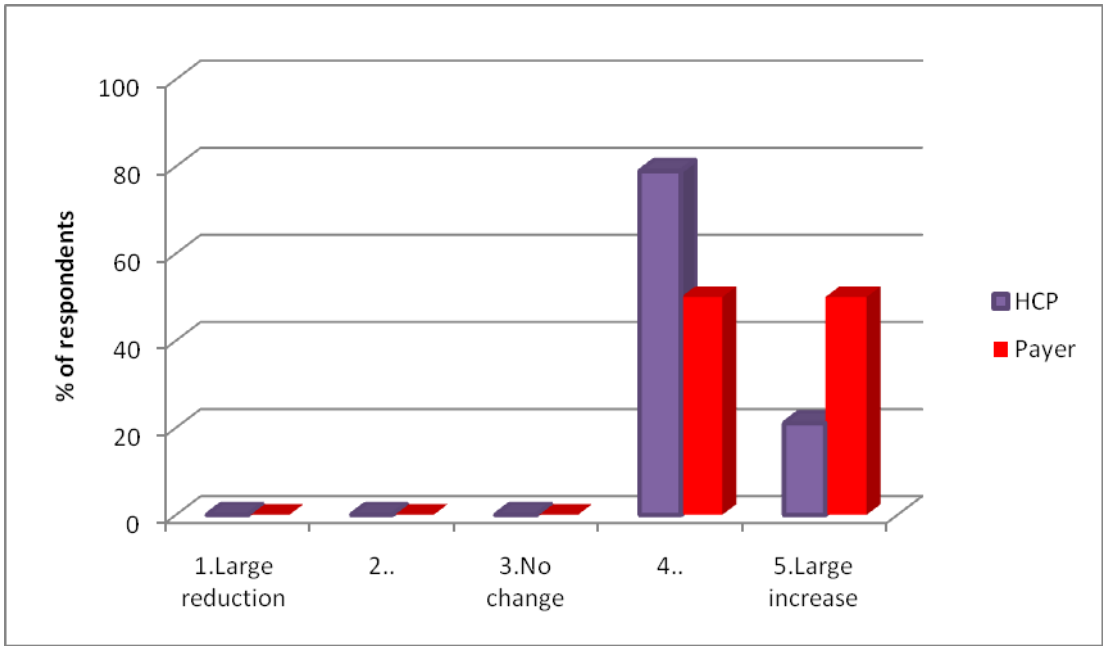


Figure A5.5: Expected change in quality of information provided

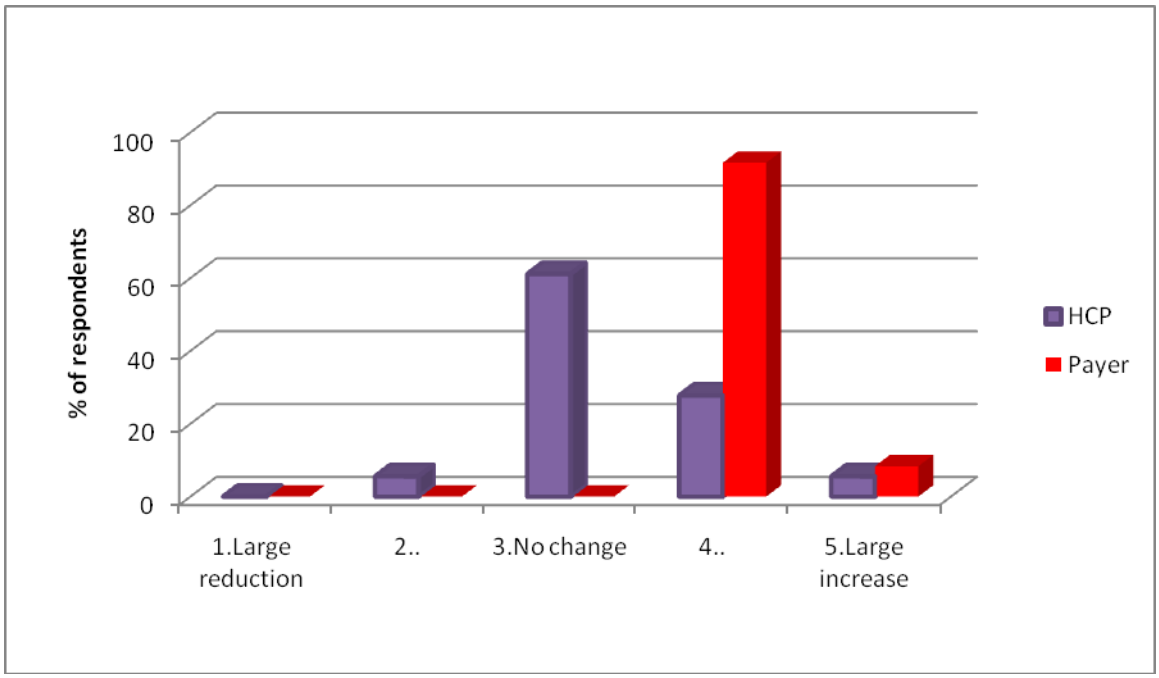
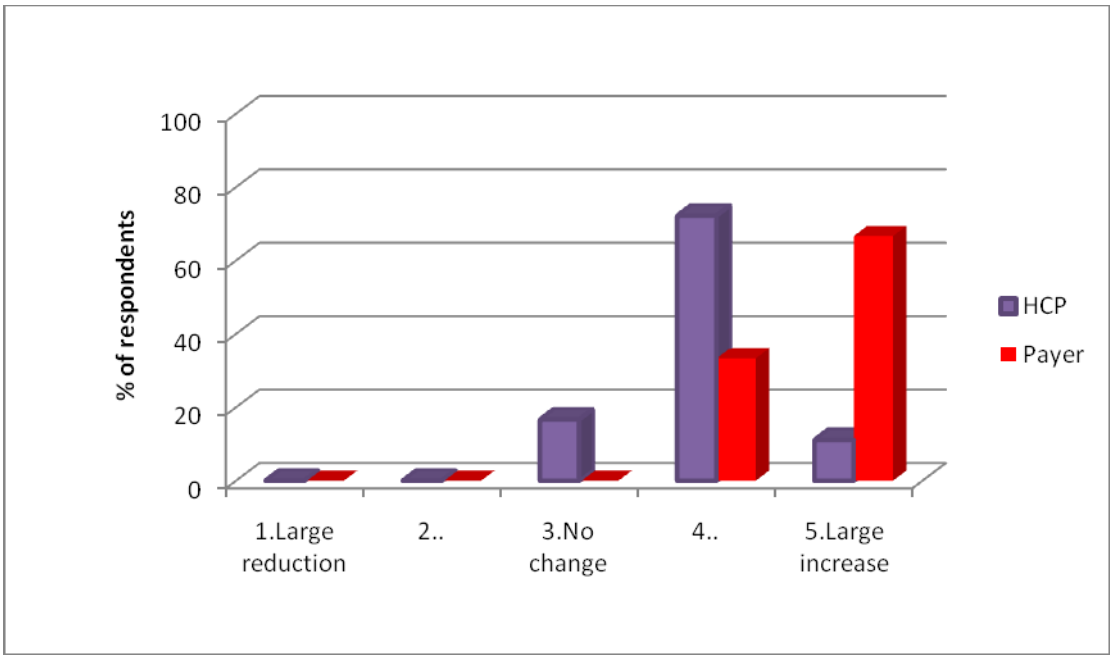


Figure A5.6: Expected change in accessibility of information

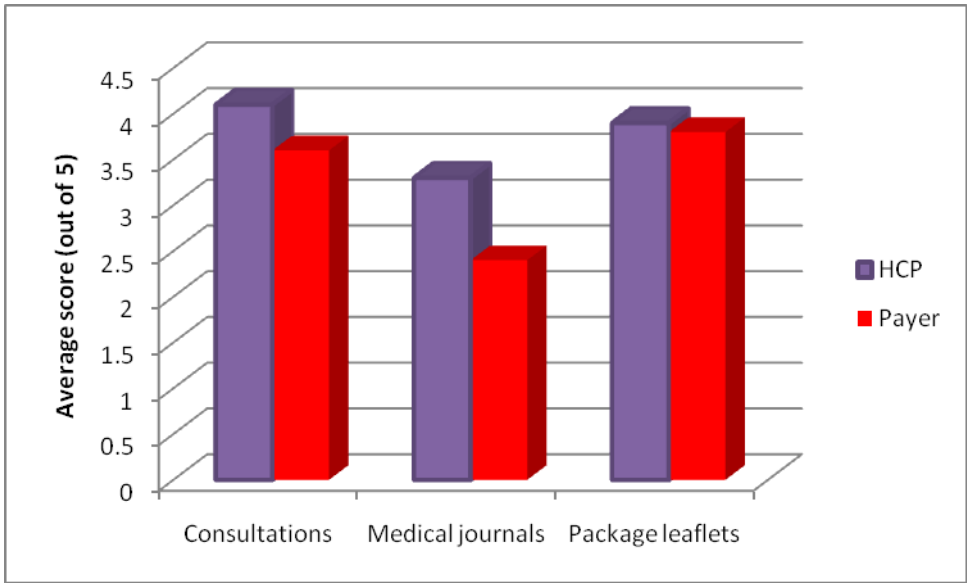


A5.4 There is a marked divergence between these two stakeholder groups in terms of the expected development of information provision under current policies. The payers are more positive across each dimension surveyed, in particular on the expected change in the quality of information provided and its accessibility by patients.

A5.5 Turning to the channels through which information is accessed by patients, both stakeholder groups are highly supportive of the role of healthcare professionals (with the strength of support from healthcare professionals themselves being markedly greater). Package leaflets are generally seen as being of high quality.

