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A CONTENT ANALYSIS OF THE REPRESENTATION OF STATINS IN THE BRITISH NEWSPRINT MEDIA

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What is already known

- * The clinical and cost-effectiveness of statins in secondary and primary prevention is established in research and clinical guidance.
- * There is continuing clinical debate around the extent & impact of the side-effects of statins and the optimum scale of their use in primary prevention.
- * Studies have shown that the lay media can influence people's understanding of health issues and their health related behaviours. However the nature and extent of the debate concerning statins in the lay media is less well documented.

What this study adds

- * This study adds insight into the portrayal of preventative medications, and related clinical policy, in the media.
- * It suggests there is scope for study authors, policy makers and public health practitioners to promote a more media-friendly, evidence-based narrative on health topics of public interest and concern.

ABSTRACT

Objective

This study reviewed the news media coverage of statins, seeking to identify specific trends or differences in viewpoint between media outlets and examine common themes.

Design

The study is a media content analysis of the frequency and content of the reporting of statins in a selection of the British newsprint media. It involved an assessment of the number, timing and thematic content of articles followed by a discourse analysis examining the underlying narratives. The sample was the output of four UK newspapers, covering a broad spectrum readership, over six months 1 October 2013 - 31 March 2014.

Results

A total of 67 articles included reference to statins. The majority (37, 55%) were reporting or responding to publication of a clinical study. The ratio of negative to positive coverage was greater than 2:1 overall. In the more politically right-leaning newspapers, 67% of coverage was predominantly negative (30/45 articles); 32% in the more left-leaning papers (7/22 articles). Common themes were:

- the perceived 'medicalisation' of the population;
- the balance between lifestyle modification and medical treatments in the primary prevention of heart disease;

- side effects and the effectiveness of statins;
- pharmaceutical sponsorship, and the implications for the reliability of evidence;
- trust between the public and government, institutions, research organisations and the medical profession.

Conclusions

Newsprint media coverage of statins was substantially influenced by the publication of national guidance and by coverage in the medical journals of clinical studies and comment. Statins received a predominantly negative portrayal, notably in the more right-leaning press. There were shared themes: concern about the balance between medication and lifestyle change in the primary prevention of heart disease; the adverse effects of treatment; and a questioning of the reliability of evidence from research institutions, scientists and clinicians in the light of their potential allegiances and funding.

Strengths and limitations of this study

- The use of media websites for data collection may have excluded some material which was only available in the print versions, and conversely included some material not available in print. It also led to some unavoidable exclusions, for example The Times and The Sun operate a subscription only service.

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- The pragmatic selection of the study timescale and media selection may have reduced the representativeness and therefore generalisability of the study. However, the sampling strategy was designed to ensure that the sources represented a reasonable range and diversity of the established newspaper media.
 - There was a single researcher and not a research team. This avoided inconsistency in analysis, but led to a risk of bias and potential incompleteness or errors in the identification and selection of articles and the analysis. Research questions and methods were clearly set out at the start and consistently followed, to ensure validity. Analysis by a second researcher of a sub-sample of the sources showed a high level of consistency.
 - Blinding was not strictly possible, but articles were coded by a unique numerical identifier to blind the researcher to source during the collection process to reduce bias during the thematic analysis. An inductive approach was applied to ensure that the themes were dictated by the evidence emerging from the texts and were not imposed by the researcher.

INTRODUCTION

UK clinical guidelines recommend the use of lipid lowering therapy for both secondary and primary prevention.[1, 2] This is based on published clinical trial evidence of effectiveness, cost-effectiveness,[1, 3-8] and the extent of side-effects.[7-9] There is debate in the clinical literature about the merits of the widespread and growing use of statins.[10-16] The same issues are also covered in the lay media, where, however, the nature and extent of the debate is less well documented.

There is an identified interaction between the lay and clinical media[17-19] and, importantly, there is evidence that the lay media influences health-related perceptions and behaviours[20-25]. The Chief Medical Officer for England has called for a review into how the safety and efficacy of drugs is judged, prompted by concern about the representation of statins and other drugs “in both the medical and general press”. [26] A recent Dutch study, using national and regional media coverage as a proxy for individual exposure, found that negative statin-related news stories were associated with both early statin discontinuation and cardiovascular mortality.[27]

This study describes the nature of the representation of statins in the newsprint media, investigating the key themes, trends, characteristics and viewpoints.

METHOD

A semi-quantitative descriptive and thematic analysis of the frequency of the coverage of statins in the UK newsprint media was undertaken. Media were selected with the aim of obtaining broad spectrum coverage reflecting a range of editorial leanings and readerships. An initial screening sample was undertaken in order to pilot the methodology and to consolidate the questions and sampling strategy for the main research.[28] This identified what would be practical for one researcher to collect, and enabled refinement of the range and type of outlets, the time period and the type of articles for inclusion in the main data collection. The sampling frame selected for the main study was the UK newsprint media. A purposive sampling strategy was followed, with newspapers selected on the basis that they were accessible, able to be searched and analysed by one researcher in the time available, and demographically, geographically and politically representative of a broad spectrum readership. The selected newspapers were The Daily Mail, The Daily Mirror, The Telegraph and The Guardian. These are all national UK newspapers, recording the highest circulation¹.

¹ The Sun recorded the highest circulation but The Sun and The Times were excluded because they did not have free to access websites.

Table 1 Readership of selected newspapers

Category	Daily Mail	Daily Mirror	The Telegraph	The Guardian
Circulation	1,863,000	1,058,500	555,600	204,400
Average age	58	Not given	61	44
Readership 65+	45%	34%	46%	21%
Gender	51% female	54% male	52% male	52% male
Social class ABC1 ²	64%	43%	87%	89%
Predominant geography [Mori 2005]	83% outside London & Scotland	North	East & South East	London
Predominant political stance ³	Right	Left	Centre right	Centre left
Market designation	Tabloid	Tabloid	Broadsheet	Broadsheet

Source: National Readership Survey 2014, UK Newspaper Guide 2014, TheMediaBriefing. Figures for 2013.

Full texts of articles were searched by keyword and collected retrospectively from the websites of the selected media outlets over a continuous six month timeframe (1 October 2013 to 31 March 2014). The main search term was “statin”. (“Statins” did not retrieve all mentions.) A further search on “cholesterol”, “cardiovascular” and “heart disease” was undertaken to confirm all relevant articles had been captured. All articles with any recorded mention of statins were screened. All types of article were included.

Articles were downloaded and printed in full. Each article was given a unique reference number, to blind the researcher to source during the analysis, and key descriptors were recorded. A thematic data analysis was then undertaken. A coding scheme provided a consistent framework for data collection and analysis

² Social gradings A-E are based on census data. ABC1 represents higher & intermediate to clerical and junior occupations.

³ Political stance reflects party affiliation in the most recent general election.

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2 and enabled independent third party review. The exclusion criterion was
3
4 peripheral mention of statins with no associated reporting or comment.
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9 The analysis was in two parts. A semi-quantitative analysis mapped the findings
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11 against the descriptive indicators, including whether the coverage was judged to
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13 be predominantly positive or negative in terms of the arguments, language, and
14
15 terminology. Where the proportion of positive and negative comments appeared
16
17 similar, or where it was difficult to decide on the overall direction, a neutral
18
19 assessment was given. A qualitative analysis then examined the discourses
20
21 within a selection of the key themes. A second qualitative researcher
22
23 independently analysed a small subset of sample articles against the descriptive
24
25 and thematic headings, to test the reliability of the data collection and thematic
26
27 selection. There was a high level of consistency between reviewers. Outlets
28
29 were then tracked back and identified in the results.
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36 There were no confidentiality issues associated with the study as all data sources
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38 were within the public domain. Ethics Committee approval was not required.
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RESULTS

Searches identified 67 articles (**Table 2**). In two thirds of articles, statins were the main topic. The majority of articles (37, 55%) were reporting or responding to publication of a clinical study.

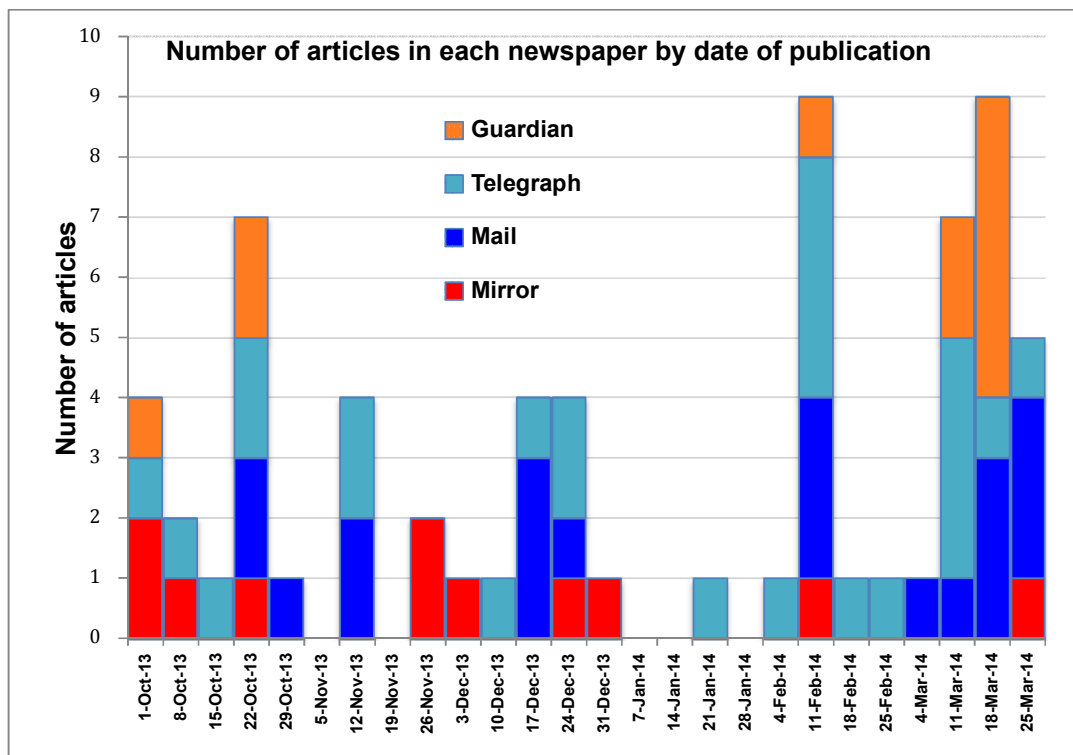
Table 2 Number, stance, and theme of articles mentioning statins
1 October 2013 – 31 March 2014

		Telegraph	Daily Mail	Guardian	Daily Mirror	Total
Number of articles		25	20	11	12*	68
Frequency of article type	Study report	10	13	6	8	37
	Commentary	3	4	2	0	9
	Q&A	2	1	0	0	3
	Personal story	0	1	1	0	2
	News report	1**	1**	0	1**	3
	Letters	2	2	0	0	4
	Expert/'celebrity' commentator	1	2	0	1	4
	Other	1	1	2	0	4
Statins main topic	Main topic	18	14	10	3	45
	Secondary topic	7	6	1	8	22
Positive/negative	Positive	2	8	3	4	17
	Neutral	3	2	5	3	13
	Negative	20	10	3	4	37

* One article was excluded.

** Publication of NICE and US guidelines on the use of statins

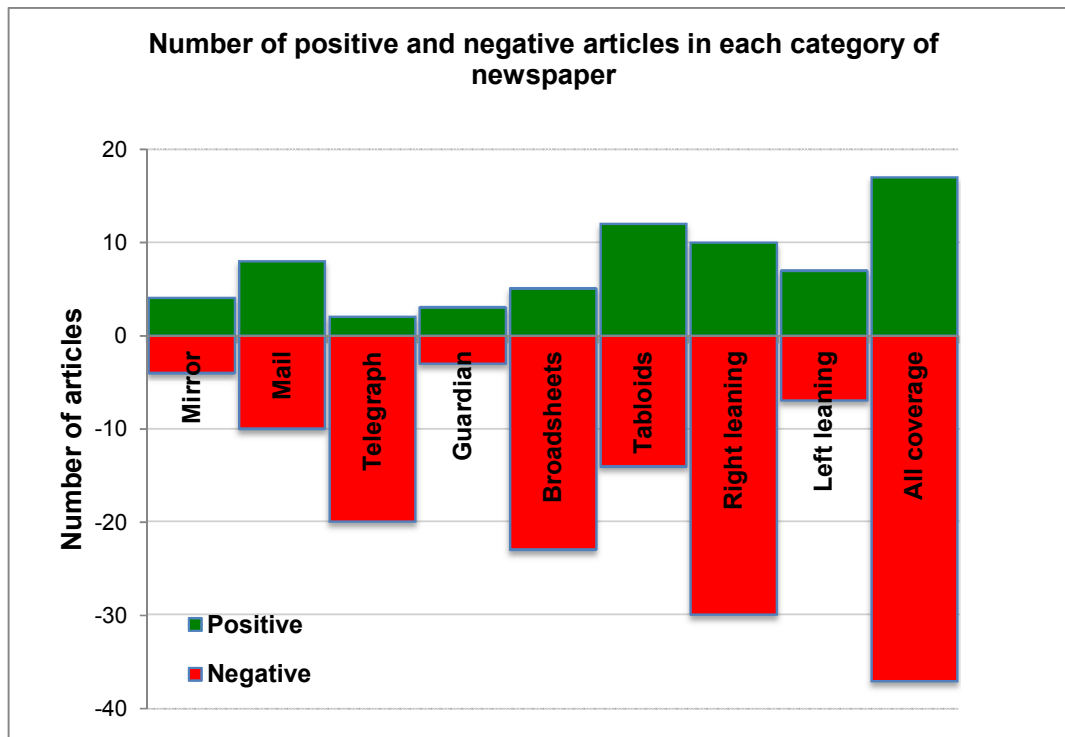
Coverage by outlet by week is shown in **Graph 1**. There is considerable variation, with peaks in coverage weeks commencing 11 February and 18 March. The NICE revised draft guidelines were published on 12 February,[29] covered in 11 articles, prompting the earlier peak. A systematic review of the side-effects of statins[9] was widely reported a month later. In only five of the 26 weeks was there no story about statins.

Graph 1 Coverage by outlet by week, October 2013 – March 2014

The ratio of negative to positive coverage was greater than 2:1 overall (**Graph 2**).

The more right-leaning papers exhibited a ratio of 3:1 negative to positive articles, where the left leaning press had equal proportions of each. The Telegraph had the highest differential with a 10:1 ratio of negative to positive stories. Articles on studies reporting collateral benefits (statins benefiting people with multiple sclerosis or dementia for example) were more likely to portray statins in a positive light.

Graph 2 Positive and negative coverage



Thematic analysis

The themes with the highest number of mentions selected for detailed analysis were: medicalisation versus lifestyle modification; the effectiveness of statins in the light of their side-effects; and trust of those advocating statin therapy.

