The following are proposed answers prepared by Dr Helene Irvine, Consultant in Public Health Medicine, NHS GG&C, and submitted 10 March 2017.

1. Which areas of preventative spending/the preventative agenda would it be most useful for the Health and Sport Committee to investigate?

With the exception of the primary immunisation schedule in pre-school children, no area should be exempt from scrutiny or regarded as sacred and beyond thorough review, and subsequent downgrading, limiting (ie targeting) or even scrapping if justified by the evidence. Given the current financial pressures on the NHS and evidence that demand for health and social care is well exceeding supply, we now need to prioritise responding to the genuine needs of patients in real time (e.g. provision of high quality health and social care to the elderly) over the theoretical potential to prevent problems in the future (most secondary prevention schemes and many health improvement initiatives), unless that preventive measure is highly cost effective (eg health protective policies such as the ban on smoking in public places, minimum alcohol pricing, etc). It is critical that we identify and scale back on, or abandon, areas of NHS activity that could be considered as conferring more harm than good, or poor value for money. These include areas of prevention with the larger budgets and with poorer evidence on their cost-effectiveness, which tend to be examples of secondary prevention (e.g. screening, both formal programmes and informal or ad hoc) and health improvement (e.g. smoking cessation and alcohol brief interventions), which should be reviewed in the first instance.

The Breast Screening Programme

A prime example of formal secondary prevention that warrants a thorough review is the national breast screening programme (in Scotland, the SBSP). Although it recently survived a UK wide review lead by Sir Michael Marmot, it may not survive future reviews as the case-fatality of breast cancer continues to improve with improving treatment and the risk benefit ratio of screen detection continues to fall as a result. Recent reviews of old and new evidence suggest that we pay a high price, in terms of false positives and unnecessary treatment, for the small number of lives saved.

The national BSP targets asymptomatic women aged 50-70, and like most screening programmes, it is better taken up by affluent women. This means that it also contributes to inequalities in health and is the likely reason that hospital admission rates for elective oncology are considerably higher in GG&C in affluent than in socially deprived women even though cancer (overall) registration and death rates are considerably higher in the deprived. Until recently, the relevant information leaflets glossed over the harms of unnecessary investigation and treatment that may result which means that the BSP has enjoyed more than 20 years of unbalanced endorsement by leaflets that did not satisfy the need for informed consent.

The history of the national breast screening programme provides some important and unsettling clues that reveal why we have prioritised this ‘public health’ approach

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1 This includes lumpectomy, varying degrees of mastectomy, accompanied by radiation, chemotherapy, hormonal treatment, etc.
to prevention. It was introduced in 1988 by Margaret Thatcher following advice from Edwina Currie who is on the record for saying “In political terms, with elections no more than a few months away [breast screening] was also attractive”. Author and Glasgow GP Margaret McCartney asks the question: “Was the whole breast screening programme less about science and more about being a pink-ribbed vote winner?” Billions of pounds have been spent, hundreds of millions of women have been screened via an x-ray mammogram every three years and thousands of women have been identified as having ’screen detected breast cancer’ since the programme was introduced. Unfortunately, three quarters of those women with ‘screen detected cancer’ have been needlessly subjected to disfiguring surgery and adjuvant treatment. Many women remain unaware of this aspect of screening, namely the fact that it is impossible to distinguish between a screen-identified ‘cancer’ that behaves in a malignant fashion and one that behaves in an indolent or even benign fashion.

Understandably, no government wants to be the one to scrap the programme when serious consideration now needs to be given to doing just that and replacing it with targeted screening for high risk women. But how can we justify the expenditure, given the poor value for money and the harm it causes, when finances are stretched and the workload it generates is part of the problem of excessive demand for health care?

Because of the objections, much of it originating from Northern European academics, to the exclusively positive slant of previous leaflets and website statements, the message on NHS Choices [http://www.nhs.uk/Conditions/breast-cancer-screening/Pages/why-its-offered.aspx] now reads as follows: “The main risk is that breast screening sometimes picks up cancers that may not have caused any symptoms or become life-threatening. You may end up having unnecessary extra tests and treatment.” In fact, the odds are three to one that if you are advised to have treatment, it will be unnecessary treatment, as demonstrated below and explained on the same NHS Choices website. Are women who are offered treatment for ‘breast cancer’ fully aware of this?