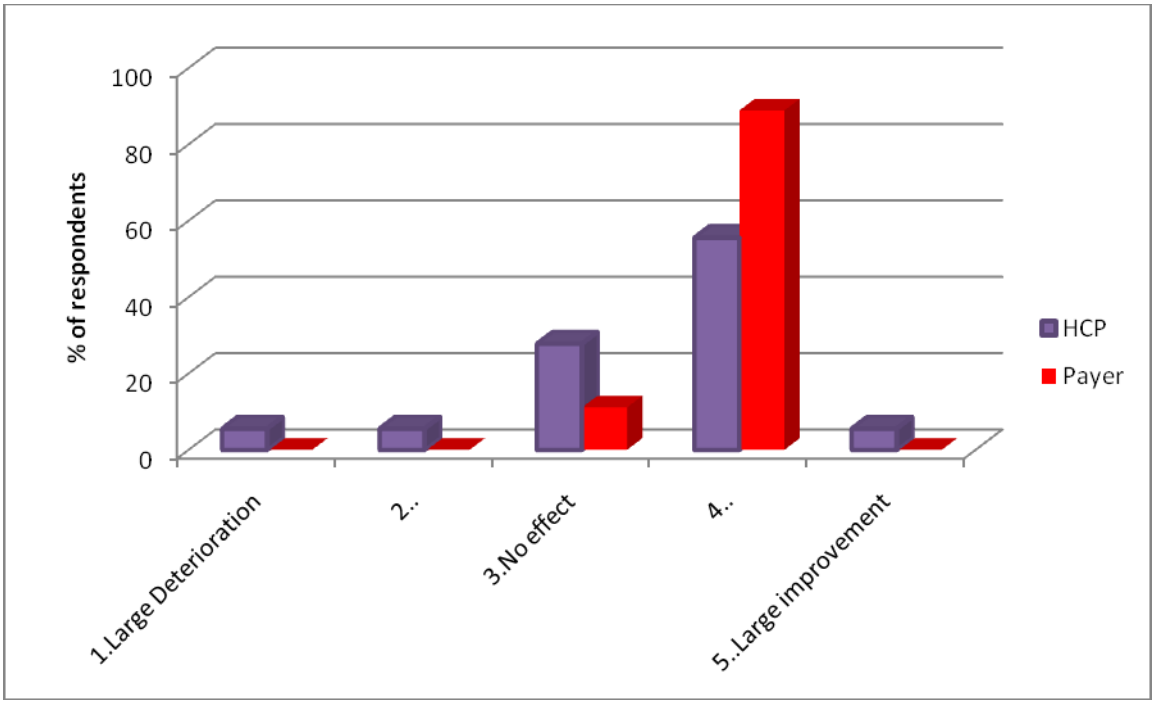
A5.6 TV, radio, internet, newspapers and magazines, and posters were seen as being not at all comprehensive at present.

Figure A5.7: Comprehensiveness of information



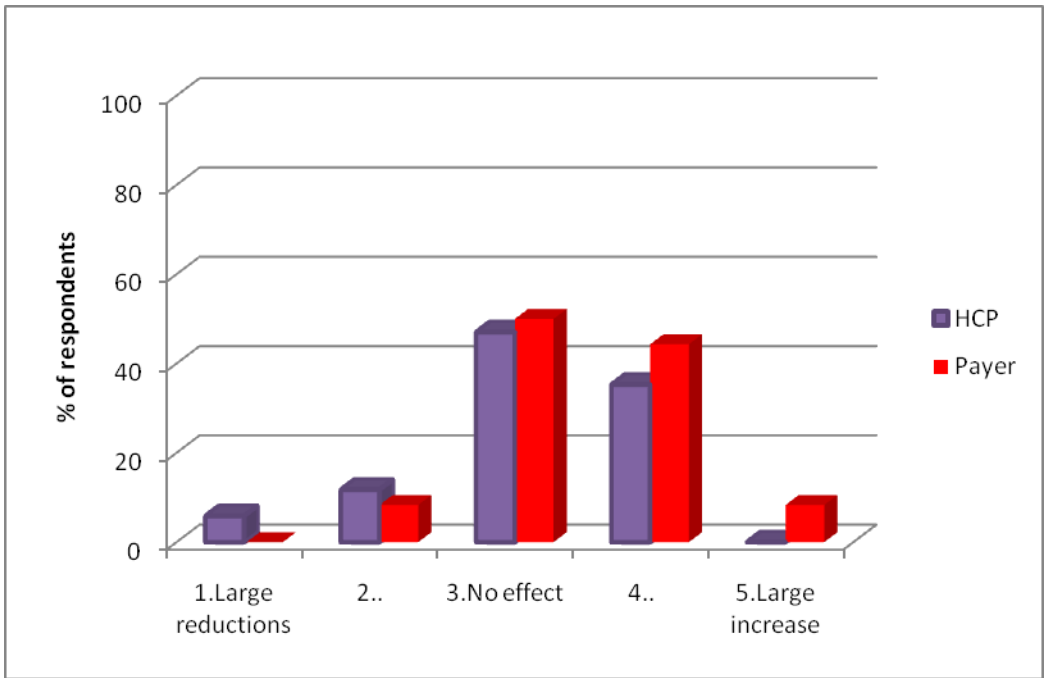
A5.7 In terms of the impact of this information on healthcare outcomes, the healthcare providers (with one dissenting voice) are broadly positive, while the payers are very positive. The payers' stated view is essentially that under a continuation of current policies there would be a notable improvement in healthcare outcomes.

Figure A5.8: Impact of information provision on the quality of healthcare provision



A5.8 Both stakeholder groups are broadly in agreement on the impact of existing trends in information provision on future prescription volumes, with most respondents in both groups anticipating either no effect or an increase in prescriptions.

Figure A5.9: Impact upon prescriptions



Channels of information

A5.9 Medicines regulators and healthcare providers were also asked to assess the potential benefits and the potential risks of misuse of permitting the pharmaceutical industry to distribute information through various channels. The following charts summarise the results using the average scores given by both groups for each channel.

Figure A5.10: Potential benefits from selected media

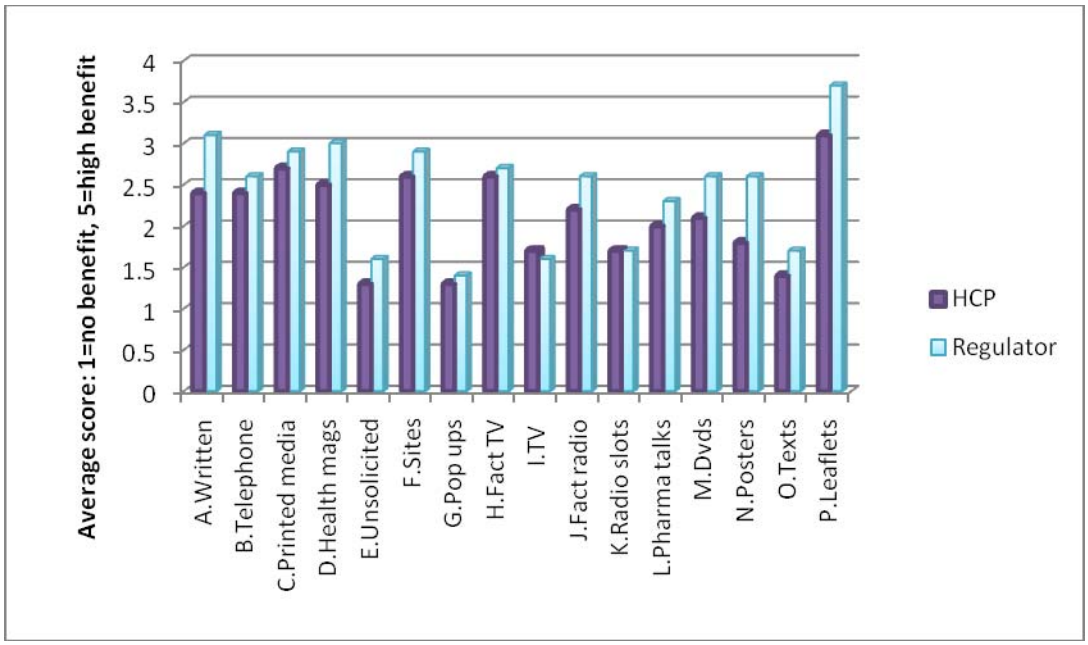
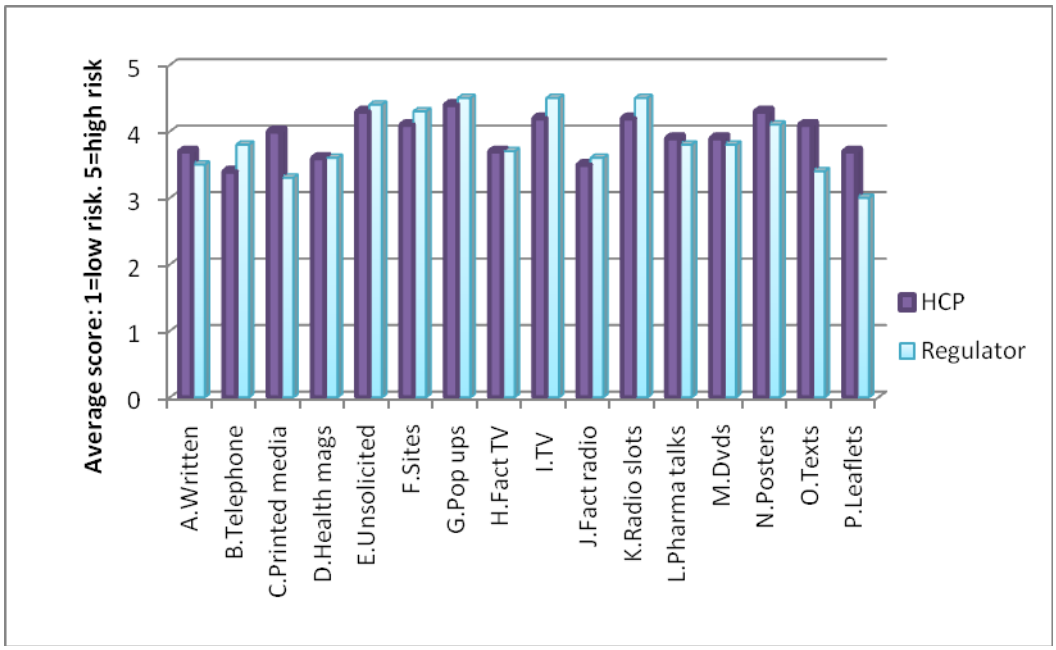