Medicalisation versus lifestyle modification

The term “medicalisation” is used by three of the four sampled media, both in quotes from contributors and by the article authors. In most cases it is used to denote the introduction of drug treatment for use in an otherwise apparently healthy population. It is used with an exclusively negative meaning:

“the “medicalisation” of people who are not ill... turning five million middle-

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3 *aged and predominantly healthy men and women into statin-popping*
4 *patients.*” [Mail]
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9 *“It is a concern to have to mass medicalise the whole of the British public in*
10 *this way”* [Telegraph] Britain will be confirmed *“the statins capital of Europe”*
11
12 [Mail]
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17
18 There is a language of passivity and control. People are “medicalised”,
19 “medicated” or “*put on statins*” (emphasis added).
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24 The majority of articles appear supportive of prescribing statins for those with
25 established heart disease. The controversy centres on what proportion of those
26 with risk factors for cardiovascular disease should receive statins as a primary
27 preventative measure:
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36 *“there are people who may be overweight or have raised blood pressure.*
37 *They probably don’t have symptoms. They are not ill”* [Guardian]
38
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41
42 *“we’ll be medicalising many relatively healthy patients”* [Mail] (emphasis
43 added)
44
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49 The medical profession is seen to be focusing on the medical option in preference
50 to promoting lifestyle change:
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56 *“doctors should first work with patients to put them less at risk... [by]*
57
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3 *stopping smoking, drinking less, taking exercise and eating healthily.*" [Mail]
4
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7 However:

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9 It is *"simpler to reach for the pad and write out a prescription than to dole*
10
11 *out lifestyle advice"* [National Obesity Forum, Mail and Telegraph]
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15
16 The public is also indicated to be at fault:

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18
19
20 *"There is a tendency... for patients (and doctors) to think that as long as*
21
22 *they're on statins, smoking or a poor diet doesn't really matter";*
23
24 *"people will see them as a magic pill that allows them to tuck into three*
25
26 *pizzas a night and umpteen hamburgers with impunity"* ["leading
27
28 cardiologist", Mail]
29
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33 Lifestyle measures could actually be the preferable medicine:
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38 *"Exercise can be just as efficient as drugs in treating heart disease"* [study
39
40 report, Mirror]
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44 *"eating an apple a day is as effective as taking statins"* [medical
45
46 "campaigner", Mail]
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56 ***Effectiveness and side-effects of treatment***
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4 The positioning of “expert” opinion is important here. Who is most qualified to
5 determine the impact of side-effects: clinician, trialist or patient?
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11 Evidence from published studies on the extent of side-effects is reported:
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15 *“the benefits of statins greatly exceed any side effects”* [Cholesterol trialists
16 study report, Mail].
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21 This is directly challenged by individuals:
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25 *NICE “will tell you that... one in 10,000 patients... will suffer severe muscular*
26 *pain.... In contrast, reliable data from the real world... backed up by*
27 *anecdotal evidence from my experience as a cardiac physician, suggests*
28 *that the real figure... is closer to one in five.’* [cardiologist quoted in Mail]
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37 *“I know of only three people who have been on statins – I am one of them –*
38 *and we all experienced debilitating muscle aches”* [reader correspondence,
39 Telegraph]
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47 The “noise” about side-effects may produce the equivalent of a “*nocebo effect*”:
48
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51 *“If we tell people about side effects,... we induce these unpleasant*
52 *symptoms,... inflicting harm on our patients”; “We... shouldn’t scare people*
53 *into experiencing side effects... or into avoiding a medication which might*
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3 *help them*” [“study author”, Guardian]
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7 Statins are portrayed as either villain or hero:
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11 *“in years to come, statins could be seen as being as dangerous as*
12 *thalidomide*” [reader correspondence, Mail]
13
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18 *“Statins may reduce dementia by a third*” [study report, Telegraph]
19
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22 Over the six month sample period, statins were associated with potential
23 beneficial effects on dementia, multiple sclerosis and erectile dysfunction.
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27 28 29 **Trust** 30

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33 A related but distinct theme is trust. Where there is a weight of scientific
34 evidence, there is traditionally expected to be trust in the results. However
35 pharmaceutical companies, often designated “*Big Pharma*”, are almost universally
36 negatively portrayed regardless of the political leanings of the sources, and there
37 is an implied questioning of the value of any evidence from a pharmaceutical
38 industry sponsored trial. An interesting question emerges, concerning which
39 forms of evidence have the greater validity:
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51 NICE recommendations for lowering the threshold for statin treatment are:
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53 *“based on solid evidence and the public should trust them*” [US study
54 authors quoted in Mail]
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5 *“The drug companies were saying this drug was the best thing since sliced*
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7 *bread”*; *“their findings are contradicted by independent surveys”* and they are
8
9 *“contrary to the experience of many Telegraph readers”* [response to draft
10
11 NICE guidelines, Telegraph]
12

13
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15 *“trials run by the drug companies... are likely to be excessively favourable”*
16
17 [Harvard clinician, Mail]
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22 these same trials are refuted by *“anecdotal accounts... real world data...*
23
24 *[and] my experience as a cardiac physician”* [cardiologist, Mail]
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29 The confidentiality of some of the trial data leads to suspicion of what the data
30
31 contain:
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36 There is no reason *“to accept the analysis of the Oxford team who have*
37
38 *seen the data at face value just because they are big and important and*
39
40 *professors at Oxford University... . Either they don't have a vast chunk of*
41
42 *data or they do and they are not publishing it”* [“Scottish GP and author”,
43
44 Guardian]
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49 Although some academic bodies are still largely to be trusted, for example *“the*
50
51 *respected Cochrane group”* [Guardian], other organisations or individuals are
52
53 contaminated by association:
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2 there are “arrangements between Big Pharma and academic institutions
3
4 [and] vested interests in the research” [Telegraph]
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9 Political and administrative organisations receive a mixed portrayal:
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13 “the government’s advice is based on a wealth of evidence. The BMJ article
14
15 is based on opinion” [Public Health England director quoted in Guardian]
16

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20 “how can we explain this big gap between... personal experience... of
21
22 doctors and patients... and official bodies such as NICE?” [Mail]
23

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27 “NICE seems to be siding firmly with the drug companies and relying on
28
29 industry-sponsored statistics” [Mail]
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33 Family doctors receive consistently negative coverage. Medical authority is
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35 portrayed as siding with, or indirectly influenced by, the pharmaceutically
36
37 sponsored institutions. Doctors are accused of “inexcusable deviousness” in their
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39 methods for fulfilling screening quotas and in disguising a prescription for statins
40
41 as “lipid tablets” [Telegraph]. There is a risk of:
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47 “more aggressive prescribing of the [statin] medications by family doctors,
48
49 whose pay is linked to take-up of the pills among their patients” [Mail]
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DISCUSSION

This study found that the newsprint media coverage of statins was substantially influenced by the publication of national guidance and by coverage in the medical journals of clinical studies, reports and comment. Statins received a predominantly negative portrayal overall, notably in the more right-leaning press. Specifically, there was considerable coverage of reported side-effects, concern about the balance between medication and lifestyle changes in primary prevention, and a questioning of the reliability of evidence from research institutions, scientists and clinicians in the light of their potential allegiances and funding.

The findings are consistent with some other studies but also highlight some departures from previous research. The strongest criticism of statins and their effects appears to reflect very closely the debates seen in the medical journals over the same time period.[10-12] Whilst I did not compare coverage between the medical and popular press in any detail, it was evident that there was a substantial commonality of content. In the popular press however there is no discernible difference in the reporting of what the scientific community might describe as important, high quality studies compared with the reporting of small studies with high potential for bias. All views are portrayed with equal weight and seriousness. One notable trend is that reports of new links between, for example, statins and dementia, or statins and impotence, tend to be more uncritical than reports of the use of statins in preventing heart disease. This is also consistent with findings from elsewhere.[30] With a new study, it is simply the results that

1
2 are reported, whereas with the role of statins in the prevention of heart disease, it
3 is the debate and controversy that is represented. In terms of the medication
4 versus lifestyle debate, clinical studies disagree about the extent to which health
5 promoting behaviours are actually affected by long term statin use.[31-33]
6
7 However the newspaper coverage contained a largely judgmental vocabulary
8 around the selection of a medical treatment pathway, suggesting that people who
9 take tablets, or doctors who prescribe them, may be abdicating personal
10 responsibility for health. The question of trust in institutions has also been
11 highlighted in other research. Commentators have identified a similar tendency in
12 the media to exaggerate and seek to mobilise opinion against a “supposed threat”
13 or conspiracy.[34] In contrast, where previous research has placed clinicians -
14 family doctors in particular - high in the hierarchy of public trust,[20, 35] this study
15 found no evidence of positive reporting of the medical profession in relation to
16 statins.
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36 One question arising from this study is whether statins have a distinct status with
37 respect to the debate. The polarisation of good drug/bad drug is not new. Other
38 studies have reported a similarly dichotomised approach in relation to other
39 medical treatments.[36, 21] There are parallels with the representation of the
40 diagnosis and treatment of hypertension, another frequently invisible “sickness”
41 addressed by long term, preventative medication. However in the case of statins,
42 the threshold for treatment appears increasingly to be driven by age rather than
43 specific clinical indicators. (The QRisk cardiovascular risk calculator is strongly
44 influenced by age.) Everyone could eventually become a candidate for
45 medicalisation, however healthy their lifestyle and however low their cholesterol
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7 The study highlights a fundamental point concerning the significance of the
8 portrayal of medical issues in the media: is it important that even someone
9 reading across the whole range of newspaper coverage sampled for this study
10 would receive a negative impression of the value of the scientific evidence, and
11 the benefit of statins, when current clinical guidance recommends their use?
12 Coverage in the popular press highlights the confusing messages projected by
13 science and research worldwide. There is no mediating discourse leading people
14 through the pendulum findings of one study or learned commentator after another.
15 The “noise” of the continuing debate may even be frightening people away from
16 taking their prescribed medications, and increasing cardiovascular mortality.[17,
17 27] This raises an ethical question around the desirability of presenting all
18 viewpoints, however well or ill-evidenced, at the risk of deterring people from
19 acting responsibly with regard to their health. Other studies have suggested there
20 is scope for the scientific and medical worlds to articulate their messages more
21 carefully for popular media consumption.[36, 37, 25] Alternatively, the rawness
22 and transparency of the debate may be a good thing. The ability to see and
23 critique another scientist’s work is valued by researchers, and it may also be of
24 benefit to a non-medical audience to hear the challenge and defence of each
25 viewpoint played out in the public arena. One response is for subject experts to
26 provide an evidence-based commentary on scientific issues of public interest,
27 along the lines of NHS Choices’ “Behind the Headlines”, developed by Sir Muir
28 Gray because “In the same way that people need clean, clear water, they have a
29 right to clean, clear knowledge”. [38]
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5 This study adds insight into the portrayal of preventative medications, and related
6 clinical policy, in the media. There are potential implications for clinicians, study
7 authors, policy makers and public health practitioners. It may be of value for
8 health practitioners to be aware of the messages their patients and the public are
9 predominantly hearing in relation to their medications. There is also considerable
10 scope for all health experts to promote a more media-friendly, evidence-based
11 narrative on health topics of public interest or concern.
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22 Recommendations for further research include a comparison of a wider number of
23 outlets and different areas of medicine over a longer period of time, a comparison
24 of the medical and popular media coverage in detail, and further exploration of the
25 impact of media coverage on reader health behaviours.
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47
48 **Ethical approval:** not required.

49
50 **Transparency declaration:** The manuscript is an honest, accurate and
51 transparent account of the study reported. No important aspects have been
52 omitted.
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REFERENCES

1 National Institute for Health and Care Excellence. Lipid modification: cardiovascular risk assessment and the modification of blood lipids for the primary and secondary prevention of cardiovascular disease. NICE clinical guideline 181 2014.

2 Joint British Societies. Prepared by: British Cardiac Society, British Hypertension Society, Diabetes UK, HEART UK, Primary Care Cardiovascular Society, The Stroke Association. JBS 2: Joint British Societies' guidelines on prevention of cardiovascular disease in clinical practice. *Heart* 2005;91:suppl5v1-v52 doi:10.1136/hrt.2005.079988.

3 Baigent C, Blackwell L, Emberson J, et al. Cholesterol Treatment Trialists' (CCT) Collaboration. Efficacy and safety of more intensive lowering of LDL cholesterol: A meta-analysis of data from 170 000 participants in 26 randomised trials. *Lancet* 2010;376(9753):1670-1681.29.

4 Baigent C, Keech A, Kearney P, et al. Cholesterol Treatment Trialists' (CTT) Collaboration. Efficacy and safety of cholesterol-lowering treatment: prospective meta-analysis of data from 90,056 participants in 14 randomised trials of statins. *Lancet* 2005;366(9493):1267-1278.33.

5 National Institute for Health and Care Excellence. Lipid modification: cardiovascular risk assessment and the modification of blood lipids for the primary and secondary prevention of cardiovascular disease, *NICE clinical guideline 181*, 2014.

6 National Institute for Health and Care Excellence Guideline Development Group. Lipid modification: cardiovascular risk assessment and the modification of blood lipids for the primary and secondary prevention of cardiovascular disease, *NICE Clinical guideline, methods, evidence and recommendations*, draft for consultation 2014.

7 Taylor F, Huffman M, Macedo A, et al. Statins for the primary prevention of cardiovascular disease. *Cochrane Database of Systematic Reviews* 2013; Issue 1. Art.No.:CD004816. DOI:10.1002/14651858.CD004816.pub5.

8 Mihaylova B, Voysey M, Fray A, et al. Cholesterol Treatment Trialists' (CTT) Collaboration. The effects of lowering LDL cholesterol with statin therapy in people at low risk of vascular disease: Meta-analysis of individual data from 27 randomised trials. *Lancet* 2012;380(9841):581-590.

9 Finegold J, Manisty C, Goldacre B, et al. What proportion of symptomatic side effects in patients taking statins are genuinely caused by the drug? Systematic review of randomized placebo-controlled trials to aid individual patient choice, DOI: 10.1177/2047487314525531 published online 12 March 2014. *European*

1
2
3 *Journal of Preventive Cardiology* 2014.

4
5 10 Abramson J, Rosenberg H, Jewell N, et al. Should people at low risk of
6 cardiovascular disease take a statin? *British Medical Journal* 2013;347:f6123.

7
8 11 Malhotra, A. Saturated fat is not the issue, *British Medical Journal*
9 2013;347:f6340.

10
11 12 Godlee, F. (2014) The BMJ and authors withdraw statements suggesting that
12 adverse events occur in 18-20% of patients, *British Medical Journal*,
13 2014;348:g3306.