The section on the NHS Choices website on the pros and cons of breast screening [http://www.nhs.uk/Conditions/breast-cancer-screening/Pages/why-its-offered.aspx] explains it as follows:

A minimum of two hundred women have to be screened every three years to save one life from breast cancer. Of these 200 women, three other women will have been diagnosed with ‘cancer’ that would never have been found without screening and would never have become life-threatening. This adds up to about 4,000 women each year in the UK who are offered treatment they did not need to save 1,333 lives from breast cancer.

Extrapolating for Scotland, which has ~7.8% of the UK population, this would amount to 313 women who had unnecessary treatment every year in order for 104 lives to be saved.

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Some other published sources quote 400 screened women to save one life and given the political support for the programme it is possible that more favourable odds were selected for this website. In 2014, the Swiss Medical Board reported that it is more like 1,000 screened women to save one life.
These estimates for Scotland seem unduly small however. There were 744,000 women in Scotland aged 50-70 years of age in 2015. If we assume that uptake of the BSP is 75% and that they undergo screening every three years this would mean that 175,000 women aged 50-70 years underwent screening last year. If the "screened to life threatening pathology detected by screening" ratio is only 200:1 this would imply that 868 lives were saved in Scotland and 2,604 women underwent treatment they didn’t need last year. The numbers simply don’t add up, in fact they are off almost 10 fold, suggesting that the screening to significant pathology detected ratio is much higher than 200 to 1, or that the UK estimates (published on the NHS Choices website) used to predict the Scottish estimates are way off, or that these stats are well out of date, or a combination thereof. Which is it?

And yet, despite what might be considered unhelpful odds, no matter how you look at it, the NHS Choices UK website still states that “Most experts agree that regular breast screening is beneficial in identifying breast cancer early. The earlier the condition is found, the better the chances of surviving it.” But at what cost, financial and in terms of unnecessary investigation and treatment, with the immeasurable stresses involved to women who could never be expected to fully understand the science underpinning breast screening. Is the BSP worth continuing with? Isn’t a reasonable alternative relying on investigating and treating real lumps in women of all ages when they appear rather than proactively pursuing three quarters of a million women in that age group to undergo a procedure every three years that is unpleasant and exposes them to unnecessary radiation, for a handful of ‘wins’ that creates a large false positive rate?

It might help policy makers in Scotland to know that in 2014, the Swiss Medical Board, an independent health technology assessment initiative, was asked to prepare a review of mammography screening. The team of experts included a medical ethicist, a clinical epidemiologist, a pharmacologist, an oncologic surgeon, a nurse scientist, a lawyer, and a health economist. After a year of reviewing the available evidence and its implications, they noted they became “increasingly concerned” about what they were finding. The “evidence” simply did not back up the global consensus of other experts in the field suggesting that mammograms were safe and capable of saving lives. On the contrary, mammography appeared to be preventing only one death for every 1,000 women screened, while causing harm to many more.

Two members of the Swiss Medical Board’s expert panel went on to expand on their research and the reasons which led to their conclusion in an article the New England Journal of Medicine article signposted in the footnote discussing three major factors:

1. Outdated clinical trials.
2. Benefits did not outweigh the harms.

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3 The Swiss medical board found that for every breast cancer death prevented in US women over a 10-year course of annual screening beginning at 50 years of age:
* 490 to 670 women are likely to have a false positive mammogram with repeat examination.
* 70 to 100 forced to undergo an unnecessary biopsy.
* 3 to 14 women have an over-diagnosed breast cancer that would never have become clinically apparent and present no danger.
3. Women’s perceptions of mammography benefits are not mirrored in the reality.

Their thorough review “left them no choice but to recommend that no new systematic mammography screening programs be introduced, and that a time limit should be placed on existing programs”. The medical establishment in Switzerland has provided the opposition to abolishing the programme but it is widely expected for systematic breast screening in asymptomatic women to be done away with in Switzerland, given the overwhelming evidence that is accumulating, much of it summarised by the BMJ’s own Too Much Medicine Campaign and presented at a series of annual international conferences on Overdiagnosis and Overtreatment organised jointly by the University of Oxford’s Centre for Evidence Based Medicine and the BMJ.