Figure A5.11: Potential risks of misuse of selected media



The complete description of the channels is as follows:

A. Solicited written communication (e.g. post, e-mails, answers to questions)

B. Solicited telephone information (e.g. telephone help lines)

C. Generalist printed media (e.g. books, articles in newspapers, general magazines)

D. Magazines dealing predominantly with health issues

E. Unsolicited posting, emails or telephone calls

F. Internet sites

G. Internet pop-ups

H. TV programmes with factual content

I. Short TV slots, not linked to the content of the programme

J. Radio programmes with factual content:

K. Short radio slots, not linked to the content of programmes

L. Seminars or oral presentations to patients or the general public organised by the pharmaceutical industry

M. DVDs or videos

N. Posters or billboards

O. Mobile phone text messages

P. Leaflets (other than PILs) freely available e.g. in pharmacies.

A5.10 The two stakeholder groups similar views on the anticipated risks of misuse of the different channels. Broadly, healthcare professionals appeared more pessimistic about the potential benefits.

A5.11 No channel received a strong vote of confidence from both groups of stakeholders in terms of leading to benefits. Text messages and radio and TV “short slots” are seen as being particularly unlikely to generate patient benefits.

A5.12 Nearly all of the channels are seen as having significant risks of misuse. Typically, low patient benefit is associated with high risk of misuse.

A5.13 The table below summarises the average scores given to the benefits and risks of each channel by medicines regulators and healthcare providers, and the ranking of the channels in terms of the difference between the score for risk and the score for benefit (with the worst ranking channels at the top). The results are similar for both medicines regulators and healthcare professionals.

Table A5.1: Ranking of channels according to difference between benefits and risk scores

HCP			*Regulator*		
	Benefits	**Risks**		**Benefits**	**Risks**
G.Pop ups	1.3	4.8	**G.Pop ups**	1.2	4.6
E.Unsolicited	1.3	4.6	**K.Radio slots**	1.6	4.6
I.TV	1.7	4.6	**E.Unsolicited**	1.6	4.4
K.Radio slots	1.7	4.5	**O.Texts**	1.5	4.1
O.Texts	1.5	4.3	**N.Posters**	1.6	4.1
N.Posters	1.8	4	**I.TV**	3	4.6
M.Dvds	2.1	4.1	**L.Pharma talks**	2.4	3.9
L.Pharma talks	1.9	3.8	**B.Telephone**	2.3	3.7
F.Sites	2.6	4.2	**J.Fact radio**	2.6	3.9
C.Printed Media	2.7	4	**F.Sites**	2.9	3.9
A.Written	2.5	3.5	**M.Dvds**	2.9	3.9
B.Telephone	2.5	3.5	**H.Fact TV**	2.9	3.7
H.Fact TV	2.7	3.7	**D.Health mags**	3.2	3.6
J.Fact radio	2.8	3.5	**A.Written**	3	3.3
D.Health mags	2.6	3.3	**C.Printed media**	3	3.3
P.Leaflets	3.1	3.3	**P.Leaflets**	3.1	3

SECTION 6: CASE STUDY ON CORONARY HEART DISEASE IN THE UK[16]

Introduction

A6.1 This case study is on the provision of patient information on coronary heart disease in the UK. Coronary heart disease (CHD) is an example of cardiovascular disease (CVD), which refers to the class of diseases which involve the heart or blood vessels (arteries and veins) and includes hypertension, atherosclerosis, coronary heart disease, and stroke.

A6.2 Although there are a number of different types of heart disease, coronary heart disease is by far the most common type, accounting for 53 per cent of all cardiovascular disease deaths in 2002.[17]

A6.3 The motivation for choosing this case study includes the following:

(a) Coronary heart disease affects a large number of people and hence the findings from such a case study are likely to be more widely applicable than if the focus were on a rare disease;

(b) All of the six mechanisms of effect discussed in the main report are potentially relevant in the case of coronary heart disease:

- *Preventative effect* – coronary heart disease can potentially be prevented by following an appropriate diet and by exercising;
- *Awareness effect* – citizens need to be aware that chest pains may be a sign of a heart attack, so that they can seek medical help;
- *Anxiety effect* – it is possible to become anxious about a heart condition without actually suffering from one;
- *Interaction effect* – provision of appropriate information to doctors (e.g. a family history of heart disease) could improve prescription decisions;
- *Prescription distortion effect* – patient requests for well-known cholesterol-reducing drugs could potentially distort prescription decisions;

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[16] The medical information contained in this case study is provided solely for the purposes of illustrating the potential impacts of the proposed policy. Europe Economics/ DG Enterprise do not give medical advice or engage in the practice of medicine. Europe Economics/ DG Enterprise under no circumstances recommends any particular treatment for the treatment of heart disease or related conditions and in all cases recommends that patients consult their healthcare providers before pursuing any course of treatment.

[17] World Health Organisation http://www.who.int/cardiovascular_diseases/en/cvd_atlas_01_types.pdf

– *Compliance effect* – compliance with prescribed medication could reduce the likelihood of future heart attacks.

A6.4 The case study has the following objectives:

(a) To gather evidence, if any, on how health outcomes from coronary heart disease can be affected through the seven mechanisms of effect, preferably in terms of QALY estimates.

(b) To review (at a high level) current information provision to patients in the UK on coronary heart disease, and hence the potential for the Commission's policy options to lead to practical improvements in information provision in this area.

Description of Coronary Heart Disease in the UK

A6.5 Coronary heart disease (also known as coronary artery disease or ischaemic heart disease[18]) is the term that describes the condition which occurs when the heart's blood supply is blocked or interrupted by a build up of fatty substances in the coronary arteries.[19]

A6.6 Over time, the walls of the arteries can become furred up with fatty deposits (atheroma), as part of a process known as atherosclerosis. If the coronary arteries become narrow, due to a build up of atheroma, the blood supply to the heart will be restricted, which can cause angina (chest pains). Eventually, if a coronary artery becomes completely blocked, it can cause a heart attack.

A6.7 Coronary heart disease is the UK's biggest killer, with one in every four men, and one in every six women dying from the disease. Each year, approximately 300,000 people have a heart attack in the UK,[20] and more than 110,000 die of heart problems in England.[21] Angina affects about 1 in 50 people and in the UK there are an estimated 1.2 million people with the condition. Angina affects men more than women, and people's chances of getting it increase as they get older.

A6.8 The following table details the number of deaths from different cardiovascular diseases in the UK in 2002:

[18] http://www.americanheart.org/presenter.jhtml?identifier=4720
[19] NHS Direct http://www.nhsdirect.nhs.uk/articles/article.aspx?ArticleId=444
[20] NHS Direct http://www.nhsdirect.nhs.uk/articles/article.aspx?ArticleId=444
[21] NHS, National service framework for coronary heart disease

Table A6.1: Deaths from cardiovascular diseases in UK in 2002

	Deaths in UK in 2002 (000s)	Estimated deaths per 100,000 population in UK in 2002
Rheumatic heart disease	1.7	2.9
Hypertensive heart disease	3.5	5.9
Ischaemic heart disease	120.5	204.1
Cerebrovascular disease	59.3	100.4
Inflammatory heart diseases	2.1	3.5
All cardiovascular diseases[22]	229.0	387.7

Source: WHO measurement and health information, December 2004.

A6.9 The following table details the estimated total DALYs in the UK caused by cardiovascular disease in 2002.

Table A6.2: Estimated total DALYs ('000) by cardiovascular disease

	Estimated total DALYs in UK in 2002 (000s)	Percentage of total DALYs in UK (excluding injuries)
Rheumatic heart disease	11	0.2
Hypertensive heart disease	20	0.9
Ischaemic heart disease	653	8.4
Cerebrovascular disease	366	6.3
Inflammatory heart diseases	31	0.6
All cardiovascular diseases[23]	**1,297**	**20.7**

Source: WHO measurement and health information, December 2004.

A6.10 Much of the burden caused by cardiovascular disease is preventable. There are a number of risks factors which increase an individual's chances of suffering from CHD:[24]

(c) Major risk factors: high blood pressure; high blood cholesterol; tobacco use; unhealthy diet; physical inactivity; diabetes; advancing age; inherited (genetic) disposition.

(d) Other risk factors: poverty; low educational status; poor mental health (depression); inflammation; blood clotting disorders.