14
15 13 Zhang H, Plutzky J, Skentzos S, et al. Discontinuation of Statins in Routine
16 Care Settings: A Cohort Study. *Annals of Internal Medicine* 2013;158:526-534.
17 doi:10.7326/0003-4819-158-7-201304020-00004.

18
19 14 van Staa T, Smeeth L, Ng E, et al. The efficiency of cardiovascular risk
20 assessment: do the right patients get statin treatment? *Heart* 2013;99:1597-1602.

21
22 15 Wu J, Zhu S, Yao G, et al. Patient Factors Influencing the Prescribing of Lipid
23 Lowering Drugs for Primary Prevention of Cardiovascular Disease in UK General
24 Practice: A National Retrospective Cohort *PloSone* 2013;8.7:e67611.

25
26 16 Rose G. *Rose's Strategy of Preventive Medicine* 2008;Oxford University Press.

27
28 17 Goldacre B. Statins are a mess: we need better data, and shared decision
29 making, Editorial. *BMJ* 2014;348:g3306.

30
31 18 Goldacre B. Statins have no side effects? This is what our study really found.
32 *The Guardian*. 14 March 2014.

33
34 19 Goldacre B. *BadScience.net*, 13 March 2014;
35 [http://www.badscience.net/2014/03/statins-have-no-side-effects-what-our-study-
36 really-found-its-fixable-flaws-and-why-trials-transparency-matters-again/](http://www.badscience.net/2014/03/statins-have-no-side-effects-what-our-study-really-found-its-fixable-flaws-and-why-trials-transparency-matters-again/)
37 (Accessed July 2014)

38
39 20 Duffy B, Rowden L. *You are what you read? How newspaper readership is
40 related to views*. Mori Social Research Institute 2005:P32.

41
42 21 Seale C. Health and media: an overview. *Sociology of health & illness* 2003;25
43 (6):513-531.

44
45 22 van Hunsel F, van Puijenbroek E, deJong-van den Berg L, et al. Media
46 attention and the influence on the reporting odds ratio in disproportionality
47 analysis: an example of patient reporting of statins, *Pharmacoepidemiol Drug Saf*
48 2010;19(1):26-32. Doi:10.1002/pds.1865.

49
50 23 Eberth J, Kline N, Moskowitz D, Montealegre J, Scheurer M. The Role of
51 Media and the Internet on Vaccine Adverse Event Reporting: A Case Study of
52
53
54

1
2 Human Papillomavirus Vaccination, *Journal of Adolescent Health*
3 2013;Volume54;Issue 3;289 – 295.
4

5
6 24 Fasse K, Gamble G, Cundy T, et al. Impact of television coverage on the
7 number and type of symptoms reported during a health scare: a retrospective pre-
8 post observational study. *British Medical Journal* 2012;2:e001607
9 doi:10.1136/bmjopen-2012-001607.
10

11
12 25 Grilli R, Ramsay C, Minozzi S. Mass media interventions: effects on health
13 services utilisation. *Cochrane Database Syst Rev* 2002;Issue1(1).
14

15
16 26 Davies S. Letter to the Academy of Medical Sciences, February 2015. Quoted
17 in The Guardian 16 June 2015.

18 [http://www.theguardian.com/society/2015/jun/16/chief-medical-officer-calls-](http://www.theguardian.com/society/2015/jun/16/chief-medical-officer-calls-review-after-statins-tamiflu-storm)
19 [review-after-statins-tamiflu-storm](http://www.theguardian.com/society/2015/jun/16/chief-medical-officer-calls-review-after-statins-tamiflu-storm) (Accessed 20 August 2015)

20 Quoted in the Pharmaceutical Journal of the Royal Pharmaceutical Society 17
21 June 2015. [http://www.pharmaceutical-journal.com/news-and-](http://www.pharmaceutical-journal.com/news-and-analysis/news/englands-top-doctor-orders-review-into-how-medicines-are-evaluated/20068759.article)
22 [analysis/news/englands-top-doctor-orders-review-into-how-medicines-are-](http://www.pharmaceutical-journal.com/news-and-analysis/news/englands-top-doctor-orders-review-into-how-medicines-are-evaluated/20068759.article)
23 [evaluated/20068759.article](http://www.pharmaceutical-journal.com/news-and-analysis/news/englands-top-doctor-orders-review-into-how-medicines-are-evaluated/20068759.article) (Accessed 20 August 2015)
24

25
26 27 Nielsen S, Nordestgaard B. Negative statin-related news stories decrease
27 statin persistence and increase myocardial infarction and cardiovascular mortality:
28 a nationwide prospective cohort study, *European Heart Journal*
29 2015;doi:10.1093/eurheartj/ehv641.
30

31
32 28 Macnamara J. Media content analysis: Its uses, benefits and best practice
33 methodology. *Asia Pacific Public Relations Journal* 2005;6(1),1-34:P20.
34

35
36 29 National Institute for Health and Care Excellence Lipid modification:
37 cardiovascular risk assessment and the modification of blood lipids for the primary
38 and secondary prevention of cardiovascular disease, draft update for consultation,
39 NICE guideline 2014.
40

41
42 30 Hernandez J, Mantel-Teeuwisse A, van Thiel G, et al. Publication trends in
43 newspapers and scientific journals for SSRIs and suicidality: a systematic
44 longitudinal study, *British Medical Journal* 2011;Dec 6;1(2):e000290. doi:
45 10.1136/bmjopen-2011-000290.
46

47
48 31 Sugiyama T, Tsugawa Y, Tseng C, et al. Different Time Trends of Caloric and
49 Fat Intake Between Statin Users and Nonusers Among US Adults. Gluttony in the
50 Time of Statins? *JAMA Internal Medicine*
51 2014;doi:10.1001/jamainternmed.2014.1927.
52

53
54 32 Lofgren I, Greene G, Schembre S, et al. Comparison of diet quality, physical
55 activity and biochemical values of older adults either reporting or not reporting use
56 of lipid-lowering medication. *Journal Nutritional Health Aging* 2010;14(2):168-172.
57
58
59
60

1
2
3 33 Lytsy P, Burell G, Westerling R. Cardiovascular risk factor assessments and
4 health behaviours in patients using statins compared to a non-treated population.
5 *Int Journal Behav Med* 2012;19(2):134-142.

6
7 34 McQuail D. The influence and effects of mass media. *Mass communication*
8 *and society* 1977;70-94:P15.

9
10 35 Gale N, Greenfield S, Gill P, et al. Patient and general practitioner attitudes to
11 taking medication to prevent cardiovascular disease after receiving detailed
12 information on risks and benefits of treatment: a qualitative study *BMC Family*
13 *Practice* 2011;12:59doi:10.1186/1471-2296-12-59:P5.

14
15 36 Prosser H. Marvellous medicines and dangerous drugs: the representation of
16 prescription medicine in the UK newsprint media. *Public Understanding of*
17 *Science* 2010;19(1):52-69.

18
19 37 Danovaro-Holliday M, Wood A, LeBaron C. Rotavirus vaccine and the news
20 media, 1987-2001, *JAMA: the Journal of the American Medical Association*
21 2002;Mar20;287(11):1455-62.

22
23 38 Gray M. *Behind the headlines, NHS Choices* 2011;
24 <http://www.nhs.uk/news/Pages/about-behind-the-headlines.aspx> (Accessed 2 July
25 2014)

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A CONTENT ANALYSIS OF THE REPRESENTATION OF STATINS IN THE BRITISH NEWSPRINT MEDIA

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ABSTRACT

Objective

This study reviewed the news media coverage of statins, seeking to identify specific trends or differences in viewpoint between media outlets and examine common themes.

Design

The study is a content analysis of the frequency and content of the reporting of statins in a selection of the British newsprint media. It involved an assessment of the number, timing and thematic content of articles followed by a discourse analysis examining the underlying narratives. The sample was the output of four UK newspapers, covering a broad-spectrum readership, over a six month timeframe 1 October 2013 - 31 March 2014.

Results

A total of 67 articles included reference to statins. The majority (39, 58%) were reporting or responding to publication of a clinical study. The ratio of negative to positive coverage was greater than 2:1 overall. In the more politically right-leaning newspapers, 67% of coverage was predominantly negative (30/45 articles); 32% in the more left-leaning papers (7/22 articles). Common themes were:

- the perceived 'medicalisation' of the population;

- the balance between lifestyle modification and medical treatments in the primary prevention of heart disease;
- side effects and effectiveness of statins;
- pharmaceutical sponsorship, and implications for the reliability of evidence;
- trust between the public and government, institutions, research organisations and the medical profession.

Conclusions

Newsprint media coverage of statins was substantially influenced by the publication of national guidance and by coverage in the medical journals of clinical studies and comment. Statins received a predominantly negative portrayal, notably in the more right-leaning press. There were shared themes: concern about the balance between medication and lifestyle change in the primary prevention of heart disease; the adverse effects of treatment; and a questioning of the reliability of evidence from research institutions, scientists and clinicians in the light of their potential allegiances and funding.

Strengths and limitations of this study

- The use of media websites for data collection may have excluded some material which was only available in the print versions, and conversely included some material not available in print.

- The pragmatic selection of the study timescale and media selection may have reduced the representativeness and therefore generalisability of the study; however, the sampling strategy was designed to ensure that the sources represented a reasonable range and diversity of the established newspaper media.
- There was a single researcher and not a research team, leading to a potential risk of bias or incompleteness in the identification and selection of articles and the analysis; however research questions and methods were clearly set out at the start and consistently followed, to ensure validity.
- Blinding was not strictly possible, but articles were coded by a unique numerical identifier to reduce bias during the thematic analysis and an inductive approach was applied to ensure that the themes were dictated by the evidence emerging from the texts and not imposed by the researcher.

INTRODUCTION

UK clinical guidelines recommend the use of lipid lowering therapy for both secondary and primary prevention.[1, 2] This is based on published clinical trial evidence of effectiveness, cost-effectiveness,[1, 3-8] and the extent of side-effects.[7-9] There is debate in the clinical literature about the merits of the widespread and growing use of statins, questioning whether the 'right' patients are benefiting, whether the threshold for initiation of primary preventative treatment is too low, and the reliability of the evidence underpinning the guidelines.[10-16] The same issues are also covered in the lay media, where, however, the nature and extent of the debate is less well documented.

There is an interaction between the lay and clinical media, with the same commentators and topics or reported, or directly speaking, in both,[17-21] And importantly, there is evidence that the lay media influences health-related perceptions and behaviours, including reporting of side-effects, uptake of services and adherence to medication.[22-27] The Chief Medical Officer for England has called for a review into how the safety and efficacy of drugs is judged, prompted by concern about the representation of statins and other drugs "in both the medical and general press".[28] A recent Danish study, using national and regional media coverage as a proxy for individual exposure, found that negative statin-related news stories were associated with both early statin discontinuation and cardiovascular mortality.[29]

In the light of this relationship, it is relevant to examine the portrayal of statins in the media, and the messages that are being predominantly received. This study

1
2 investigates the nature of the representation of statins in the newsprint media,
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4 identifying the key themes, trends, characteristics and viewpoints.
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METHOD

A descriptive and thematic analysis of the frequency of the coverage of statins in the UK newsprint media was undertaken. Media were selected with the aim of obtaining broad spectrum coverage reflecting a range of editorial leanings and readerships. An initial screening sample was undertaken in order to pilot the methodology and to consolidate the questions and sampling strategy for the main research.[30] This identified what would be practical for one researcher to collect, and enabled refinement of the range and type of outlets, the time period and the type of articles for inclusion in the main data collection. The sampling frame selected for the main study was the UK newsprint media. A purposive sampling strategy was followed, with newspapers selected on the basis that they were accessible, able to be searched and analysed by one researcher in the time available, and demographically, geographically and politically representative of a broad spectrum readership. The selected newspapers were The Daily Mail, The Daily Mirror, The Telegraph and The Guardian (**Table 1**). These are all national UK newspapers, recording the highest circulation¹.

¹ The Sun recorded the highest circulation but The Sun and The Times were excluded because they did not have free to access websites.

Table 1 Readership of selected newspapers 2013[31, 32]

Category	Daily Mail	Daily Mirror	The Telegraph	The Guardian
Circulation	1,863,000	1,058,500	555,600	204,400
Average age	58	Not given	61	44
Readership 65+	45%	34%	46%	21%
Gender	51% female	54% male	52% male	52% male
Social class ABC1 ²	64%	43%	87%	89%
Predominant geography [Mori 2005]	83% outside London & Scotland	North	East & South East	London
Predominant political stance ³	Right	Left	Centre right	Centre left
Market designation	Tabloid	Tabloid	Broadsheet	Broadsheet

Full texts of articles were searched by keyword and collected retrospectively from the websites of the selected media outlets over a continuous six month timeframe (1 October 2013 to 31 March 2014). The main search term was “statin” (“statins” did not retrieve all mentions.) A further search on “cholesterol”, “cardiovascular” and “heart disease” was undertaken to confirm all relevant articles had been captured. All articles with any recorded mention of statins were screened. All types of article were included.

Articles were downloaded and printed in full. Each article was given a unique reference number, to blind the researcher to source during the analysis, and key descriptors were recorded. A thematic data analysis was then undertaken. A coding scheme provided a consistent framework for data collection and analysis

² Social gradings A-E are based on 2011 census data. ABC1 represents higher & intermediate to clerical and junior occupations.

³ Political stance reflects party affiliation in the most recent general election. (Right: Conservative, UKIP; left: Labour, Green; Centre right: Conservative, Liberal Democrat; Centre left: Labour, Liberal Democrat.)

1
2 and enabled independent third party review. The exclusion criterion was
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4 peripheral mention of statins with no associated reporting or comment.
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9 The analysis was in two parts. An initial descriptive analysis mapped the findings
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11 against the descriptive indicators, including whether the coverage was judged to
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13 be predominantly positive or negative in terms of the arguments, language, and
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15 terminology. Where the proportion of positive and negative comments appeared
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17 similar, or where it was difficult to decide on the overall direction, a neutral
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19 assessment was given. A more detailed qualitative analysis then examined the
20
21 nature of the discourses within the key themes, including viewpoints, assumptions
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23 and language. Outlets were then tracked back and identified in the results. A
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25 copy of the coding scheme is available as a supplementary document.
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31 There were no confidentiality issues associated with the study as all data sources
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33 were within the public domain. Ethics Committee approval was not required.
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RESULTS

Searches identified 67 articles during the time period. A timeline showing coverage by outlet by week is shown in **Figure 1**. There is considerable variation, with peaks in coverage weeks commencing 11 February and 18 March. The NICE revised draft guidelines were published on 12 February,[33] covered in 11 articles, prompting the earlier peak. A systematic review of the side-effects of statins[9] was widely reported a month later. In only five of the 26 weeks was there no story about statins.