Medication to Treat Coronary Heart Disease

A6.11 Coronary heart disease cannot be cured. However, it can be managed and with the right treatment the symptoms of coronary heart disease can be reduced. There are many

[22] The total appears to include other cardiovascular diseases apart from those listed separately
[23] The total appears to include other cardiovascular diseases apart from those listed separately
[24] World Health Organisation http://www.who.int/cardiovascular_diseases/en/cvd_atlas_01_types.pdf

different medicines that can be used to treat CHD. Some of the medicines that are commonly used to treat heart conditions are outlined in the following table:

Table A6.3: Main medications used to treat heart disease

Medication	Description
Low dose aspirin and "clot-busting" medication	Blood clots in the coronary arteries are a major cause of heart attacks. A low dose aspirin and/or a clot-busting medicine may be prescribed to help prevent blood clotting, reducing the risk of heart attack and angina.
Anticoagulants	Anticoagulants, such as warfarin, are sometimes used to stop the blood clotting.
Statins	A high level of "bad cholesterol" in the blood, can cause a build up of atheroma (fatty deposits) in the arteries, increasing the risk of a heart attack or stroke. Cholesterol-lowering medicines, called statins, may be prescribed to people who have a high blood cholesterol level. NICE Guidance (TA094) states that *"Statin therapy is recommended as part of the management strategy for the primary prevention of CVD for adults who have a 20% or greater 10 year risk of developing CVD …it is recommended that therapy should usually be initiated with a drug with a low acquisition cost."*
Beta blockers	Beta blockers are often used to prevent angina, and treat high blood pressure. They work by blocking the effects of stress hormones. Beta blockers are usually taken in small doses alongside ACE inhibitors and diuretics.
ACE (Angiotensin Converting Enzyme) inhibitors	Angiotensin Converting Enzyme (ACE) inhibitors are commonly used to treat heart failure and high blood pressure. They block the activity of a hormone called angiotensin II which narrows blood vessels.
Angiotensin II receptor antagonists	Angiotensin II receptor antagonists work in a similar way to ACE inhibitors. They have fewer side effects than ACE inhibitors.
Anti-arrhythmic medicine	Anti-arrhythmic medicine is sometimes used to control the rhythm of the heart.
Nitrates	Nitrates are used to widen the blood vessels.
Cardiac glycosides	Cardiac glycosides, such as digoxin, strengthen and slow the heartbeat. Cardiac glycosides are usually only taken in addition to other medicine, such as ACE inhibitors and diuretics.

Source: assimilated from various web-based sources.

Existing Information Provision on Coronary Heart Disease

A6.12 The following table contains a summary of some of the current web-based information available on coronary heart disease in the UK.

Table A6.4: Information on coronary heart disease

Website and link	Brief description of information service provided	Information on disease prevention?	Drug information?
NHS Direct website http://www.nhsdirect.nhs.uk/	Delivers telephone and e-health information services 24 hrs a day. NHS Direct has an authoritative health website, and 2004 saw the addition of the NHS Direct digital TV service. Accessed by over two million people every month.	Yes	General information on CHD including information on types of medicines that can be used to treat it. Site does not contain the brand names of particular medicines.
British Heart Foundation website http://www.bhf.org.uk/	Produces publications, videos and other materials for health professionals and public. Informs public through information campaigns, advertising and media.	Yes	Produces a booklet "Medicines for the heart".[25] Describes different drugs, including what they are for, how they work and side effects. Class (not brand) names used.
BBC Health website http://www.bbc.co.uk/health/conditions/heart/	Website pages as part of BBC online service. Online advice service also provided.	Yes	Information on drugs that can treat CHD. Class (not brand) names used.
Patient UK http://www.patient.co.uk/	Health information as provided by GPs to patients during consultations.	Yes	Contains links to http://www.medicines.org.uk/ which contains information on pharmaceutical products.
Heart UK www.heartuk.org.uk	Provide information, telephone helpline, website, membership scheme.	Yes	No

[25] Medicines for the heart, Health Information Series number 17, British Heart Foundation

National Heart Forum www.heartforum.org.uk	Alliance of 50+ national organisations, comprising charities, non-governmental and medical professional organisations.	Yes	No
Medicines Guide http://medguides.medicines.org.uk/ also accessible via link from http://www.medicines.org.uk/	Medicines Guides put together by an independent non-profit group. Funding is provided by 30+ pharmaceutical companies.	No	Detailed information on both generic and branded drugs.
electronic Medicines Compendium (eMC) http://emc.medicines.org.uk/ also accessible via link from http://www.medicines.org.uk/	Updated daily, information provided by pharmaceutical companies and approved by regulatory authorities.	No	Summaries of Product Characteristics (SPCs) and Patient Information Leaflets (PILs).
X-PIL service (patient information leaflets) http://emc.medicines.org.uk/ also accessible via link from http://www.medicines.org.uk/	Provides PILs, designed to be accessible to everyone. Leaflet formats include large font, audio and Braille, and website is designed to work with screen readers.	No	PILs supplied with medicines.

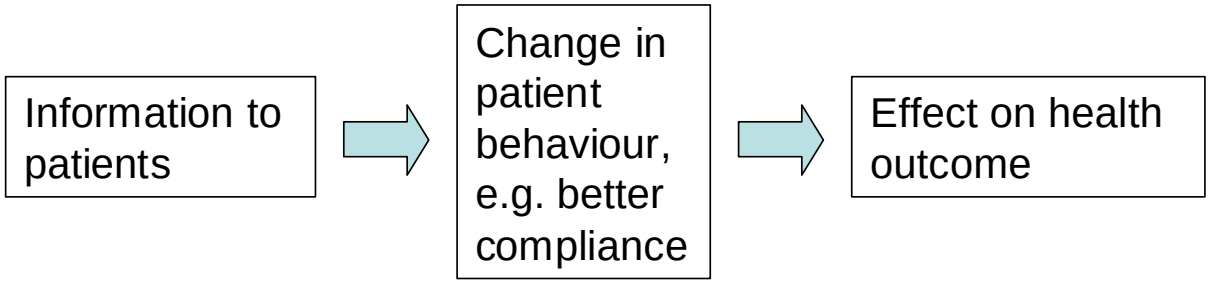
A6.13 As can be seen from the above table, there is currently comprehensive web-based information on pharmaceutical products available in the UK via websites such as the Electronic Medicines Compendium (eMC), Medicines Guides and the X-PIL service. There is also a large amount of information available on disease prevention.

Impact of Patient Information on Health Outcomes

A6.14 The health impact of providing patients with information on medicines and the diseases which they treat can be analysed in two stages. These stages are:

- First, analysis of the effect that such information has on patient behaviour, through the mechanisms of effect discussed earlier;
- Second, analysis of the effect that these changes in patient behaviour have on health outcomes.

A6.15 This two-stage approach is illustrated in the following diagram:



A6.16 The advantage of breaking the problem down into two stages is that it is possible to draw on a wider array of evidence. For instance, papers which look at the impact of improved compliance on health outcomes can usefully inform the second stage of the analysis, even if the improvement in compliance studied in the paper did not result from the provision of information.

A6.17 Estimates of the impact of information provision on patient behaviour were collected through the survey of healthcare providers (see annex 2), and these can be used to inform the first of the above stage of analysis. Hence, within this case study we focus on gathering evidence which may shed light on the impact of changes in patient behaviour on health outcomes, using CHD as an example, in order to inform the second stage of the analysis.

A6.18 As outlined in the introduction, there are a number of mechanisms through which health outcomes from CHD can be affected. Below we present evidence from the literature which can be used to analyse how CHD health outcomes might be affected through the following mechanisms of effect: prevention; awareness; interaction and prescription

distortion; and compliance.[26] The anxiety effect is not addressed in this case study since by definition it relates to people who do not actually have the disease they are concerned about.

A6.19 Most of the studies discussed below describe the potential benefits of various interventions in terms of QALYs. QALY stands for quality-adjusted-life-year. QALYs capture impacts on life expectancy and quality of life in a single measure, and are widely used in assessing healthcare interventions. A year in perfect health is considered equal to 1 QALY, and quality of life is generally considered to be less than full and to decline with age. The average QALY per year in the population as a whole is 0.79 at 60 and declines to 0.73 after 75.[27]

Preventative effect

A6.20 If the public has access to high quality information on CHD prevention and medication this could lead to a lower incidence of the disease if it results in citizens taking preventative steps to lower their risk of developing the disease.

A6.21 McElduff et al (2001)[28] estimate the number of coronary events that could be prevented in Australia each year by the use of preventative and therapeutic strategies targeted at sub-groups of the population based on their levels of risk and need.

A6.22 They find that approximately 40 per cent of coronary events could be avoided each year if the average level of cholesterol in the population was reduced by 0.5 mmol/L, smoking was halved and the prevalence of physical inactivity was reduced to 35 per cent.

A6.23 If 40 per cent of DALYs in the UK relating to coronary heart disease could be prevented this would lead to a reduction of approximately 261,200 DALYs a year.[29]

Awareness effect

A6.24 If members of the public have access to high quality information on CHD symptoms and medication this could lead to improved health outcomes as a result of citizens being alerted earlier to the possibility that they might have the disease and taking more timely action. For example, a patient might discuss their symptoms with their doctor which, although not preventing the disease, could lead to earlier diagnosis and to the patient starting a course of treatment when they are, say, younger or have a lower cholesterol level.

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[26] Please note that not all of these studies relate to the UK; however, as CHD is the leading cause of death worldwide we feel that the studies selected are helpful in informing the likely effects of various interventions on health outcomes in the UK. All of the studies that we have used are from developed countries.

[27] Measurement of healthcare output and productivity – use of statins and calculation of value weight, Department of Health, gateway no. 5886, December 2005, technical paper 2.

[28] McElduff P, Dobson AJ, Jamrozik K, Hobbs MST. Opportunities for control of coronary heart disease in Australia, Australian & New Zealand Journal of Public Health 2001; 25: 24-30.

[29] Calculation based on WHO figure of estimated total DALYs in UK in 2002 of 653,000.

A6.25 A New Zealand study by Pharmac[30] describes the costs and benefits of treating patients with varying CHD risk levels with statins. The study estimated the QALYs and costs of statins for different cohorts of patients both over the period of a patient's lifetime and over 5 years respectively, for patients with dyslipidaemia[31] (one of the most prevalent risk factors for CHD).

A6.26 The analysis was based on clinical trial data on the effectiveness of statin treatment (versus untreated patients) applied to models of natural history of cardiovascular disease (death rates, rates of non-fatal events, and calculations of life expectancy), quality of life scores for each health state, and the pharmaceutical and non-pharmaceutical costs of treating or not treating with statins. There were a number of different cohorts analysed based on age, gender, 5-year absolute CHD risk, and total cholesterol levels.

A6.27 The following table shows QALY and cost estimates for patients with differing CHD risk levels using statins over their lifetimes (with a discount rate of 10 per cent).

Table A6.5: Cost/QALYs for statins prescriptions, lifetime use at 10% discount rate

Population group	Undiscounted QALYs	Discounted QALYs	Cost/QALYs ($)
Past CHD >= 7.5 mmol/l	3.73	1.09	888
Past CHD 6.5-7.4 mmol/l	3.49	0.93	1,078
Past CHD 5.5-6.4 mmol/l	2.53	0.54	2,090
Past CHD <5.5 mmol/l	1.34	0.26	4,950
Genetic LDs	5.13	0.66	1,047
At risk >=20%	1.92	0.54	2,010
At risk 15-19%	1.80	0.45	2,661
At risk 10-14%	1.64	0.36	3,815
Low risk <10%	1.05	0.10	18,768
Past CHD	2.49	0.59	1,913
Others >10% risk	1.77	0.41	3,096
Total	2.13	0.50	2,409

Source: Updated cost utility analysis for statins, Scott Metcalfe, Pharmac, January 2001

Notes: mmol/l stands for millimoles per litre and is a measure of total cholesterol in the blood.

Risk refers to the patient's 5-year absolute risk of a cardiovascular event.

Past CHD refers to those patents with established CHD.

Generic LDs refers to those patients with genetic lipid disorders (familial hyperlipidaemia etc).

A6.28 The above table shows that QALY gains from the use of statins increases with cardiovascular risk. The lowest cost/QALYs occurs for those groups with highest cardiovascular risk, i.e. patients with established CHD and total cholesterol >= 7.5 mmol/l.

[30] Updated cost utility analysis for statins, Scott Metcalfe, Pharmac, January 2001.

[31] dyslipidaemia refers to abnormality in, or abnormal amounts of, lipids and lipoproteins in the blood. http://medical-dictionary.thefreedictionary.com/Dyslipidaemia.

A6.29 The study also looks at pharmaceutical and non-pharmaceutical costs of treating or not treating various groups with statins. Patients with established CHD have lower non-statin health care costs when treated with statins than those that are not treated. However, due to the costs of statins, the total costs of treatment are higher for the treated groups. It is found that savings from statin use occur early on due to non-statin healthcare costs decreasing alongside reduced cardiovascular events. However, this reverses later on as treated patients create higher costs as a result of surviving for longer.

A6.30 The study also looks at the benefits of statin use on patients of different ages. They find that for most risk groups, especially very high risk, value is greatest (in terms of cost/QALY) at younger age groups. However, for low risk patients (<10 per cent 5-year risk) value is lowest at younger ages.

A6.31 Hypertension (high blood pressure) is a well recognised risk factor for CHD.[32] In a Spanish study Mar and Roderiguez-Artalejo (2001)[33] examine the cost-effectiveness of arterial hypertension treatment. They compare treated arterial hypertension with non-treated arterial hypertension over a range of ages for both men and women. They also analyse the data by arterial hypertension stage, type of drug used and level of treatment compliance. The following table details the results:

Table A6.6: Treated arterial hypertension compared to non-treated arterial hypertension

Age (years)	Gain in QALYs	Additional cost (€)	Cost-effectiveness ratios €/QALY
Men			
30	0.1624	4570	28,143
40	0.2087	3965	18,997
50	0.2553	3226	12,639
60	0.2983	2397	8,036
70	0.3248	1600	4,924
80	0.2878	952	3,307
Women			
30	0.1498	5171	34,516
40	0.1976	4651	23,537
50	0.2543	3993	15,703
60	0.3208	3176	9,899
70	0.3872	2226	5,747
80	0.3772	1292	3,425

Source: Which is more important for the efficiency of hypertension treatment: hypertension stage, type of drug or therapeutic compliance? Janvier Mar and Fernando Rodriguez-Artalejo, Journal of Hypertension 2001, 19:149-155.

[32] http://www.patient.co.uk/showdoc/23068761/

[33] Which is more important for the efficiency of hypertension treatment: hypertension stage, type of drug or therapeutic compliance? Janvier Mar and Fernando Rodriguez-Artalejo, Journal of Hypertension 2001, 19:149-155.

A6.32 From the above table, one can see that the QALYs gained from treatment vary from 0.1498 for a 30-year-old women to 0.3872 for a 70-year-old woman. The cost effectiveness varies from €3,307 per QALY in an 80-year-old man to €34,516 per QALY in a 30-year-old woman.

A6.33 Cost-effectiveness ratios decrease with age and are slightly smaller in men than in women. Differences in gender are larger at ages 30-50 years and decrease with age to 80-89 years where they are negligible.

A6.34 As screening is a well known catalyst of early diagnosis, it is possible that the provision of patient information could have similar effects to a screening programme in terms of alerting patients to the possibility that they might have a disease. This would of course, depend in part on the nature of the screening programme as the provision of patient information could not be expected to have the same impact as, say, patient specific blood tests.

A6.35 In an Australian study,[34] 655 individuals with a median age of 54 years (71.4 per cent female) were screened for CVD risk factors in 14 pharmacies. Of those screened, 28.1 per cent had a 10-year risk of developing cardiovascular disease greater than 15 per cent, including 6.9 per cent who had a 10 year risk above 30 per cent.

A6.36 All major cardiovascular risk factors were measured including total and high-density lipoprotein (HDL) cholesterol levels, and systolic and diastolic blood pressure.[35] Subjects were also asked about their exercise habits and family history. Knowledge of cardiovascular risk factors was assessed using a multiple-choice questionnaire. Each participant received written educational material and verbal counselling about CVD risk factors, diet and the importance of regular physical activity.

A6.37 As a result of the screening 315 of the participants required intervention in the form of 5 years of lipid-lowering therapy. This led to a QALY gain of 0.1 per patient with the intervention (assuming 100 per cent compliance) or 0.05 per patient (assuming 50 per cent compliance). [36]

A6.38 In a 2005 Department of Health paper "Measurement of healthcare output and productivity"[37] the total benefits from statins are calculated. These are shown in terms of increased life expectancy, rather than in quality-adjusted life years.

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[34] Pharmacy-based program to tackle coronary heart .disease in the Australian community, Peterson G et al (2004), Final report to the pharmacy guild of Australia UMORE

[35] Systolic blood pressure refers to the pressure of blood in the artery when the heart contracts. Diastolic blood pressure refers to the pressure of blood in the artery when the heart relaxes between beats.

[36] Based on figures of figures of 32 and 16 QALYs in total for cohort of 315 patients with the intervention.

[37] Measurement of healthcare output and productivity – use of statins and calculation of value weight, Department of Health, gateway no 5886, December 2005, Technical paper 2.

A6.39 The average gains in life expectancy from one year's statin therapy by gender and initial CVD status are as follows:

Table A6.7: Life expectancy gains from one year's statin therapy by initial risk status

	Male (years)	Female (years)
No CVD	0.034	0.024
CVD	0.055	0.051

Source: Measurement of healthcare output and productivity –use of statins and calculation of value weight, Department of health, December 2005

A6.40 The total benefits from statins are shown in the following table:

Table A6.8: Statin therapy: value of output 2003

Risk status	No CVD		CVD		
	Male	Female	Male	Female	Total
Numbers treated (000)	440	410	700	390	1,940
Gain in life expectancy per person treated	0.034	0.024	0.055	0.051	
Total life years gained (000)	15	10	38	20	83
Value (£m)	448	293	1,155	598	2,495

Source: Measurement of healthcare output and productivity –use of statins and calculation of value weight, Department of Health, December 2005

A6.41 Expenditure on statins of £720 million in 2003 delivered nearly £2.5 billion worth of health benefits. The article states that the 83,000 life years delivered by statins would correspond to about 65,000 QALYs or a little less.

Interaction and prescription distortion effects

A6.42 Different medications used for the treatment of coronary heart disease can have differing levels of effectiveness. This suggests that if patients have an influence on which drugs they are prescribed or what level of drug they are prescribed, it might have an effect on health outcomes. In addition, it could also have an effect on total medicine costs.

A6.43 Patient information could potentially affect the choice of prescription either positively or negatively:

- *Positively*: the interaction effect discussed earlier refers to the possibility of patients providing better information to their doctors (e.g. on symptoms and risk factors), so as to allow the doctor to make a better prescription.
- *Negatively*: the prescription distortion effect discussed earlier refers to the possibility that patients might influence their healthcare provider to prescribe a particular drug or level of drug which was not in fact the best treatment for them, thus potentially leading to a worse health outcome.

A6.44 Given these effects both relate to the comparative effectiveness of different drugs for treating the same disease, the evidence relating to them is described together.