Figure 1 Coverage by outlet by week, October 2013 – March 2014

In two thirds of articles (**Table 2**), statins were the main topic. The majority of articles (39, 58%) were reporting or responding to publication of a clinical study.

Table 2 Number, stance, and theme of articles mentioning statins
1 October 2013 – 31 March 2014

		Telegraph	Daily Mail	Guardian	Daily Mirror	Total
Number of articles		25	20	11	11*	67
Frequency of article type	Study report/ response	10 (40%)	13 (65%)	6 (55%)	10 (91%)	39 (58%)
	Commentary	3 (12%)	1 (5%)	2 (18%)	0 (0%)	6 (9%)
	Q&A	2 (8%)	1 (5%)	0 (0%)	0 (0%)	3 (4%)
	Personal story	1 (4%)	1 (5%)	1 (9%)	0 (0%)	3 (4%)
	News report	1** (4%)	1** (5%)	0 (0%)	1** (8%)	3 (4%)
	Letters	4 (16%)	0 (0%)	0 (0%)	0 (0%)	4 (6%)
	Expert/'celebrity' commentator	3 (12%)	2 (10%)	0 (0%)	0 (8%)	5 (7%)
	Other	1 (4%)	1 (5%)	2 (18%)	0 (0%)	4 (6%)
Statins main topic	Main topic	18 (72%)	14 (70%)	10 (91%)	3 (25%)	45 (67%)
	Secondary topic	7 (28%)	6 (30%)	1 (9%)	8 (67%)	22 (33%)

* One article was excluded.

** Publication of NICE and US guidelines on the use of statins

The ratio of negative to positive coverage was greater than 2:1 overall. The more right-leaning papers exhibited a ratio of 3:1 negative to positive articles, where the left leaning press had equal proportions of each. The Telegraph had the highest differential with a 10:1 ratio of negative to positive stories (**Figure 2**). Articles on studies reporting collateral benefits (statins benefiting people with multiple sclerosis or dementia for example) were more likely to portray statins in a positive light.

Figure 2 Positive and negative coverage

Thematic analysis

The themes with the highest number of mentions selected for detailed analysis were: medicalisation versus lifestyle modification; the effectiveness of statins in the light of their side-effects; and trust of those advocating statin therapy.

Medicalisation versus lifestyle modification

The term “medicalisation” is used by three of the four sampled media, both in quotes from contributors and by the article authors. In most cases it is used to denote the introduction of drug treatment for use in an otherwise apparently healthy population. It is used with an exclusively negative meaning:

“the “medicalisation” of people who are not ill... turning five million middle-aged and predominantly healthy men and women into statin-popping patients.” [Mail, 13/2/14]

“It is a concern to have to mass medicalise the whole of the British public in this way” [Telegraph, 11/2/14] Britain will be confirmed *“the statins capital of Europe”* [Mail, 12/2/14]

There is a language of passivity and control. People are “medicalised”, “medicated” or “*put on statins*” (emphasis added).

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2 The majority of articles appear supportive of prescribing statins for those with
3 established heart disease. The controversy centres on what proportion of those
4 with risk factors for cardiovascular disease should receive statins as a primary
5 preventative measure:
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13 *“there are people who may be overweight or have raised blood pressure.*

14 *They probably don’t have symptoms. They are not ill”* [Guardian, 21/3/14]
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20 *“we’ll be medicalising many relatively healthy patients”* [Mail, 12/2/14]
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22 (emphasis added)
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27 The medical profession is seen to be focusing on the medical option in preference
28 to promoting lifestyle change:
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33 *“doctors should first work with patients to put them less at risk... [by]*

34 *stopping smoking, drinking less, taking exercise and eating healthily.”* [Mail,
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38 13/3/14]
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42 However:

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44 *“[It is] “simpler to reach for the pad and write out a prescription” than to dole*

45 *out lifestyle advice”* [National Obesity Forum quoted in Mail and Telegraph,
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49 25/12/13]
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53 The public is also indicated to be at fault:
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“There is a tendency... for patients (and doctors) to think that as long as they’re on statins, smoking or a poor diet doesn’t really matter”;
“people will see them as a magic pill that allows them to tuck into three pizzas a night and umpteen hamburgers with impunity” [“leading cardiologist” quoted in Mail, 8/3/14, 13/2/14]

Lifestyle measures could actually be the preferable medicine:

“Exercise can be just as efficient as drugs in treating heart disease” [study report, Mirror, 2/10/13]

“eating an apple a day is as effective as taking statins” [medical “campaigner”, Telegraph, 2/3/14]

Effectiveness and side-effects of treatment

The positioning of “expert” opinion is important here. Who is most qualified to determine the impact of side-effects: clinician, trialist or patient?

Evidence from published studies on the extent of side-effects is reported:

“the benefits of statins greatly exceed any side effects” [Cholesterol trialists study report, Mail, 12/2/14].

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3 This is directly challenged by individuals:
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7 *NICE “will tell you that... one in 10,000 patients... will suffer severe muscular*
8 *pain.... In contrast, reliable data from the real world... backed up by*
9 *anecdotal evidence from my experience as a cardiac physician, suggests*
10 *that the real figure... is closer to one in five.’ [cardiologist quoted in Mail,*
11 *13/2/14]*
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20 *“I know of only three people who have been on statins – I am one of them –*
21 *and we all experienced debilitating muscle aches” [reader correspondence,*
22 *Telegraph, 15/3/14]*
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29 The “noise” about side-effects may produce the equivalent of a “*nocebo effect*”:
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33 *“If we tell people about side effects,... we induce these unpleasant*
34 *symptoms,... inflicting harm on our patients”; “We... shouldn’t scare people*
35 *into experiencing side effects... or into avoiding a medication which might*
36 *help them” [“study author”, Guardian, 14/3/14]*
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45 Statins are portrayed as either villain or hero:
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49 *“in years to come, statins could be seen as being as dangerous as*
50 *thalidomide” [reader correspondence, Mail, 14/11/13]*
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56 *“Statins may reduce dementia by a third” [study report, Telegraph, 30/12/13]*
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4 Over the six month sample period, statins were associated with potential
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6 beneficial effects on dementia, multiple sclerosis and erectile dysfunction.
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10 **Trust**

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15 A related but distinct theme is trust. The reliability of studies or guidelines is
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17 traditionally linked to the weight of scientific evidence – usually RCT evidence -
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19 underpinning them. However pharmaceutical companies, often designated “*Big*
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21 *Pharma*”, are almost universally negatively portrayed, and there is an implied
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23 questioning of the value of any evidence from a pharmaceutical industry
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25 sponsored trial. An interesting question emerges, concerning which forms of
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27 evidence have the greater validity:
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33 NICE recommendations for lowering the threshold for statin treatment are:

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36 *“based on solid evidence and the public should trust them”* [US study
37
38 authors quoted in Mail, 13/11/13]

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42 *“The drug companies were saying this drug was the best thing since sliced*
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44 *bread”*; *“their findings are contradicted by independent surveys”* and they are
45
46 *“contrary to the experience of many Telegraph readers”* [response to draft
47
48 NICE guidelines, Telegraph, 2/3/14]

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53 *“trials run by the drug companies... are likely to be excessively favourable”*
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56 [Harvard clinician, Mail, 24/12/13]

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4 these same trials are refuted by *“anecdotal accounts... real world data...
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6
7 [and] my experience as a cardiac physician”* [cardiologist, Mail, 13/2/14]
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11 The confidentiality of some of the trial data leads to suspicion of what the data
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13 contain:
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18 There is no reason *“to accept the analysis of the Oxford team who have
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Guardian, 21/3/14]

Although some academic bodies are still largely to be trusted, for example *“the
respected Cochrane group”* [Guardian], other organisations or individuals are
contaminated by association:

there are *“arrangements between Big Pharma and academic institutions
[and] vested interests in the research”* [Telegraph, 15/3/14]

Political and administrative organisations receive a mixed portrayal:

*“the government’s advice is based on a wealth of evidence. The BMJ article
is based on opinion”* [Public Health England director quoted in Guardian,
23/10/13]

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“how can we explain this big gap between... personal experience... of doctors and patients... and official bodies such as NICE?” [Mail, 18/3/14]

“NICE seems to be siding firmly with the drug companies and relying on industry-sponsored statistics” [Mail, 13/2/14]

Family doctors receive consistently negative coverage. Medical authority is portrayed as siding with, or indirectly influenced by, the pharmaceutically sponsored institutions. Doctors are accused of *“inexcusable deviousness”* in their methods for fulfilling screening quotas and in disguising a prescription for statins as *“lipid tablets”* [Telegraph, 16/2/14]. There is a risk of:

“more aggressive prescribing of the [statin] medications by family doctors, whose pay is linked to take-up of the pills among their patients” [Telegraph, 11/2/14].

DISCUSSION

This study found that the newsprint media coverage of statins was substantially influenced by coverage in the medical journals of clinical studies, reports and comment. Statins received a predominantly negative portrayal overall, notably in the more right-leaning press. Specifically, there was considerable coverage of reported side-effects, concern about the balance between medication and lifestyle changes in primary prevention, and a questioning of the reliability of evidence from research institutions, scientists and clinicians in the light of their potential allegiances and funding.

The findings are consistent with some other studies and also highlight some departures from previous research:

- The strongest criticism of statins and their effects in the media appears to reflect very closely the arguments presented in the medical journals over the same time period, although the weighting of the arguments may differ.[10-12] In the popular press there is no discernible difference in the reporting of what the scientific community might describe as important, high quality studies compared with the reporting of small studies, or opinion, with high potential for bias. All views are portrayed with equal weight and seriousness. Other studies have identified greater selectivity in reporting in the popular compared with the specialist media, with a greater focus on more controversial topics.[34]
- A notable trend I identified in the media is for reports of new links between,

1
2 for example, statins and dementia, or statins and impotence, to be more
3
4 uncritical than reports of the use of statins in preventing heart disease. With
5
6 a new study, the results themselves are the story, whereas with the role of
7
8 statins in the prevention of heart disease, it is the debate and controversy
9
10 that is represented.
11

- 12
13 • In terms of the medication versus lifestyle debate, clinical studies disagree
14
15 about the extent to which health promoting behaviours are actually affected
16
17 by long term statin use.[35-37] However the newspaper coverage contained
18
19 a largely judgmental vocabulary around the selection of a medical treatment
20
21 pathway, suggesting that people who take tablets, or doctors who prescribe
22
23 them, may be abdicating personal responsibility for health.
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- 26
27 • The question of trust in institutions has also been highlighted in other
28
29 research. Commentators have identified a similar tendency in the media to
30
31 exaggerate and seek to mobilise opinion against a “supposed threat” or
32
33 conspiracy.[38] In contrast, where previous research has placed clinicians -
34
35 family doctors in particular - high in the hierarchy of public trust,[22, 39] this
36
37 study found no evidence of positive reporting of the medical profession in
38
39 relation to statins.
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45 One question arising from this study is whether statins have a distinct status with
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47 respect to the debate. The polarisation of good drug/bad drug is not new. Other
48
49 studies have reported a similarly dichotomised approach in relation to other
50
51 medical treatments.[40, 23] There are parallels with the representation of the
52
53 diagnosis and treatment of hypertension, another frequently invisible “sickness”
54
55 addressed by long term, preventative medication.[16] However in the case of
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3 statins, the threshold for treatment appears increasingly to be driven by age rather
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5 than specific clinical indicators. (The QRisk cardiovascular risk calculator is
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7 strongly influenced by age.) Everyone could eventually become a candidate for
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9 medicalisation, however healthy their lifestyle and however low their cholesterol
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11 ratio.
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16 The study highlights a fundamental point concerning the significance of the
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18 portrayal of medical issues in the media: is it important that even someone
19
20 reading across the whole range of newspaper coverage sampled for this study
21
22 would receive a negative impression of the value of the scientific evidence, and
23
24 the benefit of statins, when current clinical guidance recommends their use?
25
26 Coverage in the popular press highlights the confusing messages projected by
27
28 science and research worldwide. There is no mediating discourse leading people
29
30 through the pendulum findings of one study or learned commentator after another.
31
32 The “noise” of the continuing debate may even be frightening people away from
33
34 taking their prescribed medications, and increasing cardiovascular mortality.[17,
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36 29] This raises an ethical question around the desirability of presenting all
37
38 viewpoints, however well or ill-evidenced, at the risk of deterring people from
39
40 acting responsibly with regard to their health. Other studies have suggested there
41
42 is scope for the scientific and medical worlds to articulate their messages more
43
44 carefully for popular media consumption.[40, 41, 27] Alternatively, the rawness
45
46 and transparency of the debate may be a good thing. The ability to see and
47
48 critique another scientist’s work is valued by researchers, and it may also be of
49
50 benefit to a non-medical audience to hear the challenge and defence of each
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52 viewpoint played out in the public arena. One response is for subject experts to
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1
2 provide an evidence-based commentary on scientific issues of public interest,
3
4 along the lines of NHS Choices' "Behind the Headlines", developed by Sir Muir
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6 Gray because "In the same way that people need clean, clear water, they have a
7
8 right to clean, clear knowledge".[42]
9
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13 This study adds insight into the portrayal of preventative medications, and related
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15 clinical policy, in the media. There are potential implications for clinicians, study
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17 authors, policy makers and public health practitioners. By increasing awareness
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19 of the messages their patients, readers and the public are predominantly hearing
20
21 in relation to their medications, it highlights the considerable scope for all health
22
23 experts to promote a more media-friendly, evidence-based narrative on health
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25 topics of public interest or concern.
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32 Recommendations for further research include a comparison of a wider number of
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34 outlets and different areas of medicine over a longer period of time, a comparison
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36 of the medical and popular media coverage in detail, and further exploration of the
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38 impact of media coverage on reader health behaviours.
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42 **Contributorship statement:** no contributing authors.

43 **Declaration of competing interests:** none.

44 **Funding:** none received.

45 **Data sharing statement:** no supplementary unpublished data

46 **Ethical approval:** not required.

47
48 **Transparency declaration:** The manuscript is an honest, accurate and
49
50 transparent account of the study reported. No important aspects have been
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52 omitted.
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REFERENCES

1 National Institute for Health and Care Excellence. Lipid modification: cardiovascular risk assessment and the modification of blood lipids for the primary and secondary prevention of cardiovascular disease. NICE clinical guideline 181 2014.

2 Joint British Societies. Prepared by: British Cardiac Society, British Hypertension Society, Diabetes UK, HEART UK, Primary Care Cardiovascular Society, The Stroke Association. JBS 2: Joint British Societies' guidelines on prevention of cardiovascular disease in clinical practice. *Heart* 2005;91:suppl5v1-v52 doi:10.1136/hrt.2005.079988.

3 Baigent C, Blackwell L, Emberson J, et al. Cholesterol Treatment Trialists' (CCT) Collaboration. Efficacy and safety of more intensive lowering of LDL cholesterol: A meta-analysis of data from 170 000 participants in 26 randomised trials. *Lancet* 2010;376(9753):1670-1681.29.