A6.45 Davies et al (2006)[38] calculate the cost-effectiveness of cholesterol-lowering therapy in 55-year-old men and women with an initial total cholesterol (TC:HDL) ratio of 5.5 and an untreated expected survival (under adjusted Framingham risk equations) of 17 years (men) and 19 years (women). They carry out a six week study of patients randomised to one of five drugs rosuvastatin, atorvastatin, simvastatin, fluvastatin or pravastatin across dose ranges.

A6.46 They find that different drugs have differing effects on health outcomes. When compared to no treatment, rosuvastatin led to the largest health gain (0.71 QALYs) and pravastatin the smallest (0.42 QALYS). In the base case rosuvastatin dominated atorvastatin and delivered additional benefits at a cost of £9,735 per QALY for men in comparison with generic simvastatin.

A6.47 The following table shows the QALYs gained from the use of the different drugs for both men and women compared to no treatment.

Table A6.9: QALY gains compared to no treatment

Drug	Men	Cost per QALY (£)	Women	Cost per QALY (£)
Rosuvastatin	0.71	9,735	0.51	15,184
Atorvastatin	0.60		0.44	
Simvastatin	0.53	6,883	0.39	10,790
Fluvastatin	0.45		0.33	
Pravastatin	0.42	296	0.31	779

Source: cost-effectiveness of Rosuvastatin, Atorvastatin, SImvastatin, Pravastatin and Fluvastatin for the primary prevention of CHD in the UK, Davies et al (2006)

A6.48 The figures in the above table could inform estimates of the prescription distortion and interaction effects because they show the potential gains in QALYs obtainable from switching between drugs. For example, for men an interaction which led to the switching of a prescription of simvastatin to one of rosuvastatin could lead to an additional QALY gain of 0.18.

A6.49 Nicholson et al (2001)[39] compared the benefits and costs of short-term treatment (two to eight days) with enoxaparin and unfractionated heparin in unstable coronary artery disease. Heparin is an anticoagulant which is injected into the vein and has the effect of preventing blood clots from forming.

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[38] Cost-effectiveness of Rosuvastatin, Atorvastatin, Simvastatin, Pravastatin and Fluvastatin for the primary prevention of CHD in the UK, Andrew Davies, John Hutton, John O'Donnell and Sarah KIngslake, Br J Cardiol, 2006; 13(3):196-202.

[39] Cost-utility of enoxaparin compared with unfractionated unstable coronary artery disease, Tricia Nicholson, Alistair McGuire and Ruairidh Milne, BMC Cardiovasc Disord 2001; 1:2.

A6.50 The authors used published data to estimate the incremental costs per QALY, adopting an NHS perspective and using 1998 prices. Their results showed a 0.013 QALY gain and net cost saving of £317 per person treated with enoxaparin instead of unfractionated heparin. All but one sensitivity analysis showed net savings and QALY gains. The worst case showed a cost per QALY of £3,305; the best case was a £495 saving and 0.013 QALY gain or £317 saving and 0.014 QALY gain per person.

A6.51 The study concluded that enoxaparin appeared to give a cost saving compared to unfractionated hepatin in patients with unstable coronary artery disease, but that the cost savings depended on local revascularisation practice.

A6.52 In an American study Chan et al (2007)[40] explored the additional benefit and cost-effectiveness of high-dose statin therapy to reduce the risk of cardiovascular events in patients with acute coronary syndromes (ACS) and stable coronary artery disease (CAD), when compared to conventional dose statin therapy.

A6.53 They used a hypothetical 60-year-old cohort, and noted that their analysis would not apply to significantly older or younger patients if a significant treatment-by-age interaction existed. The trials were divided up into two groups (ACS trials and CAD trials) due to differences in populations and trial follow-ups.

A6.54 For the ACS patients a high dose statin resulted in a gain of 0.35 QALYs compared to a conventional dose. For these patients the threshold analysis showed that the use of a high-dose statin consistently produced incremental cost-effective ratios below $30,000 per QALY.

A6.55 For the stable CAD patients the high dose statin produced a gain of only 0.10 QALYs. For these patients the daily cost difference between a high- and conventional-dose statin would need to be less than $1.70, $2.65, and $3.55 respectively to yield incremental cost-effectiveness ratios of below $50,000, $100,000 and $150,000 per QALY.

A6.56 Bevan et al (2007)[41] looked at three interventions, one of which was improving prescribing statins to reduce high cholesterol.[42] They estimated the burden of disease (BoD) at current levels of statin prescribing at about 150,000 deaths, 4 million YLLs (years of life lost) and YLDs (years lived with disability) and 8 million undiscounted DALYs and 4 million QALYs (or discounted DALYs).

A6.57 National Service Framework (NSF) guidelines aim to reduce levels of cholesterol in individuals who are assessed to be high risk. The CHD NSF definition of high cholesterol

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[40] Incremental benefit and cost-effectiveness of high-dose statin therapy in high-risk patients with coronary artery disease, Paul S Chan, Brahmajee K Nallamothu, Hitinder S Gurm, Rodney A Hayward and Sandeep Vijan, Circulation 2007; 115(18): 2398-2409

[41] Estimating health and productivity gains in England from selected interventions, Gwyn Bevan, Mara Airoldi, Alec Morton and Monica Oliveira, LSE and Jennifer Smith, South Central SHA, February 2007, QQIP.

[42] The other two interventions related to diabetes and suicide.

is having a serum cholesterol concentration greater than 5mmol/l and this applies to about 80 per cent of the population in England aged between 45 and 64.

A6.58 Using a model which assumed that individuals who start taking statins do so for the rest of their lives or until they are 75 years old Bevan et al estimated the benefits from improving prescribing levels to achieve the guidelines of the CHD NSF. The benefits were reductions in the BoD of about 13,000 deaths, 490,000 YLLs, 470,000 undiscounted DALYs (with a small net increase in BoD of 20,000 YLDs) and an increase of 210,000 QALYs (or discounted DALYs).

Compliance effect

A6.59 The provision of information to patients could lead to patients complying better with their prescriptions, which could in turn have an effect on health outcomes. It could also have an effect on the costs of medications – for example, better compliance could lead to higher spending on prescription drugs, particularly for chronic illnesses.

A6.60 Two common measures of compliance are adherence (sometimes used as a synonym for compliance) and persistence. A study by Muszbek et al (2008)[43] uses the definitions of the International Society for Pharmacoeconomics and Outcomes Research (ISPOR) where compliance is defined as taking medicine as prescribed, on time and with the correct dose, and persistence is defined as the continuing use (over time) of the prescribed therapy.

A6.61 Muszbek et al review studies on the cost consequences of compliance and/or persistence in cardiovascular disease and related conditions (hypertension, dyslipidaemia, diabetes and heart failure). In studies assessing the cost-consequences of non-compliance, compliance rates were 45-80 per cent in diabetes, 15-35 per cent in hypertension, 51-59 per cent in hypercholesterolaemia and 60-96 per cent in other diseases such as heart failure and coronary heart disease.

A6.62 The authors found that, although drug costs were higher for more compliant/ persistent patients, the relative risk of CHD was lower. The drug costs for preventing one coronary event were very similar for the different levels of compliance and persistence.

A6.63 A high level (80-100 per cent) of compliance with treatment for hypercholesterolaemia was associated with significantly lower non-drug medical costs than for lower levels (1-79 per cent). For hypercholesterolaemia costs for high level versus low level compliance were $4,780 versus $5,509-9,849.

A6.64 The decrease in healthcare costs associated with increased compliance was attributed mainly to a decrease in the risk of hospitalisation.

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[43] The economic consequences of noncompliance in cardiovascular disease and related conditions: a literature review, N. Muszbek, D. Brixner, A. Benedict, A. Keskinaslan, and Z. M. Khan, Int J Clin Pract, February 2008, 62,, 2, 338-351.

A6.65 The study by Davies et al (2006)[44] mentioned above found a difference of 0.71 QALYS between those patients being treated with rosuvastatin (which the study found to eb the most effective treatment) and those receiving no treatment. This suggests a difference of 0.71 between those patients prescribed rosuvastatin who comply with their treatment and those that do not take their prescribed medication at all.

A6.66 The study mentioned above by Mar and Roderiguez-Artalejo (2001)[45] used Spanish data to examine the cost-effectiveness of arterial hypertension treatment by age, sex, arterial hypertension stage, type of drug used and level of treatment compliance.

A6.67 They calculated the improvement in effectiveness derived from raising compliance with the average drug treatment for hypertension from 50 to 100 per cent. The following table shows the QALYs gained.

Table A6.10: QALYs gained from a rise in compliance

Age (years)	Men	Women
30	0.0825	0.0831
40	0.1061	0.1099
50	0.1300	0.1422
60	0.1522	0.1813
70	0.1663	0.2243
80	0.1479	0.1925

Source: Mar and Rodriguez-Artalejo (2001) Which is more important for the efficiency of hypertension treatment: hypertension stage, type of drug or therapeutic compliance?

Conclusion

A6.68 CHD is a major cause of death in the UK and other countries, and hence is a pertinent disease area in which to consider the potential health benefits which may arise from improved patient information.

A6.69 There is currently a large amount of information available in the UK on prescription medicines – for example, in the Medicines Guides and the electronic Medicines Compendium available at www.medicines.org.uk. These websites have substantial industry involvement: the industry both provides the information and provides funding. This suggests that the impact of DG Enterprise's policy may be less pronounced in the UK than in some other EU Member States.

[44] Cost-effectiveness of Rosuvastatin, Atorvastatin, Simvastatin, Pravastatin and Fluvastatin for the primary prevention of CHD in the UK, Andrew Davies, John Hutton, John O'Donnell and Sarah KIngslake, Br J Cardiol, 2006; 13(3):196-202.

[45] Which is more important for the efficiency of hypertension treatment: hypertension stage, type of drug or therapeutic compliance? Janvier Mar and Fernando Rodriguez-Artalejo, Journal of Hypertension 2001, 19:149-155.

A6.70 The impact of patient information on health outcomes can be analysed in two stages:

- First, analysis of the impact of providing information to patients on their behaviour;
- Second, analysis of the impact of changes in patient behaviour on health outcomes.

A6.71 Data for the first stage of analysis was collected as part of the healthcare provider survey (discussed in annex 2) and hence this case study focused on collating evidence relevant to the second stage of analysis, using CHD as an example.

A6.72 Based on the literature we reviewed for this case study, we have derived the following assumptions for the possible gain in QALYs from changes in patient behaviour for use in our modelling of costs and benefits (see annex 1). Clearly, these assumptions and the resultant estimates of costs and benefits should be treated with caution, as the change in QALYs per patient will vary widely across diseases, and may be either higher or lower than the figures shown below.

Table A6.11: Assumed change in QALYs per case in which patients respond to information provision

	Low	Medium	High
Awareness effect	0.025	0.035	0.050
Interaction effect	0.100	0.170	0.250
Prescription distortion effect	-0.250	-0.170	-0.100
Compliance effect	0.050	0.100	0.150

Note: the assumptions for the awareness effect are at the lower end of the range of figures identified in the articles reviewed in the case study. This is because the largest estimate for the awareness effect came from a study into disease awareness resulting from a screening programme, and since such programmes can include elements such as blood tests, the provision of patient information may not achieve the same level of benefits.

This table does not contain assumptions for either the preventative effect or the anxiety effect. The preventative effect is computed separately in our modelling of costs and benefits using WHO burden of disease data. The anxiety effect is not addressed in this case study as by definition it relates to people who do not actually have the disease they are concerned about.

Annex 3

TO THE COMMISSION STAFF WORKING DOCUMENT

Report on the impact assessment on Information to patients

Literature Review

The literature review, carried out by Europe Economics, covered 22 items of literature. It provides some useful evidence (mostly qualitative) on the potential benefits that may result from improved information provision, such as improved compliance with prescribed treatments. It also highlights certain risks associated with information provision (e.g. that patient misunderstanding about the likelihood of side-effects may reduce enthusiasm for treatments).

Some of the literature highlights the importance of how information is presented. For example, some studies suggest that the same medical information has different effects on treatment decisions depending on whether it is presented in terms of survival rates or morbidity rates.

The literature does not provide clear guidance on how information and advertising might be distinguished. Further, while there is substantial qualitative discussion on the relative merits of different regulatory models (i.e. self-regulation, co-regulation and direct public regulation), we did not find any relevant quantitative data in this area.

There is a body of literature on the effect of direct-to-consumer advertising in New Zealand and the US. While this is only indirectly relevant to our impact assessment, it could arguably be used to provide upper bound estimates of the effects of greater information provision. For instance, any prescription distortion effect from the provision of non-promotional information is likely to be significantly less than that associated with direct-to-consumer advertising.

Approach to Literature Review

The primary purpose of the literature review is to gather evidence to help in assessing the effects on patients, health professionals, health systems and public health of the provision of information to patients on medicinal products and illnesses.

Where appropriate, we have attempted to categorise these effects according to the mechanism through which they occur. The five mechanisms of interest are:

- *Preventative effect* – where increased knowledge about a particular illness or condition obtained through improved information results in lifestyle changes which improve health without any requirement for medicinal products.
- *Awareness effect* – where access to information increases a patient's awareness of a particular disease or of the existence of new or alternative treatments.
- *Interaction effect* – where improved patient information means that patients are able to give better information to doctors during consultations, thus improving prescribing decisions. For example, patients might mention that they are susceptible to certain side effects of a product.
- *Prescription distortion effect* – when patient access to information distorts prescription decisions away from what is medically optimal. In particular, this might happen where patients request prescriptions for specific drugs.
- *Compliance effect* – the effect of improved patient information on the level of compliance with the prescribed drug therapy.

As well as gathering evidence on these impacts, other issues which we aimed to cover in our literature review included the following:

- The distinction between information and advertising.
- The relative effectiveness of different information channels, such as the internet and written information.
- The effects of how information is presented (drawing on behavioural economics research into framing effects).
- The advantages and disadvantages of different regulatory models, such as state regulation, co-regulation and self regulation.

We used a two-stage process to select the literature for review. The first stage consisted of listing a large number of articles which might possibly be relevant, based on internet searches and following up references used in previous work in this area. The second stage involved sifting this list to identify those documents which were most likely to be relevant, partially guided by abstracts where these were available.

Findings from Literature Review

In total, Europe Economics has reviewed 22 items of literature. Table 3.1 shows how this literature breaks down into different thematic categories.

Table 3.1: Breakdown of Literature Covered in Review

Thematic category	Number of items of literature
Regulation and consumer information	2
Drug / health information	6
Search and appraisal of drug / health information	3
Different models of regulation	3
Economic theory on advertising	1
Direct-to-consumer advertising of pharmaceuticals	6
Prescribing costs	1
Total	**22**

Below, we briefly discuss some key findings to emerge from the literature within each thematic category. More detailed summaries of the literature are provided in Appendix 11.

Regulation and consumer information

The two papers in this category related to regulation and consumer information in general (i.e. they did not relate specifically to medical information). Overall, these papers highlight some of the risks associated with regulations which require firms to provide information to consumers. In addition, the second paper discussed below makes a number of practical suggestions relevant to the design of regulation in this area.

Vanilla Research (2007) considers a number of case studies relating to the provision of regulated information (i.e. information which regulation requires firms or other parties to provide to consumers). It concludes that regulated information is not working, and that more information does not necessarily amount to better information (e.g. where it involves excessive "jargon" or overly long small print). It also found that consumers often did not understand the purpose of the information with which they were provided.

The Better Regulation Executive and National Consumer Council (2007) consider the degree to which regulated information provided to consumers by third parties is effective and efficient. It found that the most fundamental barrier to regulated information being helpful to consumers was that it did not seem to be effective in capturing people's attention. It also found that there was too much information (both regulated and otherwise) for consumers to process.

The paper argues that that the presentation of regulated information is a key factor in determining how effective it is. It encourages regulators to consider how information can be provided in a simple way which is accessible to everyone; how information can be framed effectively; and the potential offered by new digital media. The paper argues that, in order to ensure that information is more useful to consumers, the Government should work with industry in order to develop new models that serve to align business incentives with information provision.

Drug / health information

We reviewed six papers on the specific issue of providing medicines or health information to patients and consumers.

A 2003 Europe Economics working paper provides a useful framework for assessing the impact of information provision. In particular, it discusses the mechanisms of effect discussed earlier (particularly, the awareness effect, the interaction effect, the prescription-distortion effect and the compliance effect). It summarises some of the quantitative evidence in relation to each of these effects, although in many cases the data relate to direct-to-consumer advertising in the US.

Närhi (2006) reviews existing research into the dissemination of drug information intended for patients and consumers. The article quotes studies which suggest that information provision can improve the results of treatment and increase adherence by patients to prescribed medication. However, there is also research which suggests that the provision of valid information can sometimes reduce patient enthusiasm for treatments (e.g. where it deals with potential side-effects), and that consumer understanding of the likelihood of side-effects was poor.

Närhi considers the role of a range of potential information sources, including doctors, pharmacists, drug regulatory authorities, the printed media, the pharmaceutical industry and patient organisations. Närhi also discusses different tools and channels for information delivery. The paper suggests that patients value the chance of interaction associated with the verbal delivery of information, while there is some evidence that written information can improve understanding significantly. Närhi identifies both advantages and disadvantages to the internet as a source of information.

Raynor *et al* (2007) review research on the role and effectiveness of written information available to patients about individual medicines. The study found that most people do not value the written information they are given, which in many cases fails to increase their knowledge due to poor quality content and layout. However, patients valued medicines information when it was presented appropriately (e.g. it looked important and highlighted priority information), and valued information that was tailored to their individual situation. The study found that patients did not want written information to be a substitute for spoken information from their health provider.

We reviewed a report entitled "Recommendations on health information" produced by a working group set up by the EU Health Policy Forum (a health stakeholder forum established by DG SANCO). The paper stresses the need to distinguish between information which is unbiased and unpersuasive, and commercial communication which seeks to promote a product or service. A central conclusion of the paper is that the current EU ban on the advertising of prescription-only medicines should not be relaxed.

Shaw et al (2005) criticise the Association of the British Pharmaceutical Industry (ABPI)'s current Code of Practice for imposing excessive restrictions on direct communication with patients. Shaw et al argue that the information provided in regulatory documents will always tend to be inadequate (e.g. too narrow and too negative) to address the information needs of patients. The authors refer to a pilot project (the Medicines Information Project) to support their argument that a less restrictive approach to information provision would benefit patients.

A report by the ABPI, ASK About Medicines and Diabetes UK summarises the proceedings of a "Good Practice Forum" about information provision on diabetes. The report argues in favour of tailored "information prescriptions" which could be provided to patients at the point of consultation and which would "signpost" the patient to sources of further information and

advice. It also suggests an information accreditation scheme to "kite mark" information providers who meet certain standards.

Search and appraisal of drug / health information

This category contains three papers which address the specific issue of how patients or consumers search for and appraise drug or health information.

Eysenbach *et al* (2002) use focus groups, usability tests, and in-depth interviews to assess how consumers search for and appraise health information on the internet. The study found that the factors which consumers said they would use to assess the credibility of sites in the focus groups did not match their observed behaviour. Participants were also observed to rely on search engines to find information, generally only exploring the first few links given by search engine results. In interviews, few participants had noticed and remembered where they had obtained information from.