4 Baigent C, Keech A, Kearney P, et al. Cholesterol Treatment Trialists' (CTT) Collaboration. Efficacy and safety of cholesterol-lowering treatment: prospective meta-analysis of data from 90,056 participants in 14 randomised trials of statins. *Lancet* 2005;366(9493):1267-1278.33.

5 National Institute for Health and Care Excellence. Lipid modification: cardiovascular risk assessment and the modification of blood lipids for the primary and secondary prevention of cardiovascular disease, *NICE clinical guideline 181*, 2014.

6 National Institute for Health and Care Excellence Guideline Development Group. Lipid modification: cardiovascular risk assessment and the modification of blood lipids for the primary and secondary prevention of cardiovascular disease, *NICE Clinical guideline, methods, evidence and recommendations*, draft for consultation 2014.

7 Taylor F, Huffman M, Macedo A, et al. Statins for the primary prevention of cardiovascular disease. *Cochrane Database of Systematic Reviews* 2013; Issue 1. Art.No.:CD004816. DOI:10.1002/14651858.CD004816.pub5.

8 Mihaylova B, Voysey M, Fray A, et al. Cholesterol Treatment Trialists' (CTT) Collaboration. The effects of lowering LDL cholesterol with statin therapy in people at low risk of vascular disease: Meta-analysis of individual data from 27 randomised trials. *Lancet* 2012;380(9841):581-590.

9 Finegold J, Manisty C, Goldacre B, et al. What proportion of symptomatic side effects in patients taking statins are genuinely caused by the drug? Systematic review of randomized placebo-controlled trials to aid individual patient choice,

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DOI: 10.1177/2047487314525531 published online 12 March 2014. *European Journal of Preventive Cardiology* 2014.

10 Abramson J, Rosenberg H, Jewell N, et al. Should people at low risk of cardiovascular disease take a statin? *British Medical Journal* 2013;347:f6123.

11 Malhotra, A. Saturated fat is not the issue, *British Medical Journal* 2013;347:f6340.

12 Godlee, F. (2014) The BMJ and authors withdraw statements suggesting that adverse events occur in 18-20% of patients, *British Medical Journal*, 2014;348:g3306.

13 Zhang H, Plutzky J, Skentzos S, et al. Discontinuation of Statins in Routine Care Settings: A Cohort Study. *Annals of Internal Medicine* 2013;158:526-534. doi:10.7326/0003-4819-158-7-201304020-00004.

14 van Staa T, Smeeth L, Ng E, et al. The efficiency of cardiovascular risk assessment: do the right patients get statin treatment? *Heart* 2013;99:1597-1602.

15 Wu J, Zhu S, Yao G, et al. Patient Factors Influencing the Prescribing of Lipid Lowering Drugs for Primary Prevention of Cardiovascular Disease in UK General Practice: A National Retrospective Cohort *PloSone* 2013;8.7:e67611.

16 Rose G. *Rose's Strategy of Preventive Medicine* 2008;Oxford University Press.

17 Goldacre B. Statins are a mess: we need better data, and shared decision making, Editorial. *BMJ* 2014;348:g3306.

18 Goldacre B. Statins have no side effects? This is what our study really found. *The Guardian*. 14 March 2014.

19 Goldacre B. *BadScience.net*, 13 March 2014; <http://www.badscience.net/2014/03/statins-have-no-side-effects-what-our-study-really-found-its-fixable-flaws-and-why-trials-transparency-matters-again/> (Accessed July 2014)

20 Malhotra A. Saturated fat is not the issue, *BMJ* 2013;347:f6340.

21 Malhotra A. (2013) *BBC News*. 23 October 2013; <http://www.bbc.co.uk/news/health-24625808> (Accessed June 2016)

22 Duffy B, Rowden L. *You are what you read? How newspaper readership is related to views*. Mori Social Research Institute 2005:P32.

23 Seale C. Health and media: an overview. *Sociology of health & illness* 2003;25(6):513-531.

1
2
3 24 van Hunsel F, van Puijenbroek E, deJong-van den Berg L, et al. Media
4 attention and the influence on the reporting odds ratio in disproportionality
5 analysis: an example of patient reporting of statins, *Pharmacoepidemiol Drug Saf*
6 2010;19(1):26-32. Doi:10.1002/pds.1865.

7
8 25 Eberth J, Kline N, Moskowitz D, Montealegre J, Scheurer M. The Role of
9 Media and the Internet on Vaccine Adverse Event Reporting: A Case Study of
10 Human Papillomavirus Vaccination, *Journal of Adolescent Health*
11 2013;Volume54;Issue 3;289 – 295.

12
13 26 Fasse K, Gamble G, Cundy T, et al. Impact of television coverage on the
14 number and type of symptoms reported during a health scare: a retrospective pre-
15 post observational study. *British Medical Journal* 2012;2:e001607
16 doi:10.1136/bmjopen-2012-001607.

17
18 27 Grilli R, Ramsay C, Minozzi S. Mass media interventions: effects on health
19 services utilisation. *Cochrane Database Syst Rev* 2002;Issue1(1).

20
21 28 Davies S. Letter to the Academy of Medical Sciences, February 2015. Quoted
22 in The Guardian 16 June 2015.

23
24 [http://www.theguardian.com/society/2015/jun/16/chief-medical-officer-calls-](http://www.theguardian.com/society/2015/jun/16/chief-medical-officer-calls-review-after-statins-tamiflu-storm)
25 [review-after-statins-tamiflu-storm](http://www.theguardian.com/society/2015/jun/16/chief-medical-officer-calls-review-after-statins-tamiflu-storm) (Accessed August 2015)

26
27 Quoted in the Pharmaceutical Journal of the Royal Pharmaceutical Society 17
28 June 2015. [http://www.pharmaceutical-journal.com/news-and-](http://www.pharmaceutical-journal.com/news-and-analysis/news/enlands-top-doctor-orders-review-into-how-medicines-are-evaluated/20068759.article)
29 [analysis/news/enlands-top-doctor-orders-review-into-how-medicines-are-](http://www.pharmaceutical-journal.com/news-and-analysis/news/enlands-top-doctor-orders-review-into-how-medicines-are-evaluated/20068759.article)
30 [evaluated/20068759.article](http://www.pharmaceutical-journal.com/news-and-analysis/news/enlands-top-doctor-orders-review-into-how-medicines-are-evaluated/20068759.article) (Accessed August 2015)

31
32 29 Nielsen S, Nordestgaard B. Negative statin-related news stories decrease
33 statin persistence and increase myocardial infarction and cardiovascular mortality:
34 a nationwide prospective cohort study, *European Heart Journal*
35 2015;doi:10.1093/eurheartj/ehv641.

36
37 30 Macnamara J. Media content analysis: Its uses, benefits and best practice
38 methodology. *Asia Pacific Public Relations Journal* 2005;6(1),1-34:P20.

39
40 31 NRS Readership Estimates, National Readership Survey 2013.
41 <http://www.nrs.co.uk/latest-results/nrs-print-results/newspapers-nrsprintresults/>
42 (Accessed March 2014)

43
44 32 TheMediaBriefing 2014. <https://www.themediabriefing.com/> [Accessed March
45 2014]

46
47 33 National Institute for Health and Care Excellence Lipid modification:
48 cardiovascular risk assessment and the modification of blood lipids for the primary
49 and secondary prevention of cardiovascular disease, draft update for consultation,
50 NICE guideline 2014.

51
52 34 Hernandez J, Mantel-Teeuwisse A, van Thiel G, et al. Publication trends in
53 newspapers and scientific journals for SSRIs and suicidality: a systematic
54

1
2 longitudinal study, *British Medical Journal* 2011;Dec 6;1(2):e000290. doi:
3 10.1136/bmjopen-2011-000290.
4

5
6 35 Sugiyama T, Tsugawa Y, Tseng C, et al. Different Time Trends of Caloric and
7 Fat Intake Between Statin Users and Nonusers Among US Adults. Gluttony in the
8 Time of Statins? *JAMA Internal Medicine*
9 2014;doi:10.1001/jamainternmed.2014.1927.
10

11
12 36 Lofgren I, Greene G, Schembre S, et al. Comparison of diet quality, physical
13 activity and biochemical values of older adults either reporting or not reporting use
14 of lipid-lowering medication. *Journal Nutritional Health Aging* 2010;14(2):168-172.
15

16
17 37 Lytsy P, Burell G, Westerling R. Cardiovascular risk factor assessments and
18 health behaviours in patients using statins compared to a non-treated population.
19 *Int Journal Behav Med* 2012;19(2):134-142.
20

21
22 38 McQuail D. The influence and effects of mass media. *Mass communication*
23 *and society* 1977;70-94:P15.
24

25
26 39 Gale N, Greenfield S, Gill P, et al. Patient and general practitioner attitudes to
27 taking medication to prevent cardiovascular disease after receiving detailed
28 information on risks and benefits of treatment: a qualitative study *BMC Family*
29 *Practice* 2011;12:59doi:10.1186/1471-2296-12-59:P5.
30

31
32 40 Prosser H. Marvellous medicines and dangerous drugs: the representation of
33 prescription medicine in the UK newsprint media. *Public Understanding of*
34 *Science* 2010;19(1):52-69.
35

36
37 41 Danovaro-Holliday M, Wood A, LeBaron C. Rotavirus vaccine and the news
38 media, 1987-2001, *JAMA: the Journal of the American Medical Association*
39 2002;Mar20;287(11):1455-62.
40

41
42 42 Gray M. *Behind the headlines, NHS Choices* 2011;
43 <http://www.nhs.uk/news/Pages/about-behind-the-headlines.aspx> (Accessed July
44 2014)
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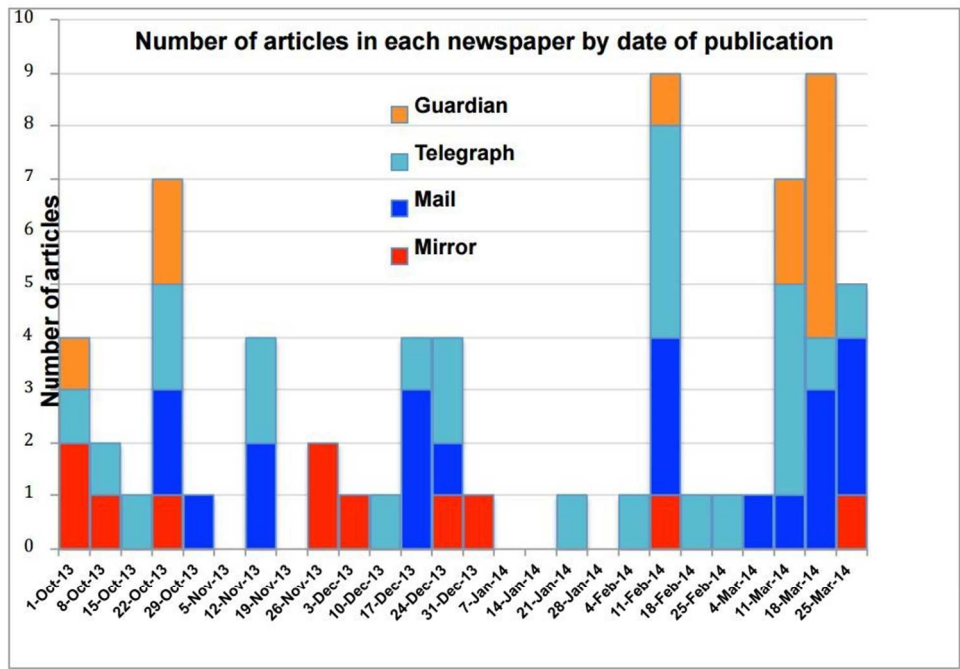


Figure 1

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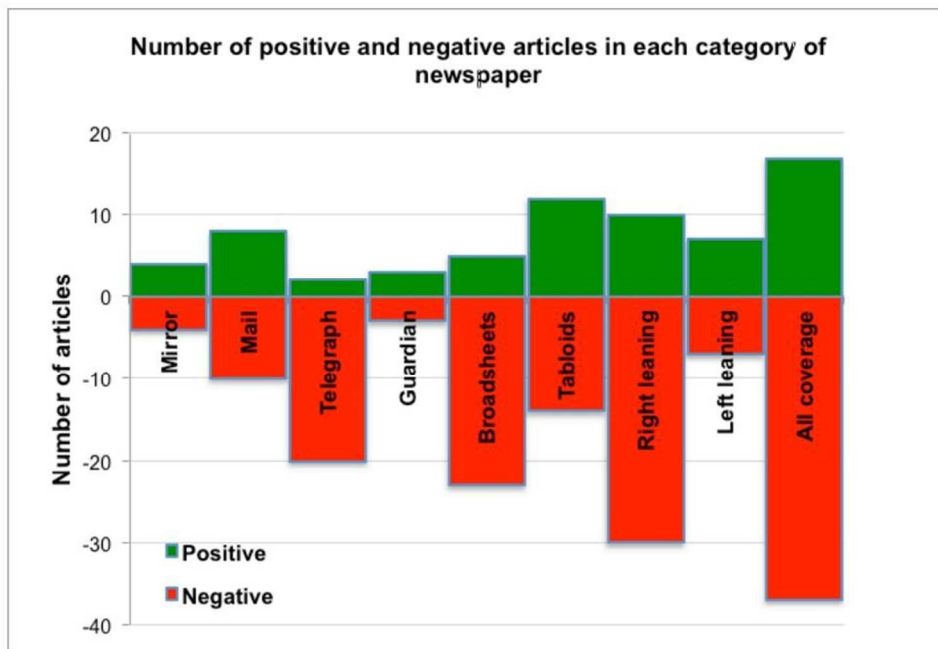


Figure 2

87x59mm (300 x 300 DPI)

view only

DESCRIPTIVE AND ANALYTICAL CODING SCHEME

General descriptors

- unique article reference number
- date
- publication/outlet
- type of article
 - news report
 - report of published/planned study
 - personal interest story
 - comment
 - dear doctor column/Q&A
 - other (specify)
- headline (write in full)
- sub-headline (write in full)
- reference to statins
 - main subject
 - secondary subject (eg. in article on heart disease or lifestyle measures)
 - passing comment
- pictures/images – brief description eg. older woman in hospital bed wearing gown & taking blue tablets from a cup; red tablets scattered on a blue background
- author

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- name
 - title (eg. Chief health correspondent; doctor; ‘celebrity’ columnist)
 - contributors/sources quoted
 - name
 - organisation/designation (eg. British Heart Foundation; King’s College London; NICE; BMJ editor; lay commentator)
 - medical ‘experts’
 - study authors
 - lay/public individuals or bodies
 - charities/support groups
 - treatment of statins overall
 - positive
 - negative
 - neutral
 - not categorisable
 - examples of positive/negative language
 - mention of harms, risks, side-effects
 - mention of benefits, positive collateral impact
 - eg. ‘few argue over effectiveness of statins for secondary prevention’; ‘statins help reduce signs of dementia by almost a third’
 - ‘significant risk of side-effects’; ‘never prescribe a statin for a loved one’
 - apparent purpose of the article
 - eg. reporting publication of new guidance
 - responding to publication of a new study

- reporting patient experience
- responding to reader letter
- reporting prominent medical debate in the BMJ/Lancet

Constructed themes and suggested indicators

Theme	Example constructs
Medicalisation	<ul style="list-style-type: none"> Medicalising the healthy population Over-medication Over-treatment Giving tablets instead of modifying lifestyles
Lifestyle	<ul style="list-style-type: none"> Advocacy of lifestyle changes Diet Exercise Smoking Fats & cholesterol
Responsibility	<ul style="list-style-type: none"> Taking tablets mean people don't think they need to change their habits GPs should be addressing lifestyle factors
Side-effects of treatment	<ul style="list-style-type: none"> Muscular pain, weakness, myalgia, arthralgia, sleeping, not sleeping, diabetes, etc. Adverse effects Side-effects Negative impacts of statins
Collateral benefits	<ul style="list-style-type: none"> Statins improving other conditions eg multiple sclerosis

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3	Evidence/effectiveness of	Statins are in/effective
4		
5	treatment	Statins work by
6		
7		The evidence shows
8		
9		Statins halve the incidence of
10		
11		Studies show statin efficacy
12		
13		Effectiveness in primary prevention
14		
15		Effectiveness in secondary prevention
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19	Confounding factors	It is not the statin, it is...
20		
21		Reducing smoking, not statins, has had an effect...
22		
23		
24	Scientific explanation	Statins operate by tackling reducing the enzymes that
25		encourage production of LD cholesterol...
26		
27		Anti-inflammatory properties of statins...
28		
29		Side-effects are caused by the over-production of...
30		
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33	(Dis)trust	Doctors are paid by the number of people they
34		identify/number of prescriptions...
35		
36		Studies are pharmaceutically sponsored...
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38		Government is motivated by...
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40		NICE has a duty to provide objective guidance...
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45	Costs, value	Statins only cost 12p per day
46		
47		Prescriptions are increasing as statins come off patent
48		
49		The costs of surgery vs. drugs
50		
51		
52	Personal experience	My doctor recommended...
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54		I suffered side-effects from...
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56		I was on statins for 5 years...
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59		We and our patients know that...
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	As a doctor...
	As a patient...
Patient/user	Patients should have a choice
choice/autonomy	Patients should check with their doctor
	Statins are not mandatory
	No-one is forced to take a statin
	Patients need to weigh up the pros and cons
Information for decision-	Information for patients
making	Patients need to make informed decisions
	Patients are confused by the messages they receive
	It is important to give clear information
Age, gender	More men than women/vice versa
	Everyone over 50/65/75/85
	Evidence is lower for those over 75
Pharmaceutical companies	Pharma
	Sponsorship of trials
	Sponsorship of individuals
	Influence on individuals, institutions, national bodies, politics
Reader response	Where quoted – letters, emails, follow up trails
Trends	Over the last ten years...
International comparisons	The UK is the statins capital of Europe...
	UK vs. US/Europe/Australasia

BMJ Open

A CONTENT ANALYSIS OF THE REPRESENTATION OF STATINS IN THE BRITISH NEWSPRINT MEDIA

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2016-012613.R2
Article Type:	Research
Date Submitted by the Author:	18-Jan-2017
Complete List of Authors:	Chisnell, Julia; PenCLAHRC, Institute of Health Research
Primary Subject Heading:	Public health
Secondary Subject Heading:	Cardiovascular medicine
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A CONTENT ANALYSIS OF THE REPRESENTATION OF STATINS IN THE BRITISH NEWSPRINT MEDIA

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ABSTRACT

Objective

This study reviewed the news media coverage of statins, seeking to identify specific trends or differences in viewpoint between media outlets and examine common themes.

Design

The study is a content analysis of the frequency and content of the reporting of statins in a selection of the British newsprint media. It involved an assessment of the number, timing and thematic content of articles followed by a discourse analysis examining the underlying narratives. The sample was the output of four UK newspapers, covering a broad-spectrum readership, over a six month timeframe 1 October 2013 - 31 March 2014.

Results

A total of 67 articles included reference to statins. The majority (39, 58%) were reporting or responding to publication of a clinical study. The ratio of negative to positive coverage was greater than 2:1 overall. In the more politically right-leaning newspapers, 67% of coverage was predominantly negative (30/45 articles); 32% in the more left-leaning papers (7/22 articles). Common themes were:

- the perceived 'medicalisation' of the population;

- the balance between lifestyle modification and medical treatments in the primary prevention of heart disease;
- side effects and effectiveness of statins;
- pharmaceutical sponsorship, and implications for the reliability of evidence;
- trust between the public and government, institutions, research organisations and the medical profession.

Conclusions

Newsprint media coverage of statins was substantially influenced by the publication of national guidance and by coverage in the medical journals of clinical studies and comment. Statins received a predominantly negative portrayal, notably in the more right-leaning press. There were shared themes: concern about the balance between medication and lifestyle change in the primary prevention of heart disease; the adverse effects of treatment; and a questioning of the reliability of evidence from research institutions, scientists and clinicians in the light of their potential allegiances and funding.

Strengths and limitations of this study

- The use of media websites for data collection may have excluded some material which was only available in the print versions, and conversely included some material not available in print.

- The pragmatic selection of the study timescale and media selection may have reduced the representativeness and therefore generalisability of the study; however, the sampling strategy was designed to ensure that the sources represented a reasonable range and diversity of the established newspaper media.
- There was a single researcher and not a research team, leading to a potential risk of bias or incompleteness in the identification and selection of articles, and no inter-rater reliability checking of the coding scheme, which may have an impact on the validity of the analyses.
- Blinding was not strictly possible, but articles were coded by a unique numerical identifier to reduce bias during the thematic analysis and an inductive approach was applied to ensure that the themes were dictated by the evidence emerging from the texts and not imposed by the researcher.

INTRODUCTION

UK clinical guidelines recommend the use of lipid lowering therapy for both secondary and primary prevention.[1, 2] This is based on published clinical trial evidence of effectiveness, cost-effectiveness,[1, 3-8] and the extent of side-effects.[7-9] There is debate in the clinical literature about the merits of the widespread and growing use of statins, questioning whether the 'right' patients are benefiting, whether the threshold for initiation of primary preventative treatment is too low, and the reliability of the evidence underpinning the guidelines.[10-16] The same issues are also covered in the lay media, where, however, the nature and extent of the debate is less well documented.

There is an interaction between the lay and clinical media, with the same commentators and topics or reported, or directly speaking, in both,[17-21] And importantly, there is evidence that the lay media influences health-related perceptions and behaviours, including reporting of side-effects, uptake of services and adherence to medication.[22-27] The Chief Medical Officer for England has called for a review into how the safety and efficacy of drugs is judged, prompted by concern about the representation of statins and other drugs "in both the medical and general press".[28] A recent Danish study, using national and regional media coverage as a proxy for individual exposure, found that negative statin-related news stories were associated with both early statin discontinuation and cardiovascular mortality.[29]

In the light of this relationship, it is relevant to examine the portrayal of statins in the media, and the messages that are being predominantly received. This study

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2 investigates the nature of the representation of statins in the newsprint media,
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4 identifying the key themes, trends, characteristics and viewpoints.
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METHOD

A descriptive and thematic analysis of the frequency of the coverage of statins in the UK newsprint media was undertaken. Media were selected with the aim of obtaining broad spectrum coverage reflecting a range of editorial leanings and readerships. An initial screening sample was undertaken in order to pilot the methodology and to consolidate the questions and sampling strategy for the main research.[30] This identified what would be practical for one researcher to collect, and enabled refinement of the range and type of outlets, the time period and the type of articles for inclusion in the main data collection. The sampling frame selected for the main study was the UK newsprint media. A purposive sampling strategy was followed, with newspapers selected on the basis that they were accessible, able to be searched and analysed by one researcher in the time available, and demographically, geographically and politically representative of a broad spectrum readership. The selected newspapers were The Daily Mail, The Daily Mirror, The Telegraph and The Guardian (**Table 1**). These are all national UK newspapers, recording the highest circulation¹.

¹ The Sun recorded the highest circulation but The Sun and The Times were excluded because they did not have free to access websites.

Table 1 Readership of selected newspapers 2013[31, 32]

Category	Daily Mail	Daily Mirror	The Telegraph	The Guardian
Circulation	1,863,000	1,058,500	555,600	204,400
Average age	58	Not given	61	44
Readership 65+	45%	34%	46%	21%
Gender	51% female	54% male	52% male	52% male
Social class ABC1 ²	64%	43%	87%	89%
Predominant geography [Mori 2005]	83% outside London & Scotland	North	East & South East	London
Predominant political stance ³	Right	Left	Centre right	Centre left
Market designation	Tabloid	Tabloid	Broadsheet	Broadsheet

Full texts of articles were searched by keyword and collected retrospectively from the websites of the selected media outlets over a continuous six month timeframe (1 October 2013 to 31 March 2014). The main search term was “statin” (“statins” did not retrieve all mentions.) A further search on “cholesterol”, “cardiovascular” and “heart disease” was undertaken to confirm all relevant articles had been captured. All articles with any recorded mention of statins were screened. All types of article were included.

Articles were downloaded and printed in full. Each article was given a unique reference number, to blind the researcher to source during the analysis, and key descriptors were recorded. A thematic data analysis was then undertaken. A coding scheme provided a consistent framework for data collection and analysis

² Social gradings A-E are based on 2011 UK census data. ABC1 represents higher & intermediate to clerical and junior occupations.

³ Political stance reflects party affiliation in the most recent general election. (Right: Conservative, UKIP; left: Labour, Green; Centre right: Conservative, Liberal Democrat; Centre left: Labour, Liberal Democrat.)

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2 and enabled independent third party review. The exclusion criterion was
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4 peripheral mention of statins with no associated reporting or comment.
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9 The analysis was in two parts. An initial descriptive analysis mapped the findings
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11 against the descriptive indicators, including whether the coverage was judged to
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13 be predominantly positive or negative in terms of the arguments, language, and
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15 terminology. Where the proportion of positive and negative comments appeared
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17 similar, or where it was difficult to decide on the overall direction, a neutral
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19 assessment was given. A more detailed qualitative analysis then examined the
20
21 nature of the discourses within the key themes, including viewpoints, assumptions
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23 and language. Outlets were then tracked back and identified in the results. A
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25 copy of the coding scheme is available as a supplementary document.
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31 There were no confidentiality issues associated with the study as all data sources
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33 were within the public domain. Ethics Committee approval was not required.
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RESULTS

Searches identified 67 articles during the time period. A timeline showing coverage by outlet by week is shown in **Figure 1**. There is considerable variation, with peaks in coverage weeks commencing 11 February and 18 March. The NICE revised draft guidelines were published on 12 February,[33] covered in 11 articles, prompting the earlier peak. A systematic review of the side-effects of statins[9] was widely reported a month later. In only five of the 26 weeks was there no story about statins.

Figure 1 Coverage by outlet by week, October 2013 – March 2014

In two thirds of articles (**Table 2**), statins were the main topic. The majority of articles (39, 58%) were reporting or responding to publication of a clinical study.

Table 2 Number, stance, and theme of articles mentioning statins
1 October 2013 – 31 March 2014

		Telegraph	Daily Mail	Guardian	Daily Mirror	Total
Number of articles		25	20	11	11*	67
Frequency of article type	Study report/ response	10 (40%)	13 (65%)	6 (55%)	10 (91%)	39 (58%)
	Commentary	3 (12%)	1 (5%)	2 (18%)	0 (0%)	6 (9%)
	Q&A	2 (8%)	1 (5%)	0 (0%)	0 (0%)	3 (4%)
	Personal story	1 (4%)	1 (5%)	1 (9%)	0 (0%)	3 (4%)
	News report	1** (4%)	1** (5%)	0 (0%)	1** (8%)	3 (4%)
	Letters	4 (16%)	0 (0%)	0 (0%)	0 (0%)	4 (6%)
	Expert/'celebrity' commentator	3 (12%)	2 (10%)	0 (0%)	0 (8%)	5 (7%)
	Other	1 (4%)	1 (5%)	2 (18%)	0 (0%)	4 (6%)
Statins main topic	Main topic	18 (72%)	14 (70%)	10 (91%)	3 (25%)	45 (67%)
	Secondary topic	7 (28%)	6 (30%)	1 (9%)	8 (67%)	22 (33%)

* One article was excluded.

** Publication of NICE and US guidelines on the use of statins

The ratio of negative to positive coverage was greater than 2:1 overall. The more right-leaning papers exhibited a ratio of 3:1 negative to positive articles, where the left leaning press had equal proportions of each. The Telegraph had the highest differential with a 10:1 ratio of negative to positive stories (**Figure 2**). Articles on studies reporting collateral benefits (statins benefiting people with multiple sclerosis or dementia for example) were more likely to portray statins in a positive light.

Figure 2 Positive and negative coverage⁴

⁴ The Guardian and Telegraph are categorised as broadsheet, The Mail and Mirror as tabloid; The Telegraph and Mail are categorised as right leaning, The Guardian and Mirror as left leaning.

Thematic analysis

The themes with the highest number of mentions selected for detailed analysis were: medicalisation versus lifestyle modification; the effectiveness of statins in the light of their side-effects; and trust of those advocating statin therapy.

Medicalisation versus lifestyle modification

The term “medicalisation” is used by three of the four sampled media, both in quotes from contributors and by the article authors. In most cases it is used to denote the introduction of drug treatment for use in an otherwise apparently healthy population. It is used with an exclusively negative meaning:

“the “medicalisation” of people who are not ill... turning five million middle-aged and predominantly healthy men and women into statin-popping patients.” [Mail, 13/2/14]

“It is a concern to have to mass medicalise the whole of the British public in this way” [Telegraph, 11/2/14] Britain will be confirmed *“the statins capital of Europe”* [Mail, 12/2/14]

There is a language of passivity and control. People are “medicalised”, “medicated” or “*put on statins*” (emphasis added).