Moxey *et al* (2003) review 37 articles on the impact of different ways of framing equivalent messages on patient decisions. Framing effects were found in relation to decisions about whether or not to have surgery, with respondents more likely to opt for surgery when treatment efficacy is framed in terms of survival (i.e. a positive frame) rather than in terms of morbidity (i.e. a negative frame). Positively framed information also resulted in an increased preference for more invasive or toxic treatments. However, the authors emphasise the poor methodological quality of some of the studies reviewed. Framing effects appeared to be of a lesser magnitude in those studies which the authors deemed to be of good methodological quality and/or which examined actual behaviour.

Koo *et al* (2005) used questionnaires to explore the influence of patient characteristics on how written medicine information is evaluated by patients in Australia. The paper found that comprehension of the information was positively associated with speaking primarily English in the home, attaining secondary education or higher, and adequate health literacy levels. The perceived usefulness of the information increased with patient age and the number of medications taken by the patient. The intended use of the information was affected by respondents' health literacy levels.

Different models of regulation

We reviewed three papers on different models of regulation to provide insights into the relative merits and drawbacks of self-regulation or co-regulation compared to direct public regulation. These papers did not relate specifically to a pharmaceutical context.

Bartle and Vass (2005) suggest that self-regulation has a number of advantages over statutory/direct regulation, including more effective use of the expertise of all parties, greater flexibility, lower regulatory burdens on business, more commitment within a profession or industry, and reduced regulatory costs for the state. They also identify a number of advantages which self-regulation may have over no regulation, including improving the workings of the market (e.g. by addressing information asymmetry) and improved corporate governance. However, the authors also suggest that a number of precautions are necessary when introducing self-regulation. For instance, they argue that care is needed to ensure that self-regulation acts in the public interest and does not lead to anti-competitive practices, and that the issue of public accountability also needs to be considered.

We reviewed a paper by the Ministry of Consumer Affairs in New Zealand on industry-led regulation. This paper suggests that industry-led regulation can promote good practice within industry, promote consumer confidence in market rules, provide a means of access to quick

and informal complaint handling and redress mechanisms, and allow for more appropriate sanctions. On the other hand, the paper identifies a number of potential disadvantages, including that firms may opt out in the event of a possible sanction, that the objectives of consumers and government may not be met, that the scheme may not cover the entire industry, and that competition and innovation may be adversely affected by the self-constraint actions of firms.

Palzer and Scheuer (2004) define three types of regulation (self-regulation, co-regulation and public-regulation) and then discuss some of their advantages and disadvantages. They suggest that the advantages of self-regulation include greater support from stakeholders, greater willingness among players to comply, and the suitability of self-regulation for some market segments (e.g. the internet part of the media sector) where state regulatory approaches are unsuitable. On the other hand, they state that self-regulation cannot guarantee compliance and may lack legitimacy. On co-regulation, they argue that this approach can address some of the problems faced by traditional public regulation but that it may lead to a duplication of institutional structures.

Economic theory on advertising

The literature review should include a good review article on the economics of information provision and advertising. We selected this article by Bagwell which surveys the academic literature in this field.

Bagwell identifies three competing views of advertising:

- The informative view – advertising provides consumers with useful information (e.g. on products and prices), thus facilitating the process of competition.
- The persuasive view – advertising is manipulative and distorts consumers' decisions. Advertising can also have anti-competitive effects by enabling firms to gain market power.
- The complementary view – consumers derive enjoyment from watching adverts together with purchasing the associated products.

The literature identifies a number of ways in which advertising could harm social welfare. For example, the literature suggests that combative advertising (which seeks to redistribute brands among consumers) may exceed the social optimum where real differences between brands are modest.

On the other hand, Bagwell discusses the work of Nelson, who argues that all advertising has an underlying informational role. Nelson argues that even advertising that does not contain direct information may be signalling efficiency, reminding consumers of previous experiences with the product, or indicating a match between products and the buyers to whom the advertisement is targeted.

This paper indicates the difficulty of distinguishing between information and advertising, since economists have different views on whether the purpose of same commercial communication is to provide information or to persuade consumers.

Direct-to-consumer advertising of pharmaceuticals

This category contains six articles summarising evidence on the impact of direct-to-consumer advertising of pharmaceuticals. While only indirectly relevant to the policy changes being considered, this literature is a fruitful source of quantitative evidence on the mechanisms of effect discussed at the beginning of this section.

Provisionally, we take the view that this literature could provide upper bound estimates of the effect of providing more non-promotional information. For example, any prescription distortion effect resulting from the policy changes being considered is likely to be significantly less than the prescription distortion effect observed from in the US from direct-to-consumer advertising. Hence, if the expected benefits of the policy proposal were to exceed expected costs even when such an upper bound estimate is used, this would provide strong evidence that the policy option is likely to yield net benefits.

O'Mathuna *et. al.* examine the provision of information to Irish patients, and draw out implications for direct-to-consumer advertising of prescription medicines. The authors identify health literacy as having an important effect on how patients use medication information, and argue that health information needs to be tailored to the patient's literacy and comprehension levels. The report concludes against direct-to-consumer advertising of prescription medicines. However, it states that pharmaceutical companies should have a continuing role in informing patients about their products via health professionals and patient information leaflets. The report also argues that the European Union and/or the Irish Department of Health and Children should make available high quality, evidence-based information, accompanied by clear warnings on the dangers of self diagnosis and self-treatment.

Meet (2001) reviews international policy and evidence on direct-to-consumer advertising of prescription medicines. Direct-to-consumer advertising is permitted in New Zealand, albeit with mandatory pre-vetting since 2000. The review finds that this has the effect of making patients more likely to visit their GP, have an informed consultation and receive medicines of benefits. At the same time, direct-to-consumer advertising is found to raise prescription costs and divert expenditure away from treating illness to treating those who are not ill. In relation to the US, the review refers to a number of cases of misleading US adverts, and cites direct-to-consumer advertising as a factor in raising prescription costs and health insurance premiums.

Mintzes *et al* (2002) use a cross-sectional survey in the US to examine the effect of direct-to-consumer advertising and patients' requests on prescribing decisions. They find that patients' requests for certain medicines are a powerful driver in prescribing decisions, even though physicians are often ambivalent about the choice of treatment.

Scott *et. al.* (2004) argue that myth is often deployed in drug advertising through the use of images to depict exaggerated therapeutic efficacy. The authors also argue that advertising has a greater influence on doctors than they might believe.

The National Institute for Healthcare Management (2000) discusses what drove the increase in prescription drug spending observed in the US between 1998 and 1999. The report argues that this growth was largely attributable to the Food and Drug Administration (FDA)'s relaxation of restrictions on drug advertising in 1997. It found that mass media advertising of prescription drugs tends to be concentrated on relatively few drugs (approximately 50), and that sales of these drugs accounted for most of the jump in prescription drug spending in 1999.

Gellad and Lyles (2007) summarise the impact of direct-to-consumer advertising on the public, healthcare providers and the healthcare system. In the US, the level of direct-to-consumer advertising has increased exponentially since the FDA amended their guidelines in 1997. The authors find that public awareness of such advertising appears to be universal. However, the authors also find evidence of consumer misconceptions – half of the respondents to one survey believed that advertisements were submitted to the FDA for approval prior to release. There were mixed views among consumers and physicians on the

question of whether direct-to-consumer advertising improved or undermined the patient-physician relationship. There are a number of empirical studies, however, which suggest that direct-to-consumer advertising increases the number of patient requests for specific drugs and thereby increases the volume of prescriptions for the drug in question.

Prescribing costs

We reviewed a report by the UK National Audit Office on prescribing costs in primary care. This report looks at how doctors might be encouraged to make more cost-effective prescribing decisions (e.g. where two drugs differ in price but have the same clinical effect). Much of the report is not directly relevant to the issue of providing information direct-to-consumers. However, the report does note that the increasing proliferation of information on the internet on the claimed benefits of particular drugs has coincided with an increase in the level of patient requests for drugs to GPs. A majority of GPs surveyed reported that demands from patients for specific drugs have risen over the past three years.

Overall conclusions from literature review

Overall, a number of useful findings have emerged from our literature review, but at the same time we have identified some significant gaps in the evidence which is available. In particular:

- The literature provides (qualitative) evidence on some of the potential benefits which may result from improved patient information. For instance, improved information may improve adherence by patients to prescribed medication and thus improve the results of treatment. There is some evidence that patients would value tailored information.
- The literature highlights a number of risks associated with information provision which need to be considered alongside the benefits. For example, there is some evidence in the literature that medicines information is not always valued by patients. Patients could also misunderstand the likelihood of side-effects about which they are informed, and this could reduce enthusiasm for treatments.
- The literature review highlights that the way in which information is presented can have an important effect. For example, some studies suggest that the same medical information has different effects on patient decisions depending on whether it is presented in terms of the likelihood of survival or the likelihood of morbidity.
- The literature does not provide clear guidance on the distinction between advertising and information. Indeed, the economic literature in this area demonstrates that economists disagree on whether the same commercial communications have the primary purpose of informing or persuading.
- There is substantial qualitative discussion in the literature on the relative merits of different models of regulation (i.e. self-regulation, co-regulation, and direct public regulation). However, our review found little or no relevant quantitative evidence on this subject.
- The literature suggests that direct-to-consumer advertising in the US and New Zealand tends to increase consumer awareness of treatments, but at the expense of distorting prescribing decisions and increasing prescription costs. This literature is only indirectly relevant to our impact assessment, but could be used to provide upper bound estimates of some of the effects of greater information provision.

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