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4 The majority of articles appear supportive of prescribing statins for those with
5 established heart disease. The controversy centres on what proportion of those
6 with risk factors for cardiovascular disease should receive statins as a primary
7 preventative measure:
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16 *“there are people who may be overweight or have raised blood pressure.*
17 *They probably don’t have symptoms. They are not ill”* [Guardian, 21/3/14]
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22 *“we’ll be medicalising many relatively healthy patients”* [Mail, 12/2/14]
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24 (emphasis added)
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29 The medical profession is seen to be focusing on the medical option in preference
30 to promoting lifestyle change:
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36 *“[It is] “simpler to reach for the pad and write out a prescription” than to dole*
37 *out lifestyle advice”* [National Obesity Forum quoted in Mail and Telegraph,
38 25/12/13]
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44 The public is also indicated to be at fault:
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49 *“There is a tendency... for patients (and doctors) to think that as long as*
50 *they’re on statins, smoking or a poor diet doesn’t really matter”;*
51 *“people will see them as a magic pill that allows them to tuck into three*
52 *pizzas a night and umpteen hamburgers with impunity”* [“leading
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2 cardiologist" quoted in Mail, 8/3/14, 13/2/14]

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7 Lifestyle measures could actually be the preferable medicine:

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11 *"Exercise can be just as efficient as drugs in treating heart disease"* [study
12 report, Mirror, 2/10/13]

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18 *"eating an apple a day is as effective as taking statins"* [medical
19 "campaigner", Telegraph, 2/3/14]

20 21 22 23 24 25 26 27 28 **Effectiveness and side-effects of treatment**

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33 The positioning of "expert" opinion is important here. Who is most qualified to
34 determine the impact of side-effects: clinician, trialist or patient?

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40 Evidence from published studies on the extent of side-effects is reported:

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45 *"the benefits of statins greatly exceed any side effects"* [Cholesterol trialists
46 study report, Mail, 12/2/14].

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51 This is directly challenged by individuals:

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56 *NICE "will tell you that... one in 10,000 patients... will suffer severe muscular*

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3 *pain.... In contrast, reliable data from the real world... backed up by*
4 *anecdotal evidence from my experience as a cardiac physician, suggests*
5 *that the real figure... is closer to one in five.* [cardiologist quoted in Mail,
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9 13/2/14]

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14 *"I know of only three people who have been on statins – I am one of them –*
15 *and we all experienced debilitating muscle aches"* [reader correspondence,
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Telegraph, 15/3/14]

The "noise" about side-effects may produce the equivalent of a "nocebo effect":

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27 *"If we tell people about side effects,... we induce these unpleasant*
28 *symptoms,... inflicting harm on our patients"; "We... shouldn't scare people*
29 *into experiencing side effects... or into avoiding a medication which might*
30 *help them"* ["study author", Guardian, 14/3/14]

Statins are portrayed as either villain or hero:

42
43 *"in years to come, statins could be seen as being as dangerous as*
44 *thalidomide"* [reader correspondence, Mail, 14/11/13]

49
50 *"Statins may reduce dementia by a third"* [study report, Telegraph, 30/12/13]

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Over the six month sample period, statins were associated with potential
beneficial effects on dementia, multiple sclerosis and erectile dysfunction.

Trust

A related but distinct theme is trust. The reliability of studies or guidelines is traditionally linked to the weight of scientific evidence – usually RCT evidence – underpinning them. However there is an implied suspicion of the evidence based on the perceived trustworthiness of those producing or funding it. An interesting question emerges concerning which forms of evidence have the greater validity:

NICE recommendations for lowering the threshold for statin treatment are:

“based on solid evidence and the public should trust them” [US study authors quoted in Mail, 13/11/13]

“The drug companies were saying this drug was the best thing since sliced bread”; “their findings are contradicted by independent surveys” and they are *“contrary to the experience of many Telegraph readers”* [response to draft NICE guidelines, Telegraph, 2/3/14]

“trials run by the drug companies... are likely to be excessively favourable” [Harvard clinician, Mail, 24/12/13]

these same trials are refuted by *“anecdotal accounts... real world data... [and] my experience as a cardiac physician”* [cardiologist, Mail, 13/2/14]

The confidentiality of some of the trial data leads to suspicion of what the data

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7 There is no reason *“to accept the analysis of the Oxford team who have*
8 *seen the data at face value just because they are big and important and*
9 *professors at Oxford University... . Either they don’t have a vast chunk of*
10 *data or they do and they are not publishing it”* [“Scottish GP and author”,
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16 Guardian, 21/3/14]
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20 Another dimension of trust is seen in the portrayal of organisations and
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22 institutions. Pharmaceutical companies are almost universally negatively
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24 portrayed. Some academic bodies are still largely to be trusted, for example *“the*
25 *respected Cochrane group”* [Guardian], but other organisations or individuals are
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27 contaminated by association:
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33 there are *“arrangements between Big Pharma and academic institutions*
34 *[and] vested interests in the research”* [Telegraph, 15/3/14]
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40 Political and administrative organisations receive a mixed portrayal:
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44 *“the government’s advice is based on a wealth of evidence. The BMJ article*
45 *is based on opinion”* [Public Health England director quoted in Guardian,
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23/10/13]

53 *“how can we explain this big gap between... personal experience... of*
54 *doctors and patients... and official bodies such as NICE?”* [Mail, 18/3/14]
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5 “NICE seems to be siding firmly with the drug companies and relying on
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7 *industry-sponsored statistics*” [Mail, 13/2/14]
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11 Family doctors receive consistently negative coverage. Medical authority is
12
13 portrayed as siding with, or indirectly influenced by, the pharmaceutically
14
15 sponsored institutions. Doctors are accused of “*inexcusable deviousness*” in their
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17 methods for fulfilling screening quotas and in disguising a prescription for statins
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19 as “*lipid tablets*” [Telegraph, 16/2/14]. There is a risk of:
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24 “*more aggressive prescribing of the [statin] medications by family doctors,*
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26 *whose pay is linked to take-up of the pills among their patients*” [Telegraph,
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28 11/2/14].
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DISCUSSION

This study found that the newsprint media coverage of statins was substantially influenced by coverage in the medical journals of clinical studies, reports and comment. Statins received a predominantly negative portrayal overall, notably in the more right-leaning press. Specifically, there was considerable coverage of reported side-effects, concern about the balance between medication and lifestyle changes in primary prevention, and a questioning of the reliability of evidence from research institutions, scientists and clinicians in the light of their potential allegiances and funding.

The findings are consistent with some other studies and also highlight some departures from previous research.

- The strongest criticism of statins and their effects in the media appears to reflect very closely the arguments presented in the medical journals over the same time period, although the weighting of the arguments may differ.[10-12] In the popular press there is no discernible difference in the reporting of what the scientific community might describe as important, high quality studies compared with the reporting of small studies, or opinion, with high potential for bias. All views are portrayed with equal weight and seriousness. Other studies have identified greater selectivity in reporting in the popular compared with the specialist media, with a greater focus on more controversial topics.[34]
- A notable trend I identified in the media is for reports of new links between, for example, statins and dementia, or statins and impotence, to be more

1
2 uncritical than reports of the use of statins in preventing heart disease. With
3
4 a new study, the results themselves are the story, whereas with the role of
5
6 statins in the prevention of heart disease, it is the debate and controversy
7
8 that is represented.
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11 • In terms of the medication versus lifestyle debate, clinical studies disagree
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13 about the extent to which health promoting behaviours are actually affected
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15 by long term statin use.[35-37] However the newspaper coverage contained
16
17 a largely judgmental vocabulary around the selection of a medical treatment
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19 pathway, suggesting that people who take tablets, or doctors who prescribe
20
21 them, may be abdicating personal responsibility for health.
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23
- 24 • The question of trust in institutions has also been highlighted in other
25
26 research. Commentators have identified a similar tendency in the media to
27
28 exaggerate and seek to mobilise opinion against a “supposed threat” or
29
30 conspiracy.[38] In contrast, where previous research has placed clinicians -
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32 family doctors in particular - high in the hierarchy of public trust,[22, 39] this
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34 study found no evidence of positive reporting of the medical profession in
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36 relation to statins.
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42 One question arising from this study is whether statins have a distinct status with
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44 respect to the debate. The polarisation of good drug/bad drug is not new. Other
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46 studies have reported a similarly dichotomised approach in relation to other
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48 medical treatments.[40, 23] There are parallels with the representation of the
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50 diagnosis and treatment of hypertension, another frequently invisible “sickness”
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52 addressed by long term, preventative medication.[16] However in the case of
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54 statins, the threshold for treatment appears increasingly to be driven by age rather
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2 than specific clinical indicators. (The QRisk cardiovascular risk calculator is
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4 strongly influenced by age.) Everyone could eventually become a candidate for
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6 medicalisation, however healthy their lifestyle and however low their cholesterol
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8 ratio.
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13 The study highlights a fundamental point concerning the significance of the
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15 portrayal of medical issues in the media: is it important that even someone
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17 reading across the whole range of newspaper coverage sampled for this study
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19 would receive a negative impression of the value of the scientific evidence, and
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21 the benefit of statins, when current clinical guidance recommends their use?
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23 Coverage in the popular press highlights the confusing messages projected by
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25 science and research worldwide. There is no mediating discourse leading people
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27 through the pendulum findings of one study or learned commentator after another.
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29 The “noise” of the continuing debate may even be frightening people away from
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31 taking their prescribed medications, and increasing cardiovascular mortality.[17,
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33 29] This raises an ethical question around the desirability of presenting all
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35 viewpoints, however well or ill-evidenced, at the risk of deterring people from
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37 acting responsibly with regard to their health. Other studies have suggested there
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39 is scope for the scientific and medical worlds to articulate their messages more
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41 carefully for popular media consumption.[40, 41, 27] Alternatively, the rawness
42
43 and transparency of the debate may be a good thing. The ability to see and
44
45 critique another scientist’s work is valued by researchers, and it may also be of
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47 benefit to a non-medical audience to hear the challenge and defence of each
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49 viewpoint played out in the public arena. One response is for subject experts to
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51 provide an evidence-based commentary on scientific issues of public interest,
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3 along the lines of NHS Choices' "Behind the Headlines", developed by Sir Muir
4 Gray because "In the same way that people need clean, clear water, they have a
5 right to clean, clear knowledge".[42]
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11 This study adds insight into the portrayal of preventative medications, and related
12 clinical policy, in the media. There are potential implications for clinicians, study
13 authors, policy makers and public health practitioners. By increasing awareness
14 of the messages their patients, readers and the public are predominantly hearing
15 in relation to their medications, it highlights the considerable scope for all health
16 experts to promote a more media-friendly, evidence-based narrative on health
17 topics of public interest or concern.
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29 Recommendations for further research include a comparison of a wider number of
30 outlets and different areas of medicine over a longer period of time, a comparison
31 of the medical and popular media coverage in detail, and further exploration of the
32 impact of media coverage on reader health behaviours.
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Transparency declaration: The manuscript is an honest, accurate and transparent account of the study reported. No important aspects have been omitted.

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REFERENCES

1 National Institute for Health and Care Excellence. Lipid modification: cardiovascular risk assessment and the modification of blood lipids for the primary and secondary prevention of cardiovascular disease. NICE clinical guideline 181 2014.

2 Joint British Societies. Prepared by: British Cardiac Society, British Hypertension Society, Diabetes UK, HEART UK, Primary Care Cardiovascular Society, The Stroke Association. JBS 2: Joint British Societies' guidelines on prevention of cardiovascular disease in clinical practice. *Heart* 2005;91:suppl5v1-v52 doi:10.1136/hrt.2005.079988.

3 Baigent C, Blackwell L, Emberson J, et al. Cholesterol Treatment Trialists' (CCT) Collaboration. Efficacy and safety of more intensive lowering of LDL cholesterol: A meta-analysis of data from 170 000 participants in 26 randomised trials. *Lancet* 2010;376(9753):1670-1681.29.

4 Baigent C, Keech A, Kearney P, et al. Cholesterol Treatment Trialists' (CTT) Collaboration. Efficacy and safety of cholesterol-lowering treatment: prospective meta-analysis of data from 90,056 participants in 14 randomised trials of statins. *Lancet* 2005;366(9493):1267-1278.33.

5 National Institute for Health and Care Excellence. Lipid modification: cardiovascular risk assessment and the modification of blood lipids for the primary and secondary prevention of cardiovascular disease, *NICE clinical guideline 181*, 2014.

6 National Institute for Health and Care Excellence Guideline Development Group. Lipid modification: cardiovascular risk assessment and the modification of blood lipids for the primary and secondary prevention of cardiovascular disease, *NICE Clinical guideline, methods, evidence and recommendations*, draft for consultation 2014.

7 Taylor F, Huffman M, Macedo A, et al. Statins for the primary prevention of cardiovascular disease. *Cochrane Database of Systematic Reviews* 2013; Issue 1. Art.No.:CD004816. DOI:10.1002/14651858.CD004816.pub5.

8 Mihaylova B, Voysey M, Fray A, et al. Cholesterol Treatment Trialists' (CTT) Collaboration. The effects of lowering LDL cholesterol with statin therapy in people at low risk of vascular disease: Meta-analysis of individual data from 27 randomised trials. *Lancet* 2012;380(9841):581-590.

9 Finegold J, Manisty C, Goldacre B, et al. What proportion of symptomatic side effects in patients taking statins are genuinely caused by the drug? Systematic review of randomized placebo-controlled trials to aid individual patient choice, DOI: 10.1177/2047487314525531 published online 12 March 2014. *European*

1
2
3 *Journal of Preventive Cardiology* 2014.

4
5 10 Abramson J, Rosenberg H, Jewell N, et al. Should people at low risk of
6 cardiovascular disease take a statin? *British Medical Journal* 2013;347:f6123.

7
8 11 Malhotra, A. Saturated fat is not the issue, *British Medical Journal*
9 2013;347:f6340.

10
11 12 Godlee, F. (2014) The BMJ and authors withdraw statements suggesting that
12 adverse events occur in 18-20% of patients, *British Medical Journal*,
13 2014;348:g3306.

14
15 13 Zhang H, Plutzky J, Skentzos S, et al. Discontinuation of Statins in Routine
16 Care Settings: A Cohort Study. *Annals of Internal Medicine* 2013;158:526-534.
17 doi:10.7326/0003-4819-158-7-201304020-00004.

18
19 14 van Staa T, Smeeth L, Ng E, et al. The efficiency of cardiovascular risk
20 assessment: do the right patients get statin treatment? *Heart* 2013;99:1597-1602.

21
22 15 Wu J, Zhu S, Yao G, et al. Patient Factors Influencing the Prescribing of Lipid
23 Lowering Drugs for Primary Prevention of Cardiovascular Disease in UK General
24 Practice: A National Retrospective Cohort *PloSone* 2013;8.7:e67611.

25
26 16 Rose G. *Rose's Strategy of Preventive Medicine* 2008;Oxford University Press.

27
28 17 Goldacre B. Statins are a mess: we need better data, and shared decision
29 making, Editorial. *BMJ* 2014;348:g3306.

30
31 18 Goldacre B. Statins have no side effects? This is what our study really found.
32 *The Guardian*. 14 March 2014.

33
34 19 Goldacre B. *BadScience.net*, 13 March 2014;
35 [http://www.badscience.net/2014/03/statins-have-no-side-effects-what-our-study-
36 really-found-its-fixable-flaws-and-why-trials-transparency-matters-again/](http://www.badscience.net/2014/03/statins-have-no-side-effects-what-our-study-really-found-its-fixable-flaws-and-why-trials-transparency-matters-again/)
37 (Accessed July 2014)

38
39 20 Malhotra A. Saturated fat is not the issue, *BMJ* 2013;347:f6340.

40
41 21 Malhotra A. (2013) *BBC News*. 23 October 2013;
42 <http://www.bbc.co.uk/news/health-24625808> (Accessed June 2016)

43
44 22 Duffy B, Rowden L. *You are what you read? How newspaper readership is
45 related to views*. Mori Social Research Institute 2005:P32.

46
47 23 Seale C. Health and media: an overview. *Sociology of health & illness* 2003;25
48 (6):513-531.

49
50 24 van Hunsel F, van Puijenbroek E, deJong-van den Berg L, et al. Media
51 attention and the influence on the reporting odds ratio in disproportionality

1
2 analysis: an example of patient reporting of statins, *Pharmacoepidemiol Drug Saf*
3 2010;19(1):26-32. Doi:10.1002/pds.1865.
4

5
6 25 Eberth J, Kline N, Moskowitz D, Montealegre J, Scheurer M. The Role of
7 Media and the Internet on Vaccine Adverse Event Reporting: A Case Study of
8 Human Papillomavirus Vaccination, *Journal of Adolescent Health*
9 2013;Volume54;Issue 3;289 – 295.
10

11
12 26 Fasse K, Gamble G, Cundy T, et al. Impact of television coverage on the
13 number and type of symptoms reported during a health scare: a retrospective pre-
14 post observational study. *British Medical Journal* 2012;2:e001607
15 doi:10.1136/bmjopen-2012-001607.
16

17
18 27 Grilli R, Ramsay C, Minozzi S. Mass media interventions: effects on health
19 services utilisation. *Cochrane Database Syst Rev* 2002;Issue1(1).
20

21
22 28 Davies S. Letter to the Academy of Medical Sciences, February 2015. Quoted
23 in The Guardian 16 June 2015.

24 [http://www.theguardian.com/society/2015/jun/16/chief-medical-officer-calls-](http://www.theguardian.com/society/2015/jun/16/chief-medical-officer-calls-review-after-statins-tamiflu-storm)
25 [review-after-statins-tamiflu-storm](http://www.theguardian.com/society/2015/jun/16/chief-medical-officer-calls-review-after-statins-tamiflu-storm) (Accessed August 2015)

26 Quoted in the Pharmaceutical Journal of the Royal Pharmaceutical Society 17
27 June 2015. [http://www.pharmaceutical-journal.com/news-and-](http://www.pharmaceutical-journal.com/news-and-analysis/news/englands-top-doctor-orders-review-into-how-medicines-are-evaluated/20068759.article)
28 [analysis/news/englands-top-doctor-orders-review-into-how-medicines-are-](http://www.pharmaceutical-journal.com/news-and-analysis/news/englands-top-doctor-orders-review-into-how-medicines-are-evaluated/20068759.article)
29 [evaluated/20068759.article](http://www.pharmaceutical-journal.com/news-and-analysis/news/englands-top-doctor-orders-review-into-how-medicines-are-evaluated/20068759.article) (Accessed August 2015)
30

31
32 29 Nielsen S, Nordestgaard B. Negative statin-related news stories decrease
33 statin persistence and increase myocardial infarction and cardiovascular mortality:
34 a nationwide prospective cohort study, *European Heart Journal*
35 2015;doi:10.1093/eurheartj/ehv641.
36

37
38 30 Macnamara J. Media content analysis: Its uses, benefits and best practice
39 methodology. *Asia Pacific Public Relations Journal* 2005;6(1),1-34:P20.
40

41
42 31 NRS Readership Estimates, National Readership Survey 2013.

43 <http://www.nrs.co.uk/latest-results/nrs-print-results/newspapers-nrsprintresults/>
44 (Accessed March 2014)
45

46
47 32 TheMediaBriefing 2014. <https://www.themediabriefing.com/> [Accessed March
48 2014]
49

50
51 33 National Institute for Health and Care Excellence Lipid modification:
52 cardiovascular risk assessment and the modification of blood lipids for the primary
53 and secondary prevention of cardiovascular disease, draft update for consultation,
54 NICE guideline 2014.
55

56
57 34 Hernandez J, Mantel-Teeuwisse A, van Thiel G, et al. Publication trends in
58 newspapers and scientific journals for SSRIs and suicidality: a systematic
59 longitudinal study, *British Medical Journal* 2011;Dec 6;1(2):e000290. doi:
60 10.1136/bmjopen-2011-000290.

1
2
3 35 Sugiyama T, Tsugawa Y, Tseng C, et al. Different Time Trends of Caloric and
4 Fat Intake Between Statin Users and Nonusers Among US Adults. *Gluttony in the*
5 *Time of Statins? JAMA Internal Medicine*
6 2014;doi:10.1001/jamainternmed.2014.1927.
7

8
9 36 Lofgren I, Greene G, Schembre S, et al. Comparison of diet quality, physical
10 activity and biochemical values of older adults either reporting or not reporting use
11 of lipid-lowering medication. *Journal Nutritional Health Aging* 2010;14(2):168-172.
12

13 37 Lytsy P, Burell G, Westerling R. Cardiovascular risk factor assessments and
14 health behaviours in patients using statins compared to a non-treated population.
15 *Int Journal Behav Med* 2012;19(2):134-142.
16

17 38 McQuail D. The influence and effects of mass media. *Mass communication*
18 *and society* 1977;70-94:P15.
19

20 39 Gale N, Greenfield S, Gill P, et al. Patient and general practitioner attitudes to
21 taking medication to prevent cardiovascular disease after receiving detailed
22 information on risks and benefits of treatment: a qualitative study *BMC Family*
23 *Practice* 2011;12:59doi:10.1186/1471-2296-12-59:P5.
24
25

26 40 Prosser H. Marvellous medicines and dangerous drugs: the representation of
27 prescription medicine in the UK newsprint media. *Public Understanding of*
28 *Science* 2010;19(1):52-69.
29

30 41 Danovaro-Holliday M, Wood A, LeBaron C. Rotavirus vaccine and the news
31 media, 1987-2001, *JAMA: the Journal of the American Medical Association*
32 2002;Mar20;287(11):1455-62.
33
34

35 42 Gray M. *Behind the headlines, NHS Choices* 2011;
36 <http://www.nhs.uk/news/Pages/about-behind-the-headlines.aspx> (Accessed July
37 2014)
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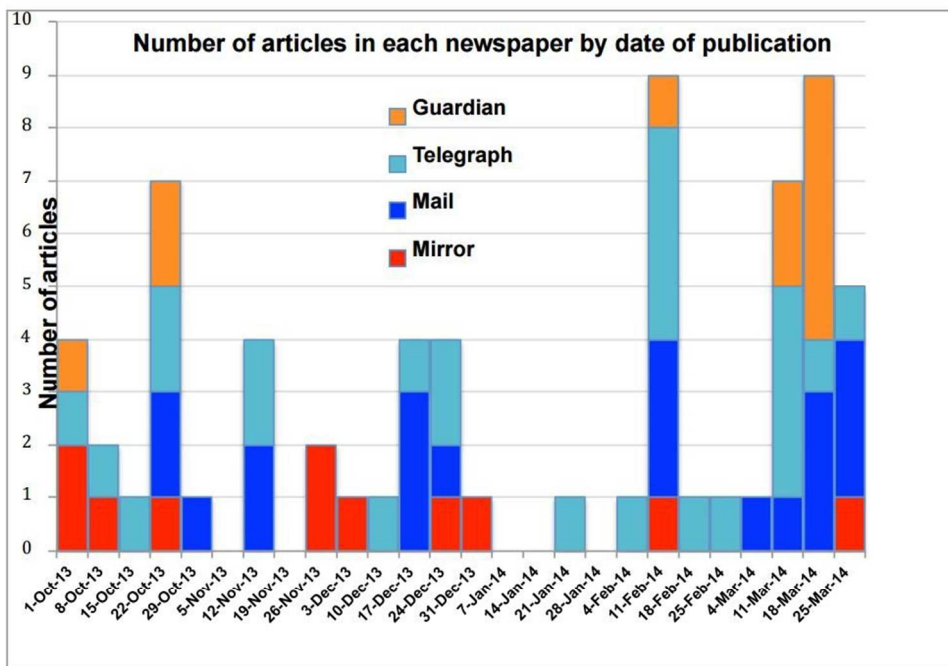


Figure 1

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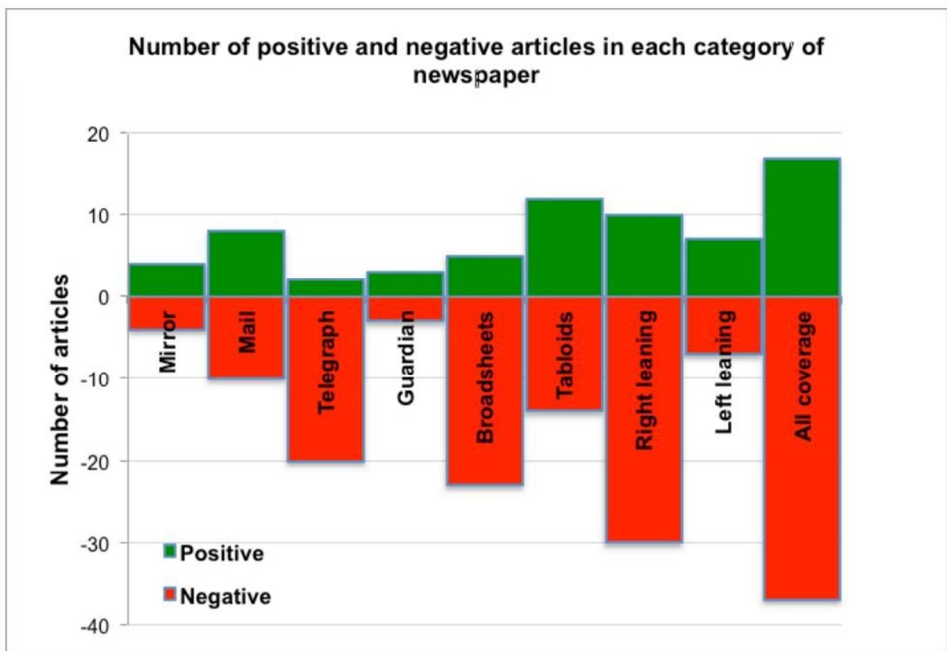


Figure 2

87x59mm (300 x 300 DPI)

view only

DESCRIPTIVE AND ANALYTICAL CODING SCHEME

General descriptors

- unique article reference number
- date
- publication/outlet
- type of article
 - news report
 - report of published/planned study
 - personal interest story
 - comment
 - dear doctor column/Q&A
 - other (specify)
- headline (write in full)
- sub-headline (write in full)
- reference to statins
 - main subject
 - secondary subject (eg. in article on heart disease or lifestyle measures)
 - passing comment
- pictures/images – brief description eg. older woman in hospital bed wearing gown & taking blue tablets from a cup; red tablets scattered on a blue background
- author

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- name
 - title (eg. Chief health correspondent; doctor; 'celebrity' columnist)
 - contributors/sources quoted
 - name
 - organisation/designation (eg. British Heart Foundation; King's College London; NICE; BMJ editor; lay commentator)
 - medical 'experts'
 - study authors
 - lay/public individuals or bodies
 - charities/support groups
 - treatment of statins overall
 - positive
 - negative
 - neutral
 - not categorisable
 - examples of positive/negative language
 - mention of harms, risks, side-effects
 - mention of benefits, positive collateral impact
 - eg. 'few argue over effectiveness of statins for secondary prevention'; 'statins help reduce signs of dementia by almost a third'
 - 'significant risk of side-effects'; 'never prescribe a statin for a loved one'
 - apparent purpose of the article
 - eg. reporting publication of new guidance
 - responding to publication of a new study

- reporting patient experience
- responding to reader letter
- reporting prominent medical debate in the BMJ/Lancet

Constructed themes and suggested indicators

Theme	Example constructs
Medicalisation	<ul style="list-style-type: none"> Medicalising the healthy population Over-medication Over-treatment Giving tablets instead of modifying lifestyles
Lifestyle	<ul style="list-style-type: none"> Advocacy of lifestyle changes Diet Exercise Smoking Fats & cholesterol
Responsibility	<ul style="list-style-type: none"> Taking tablets mean people don't think they need to change their habits GPs should be addressing lifestyle factors
Side-effects of treatment	<ul style="list-style-type: none"> Muscular pain, weakness, myalgia, arthralgia, sleeping, not sleeping, diabetes, etc. Adverse effects Side-effects Negative impacts of statins
Collateral benefits	<ul style="list-style-type: none"> Statins improving other conditions eg multiple sclerosis

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Evidence/effectiveness of treatment	Statins are in/effective Statins work by The evidence shows Statins halve the incidence of Studies show statin efficacy Effectiveness in primary prevention Effectiveness in secondary prevention
Confounding factors	It is not the statin, it is... Reducing smoking, not statins, has had an effect...
Scientific explanation	Statins operate by tackling reducing the enzymes that encourage production of LD cholesterol... Anti-inflammatory properties of statins... Side-effects are caused by the over-production of...
(Dis)trust	Doctors are paid by the number of people they identify/number of prescriptions... Studies are pharmaceutically sponsored... Government is motivated by... NICE has a duty to provide objective guidance...
Costs, value	Statins only cost 12p per day Prescriptions are increasing as statins come off patent The costs of surgery vs. drugs
Personal experience	My doctor recommended... I suffered side-effects from... I was on statins for 5 years... We and our patients know that...

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3		As a doctor...
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5		As a patient...
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7	Patient/user	Patients should have a choice
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9	choice/autonomy	Patients should check with their doctor
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11		Statins are not mandatory
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13		No-one is forced to take a statin
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15		Patients need to weigh up the pros and cons
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17	Information for decision-	Information for patients
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19	making	Patients need to make informed decisions
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21		Patients are confused by the messages they receive
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23		It is important to give clear information
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25	Age, gender	More men than women/vice versa
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27		Everyone over 50/65/75/85
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29		Evidence is lower for those over 75
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31	Pharmaceutical companies	Pharma
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33		Sponsorship of trials
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35		Sponsorship of individuals
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37		Influence on individuals, institutions, national bodies,
38		politics
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40	Reader response	Where quoted – letters, emails, follow up trails
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42	Trends	Over the last ten years...
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44	International comparisons	The UK is the statins capital of Europe...
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46		UK vs. US/Europe/Australasia
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