“Be Clear on Cancer”

Also requiring scrutiny is the policy of encouraging the public to seek medical attention for a variety of signs, symptoms and other reasons, to request ad hoc screening in the absence of an evidence base for efficacy or cost-effectiveness. This is an unwelcome development of government policy at the same time they are cutting back on the resources required to deal with the demand it raises, namely general practitioners. Governments of all political hues have been in the unfortunate habit of unilaterally announcing non evidence based ‘campaigns’ that drive people to their GP or hospital consultant asking for tests that are unlikely to help them personally in terms of extending their life span but are likely to drive up unnecessary investigation and costs.

One obvious example is the “Be Clear on Cancer” campaign promoted via NHS Choices and on wall posters delivered to GP practices where the headline advice is “If you’ve been coughing for 3 weeks or more, tell your doctor." This campaign, which was aimed at improving lung cancer survival rates in the UK, can be seen at [https://www.nhs.uk/be-clear-on-cancer/symptoms/lung-cancer#efjUFOLRqDdHBemL.97](https://www.nhs.uk/be-clear-on-cancer/symptoms/lung-cancer#efjUFOLRqDdHBemL.97). On inspection, this website may seem innocent and helpful. However, the large increase in CXRs and chest CT scans that is has generated with the extremely low yield in terms of identifying new disease has to be considered when evaluating such campaigns. Furthermore, the increased workload it poses for GPs has to be assessed in the context of the steady disinvestment in general practice since 2006. Given the longer waits to see a GP, it should not surprise us that lung cancer survival stubbornly resists such initiatives.

Another example of an initiative that originated from central government: encouraging men with a family history of prostatic cancer to visit their GP to request a PSA level when there is no evidence that this is in the patient’s interest or a cost effective health intervention. Denying patients this test provides a real conundrum for the diminishing numbers of GPs who are facing a rising consultation rate over the same time period.

Screening for depression and dementia are other poorly studied interventions that have yet to be shown to be cost-effective and yet central government has been promoting these along with Health Checks. It is likely that the high prescribing rate for anti-depressants and the apparently high prevalence of depression in the general
population are fuelled by initiatives that aim to proactively seek out depression in patients who come to their general practice complaining about something entirely different. These misguided policies are bound to create illness and label people when we need to encourage resilience and self-reliance and promote other novel concepts such as the idea that some degree of loneliness and depression are a normal part of being human, and that the government is not responsible for all of society’s ills.

By excessively singing the praises of such initiatives, which are underpinned by either no evidence or a dubious evidence base, under the popular guise of ‘prevention’, we risk compromising the entire NHS, which then fails to adequately respond to genuine illness.

Even Alcohol Brief Interventions (ABIs), which are widely regarded ‘as a good thing’ have recently been subject to welcome scrutiny in the BMJ which, suggests that, like so many other public health initiatives, the benefits may be small. An even more recent publication in the BMJ suggests that we need to rethink ABI in general practice because the existing evidence, the limitations of which have received too little attention, should be interpreted as demonstrating efficacy at best, and not effectiveness, nor cost-effectiveness. In addition, they state that “the pace of development of alcohol interventions has been disappointing, perhaps because it is not sufficiently led or championed by generalist clinicians” suggesting that we should tackle the underlying inability of our GPs to work synergistically with such add-on initiatives. Perhaps our GPs would not need these add-on initiatives if we employed enough of them and allowed them the time per patient required to make a difference as demonstrated by the SHIP Project in 4 practices in Govan Health Centre.

This raises the concern that a wide range of cause-specific services and professional groups have been spawned in recent years, at great overall combined cost, to tackle, individually, what are a range of symptoms resulting from a common cause, specifically inequality in opportunity and access to wealth and income. Wilkinson and Pickett remind us again, as recently as February 2017, that the prevalence rates of most public health problems correlate with the degree of income and wealth divide in developed countries. Instead of addressing the root cause of our problems, which is inequality in opportunity and wealth/income, we have created multiple silos of public health initiatives that attempt to tackle smoking (via smoking cessation schemes), excess alcohol consumption (ABIs), obesity (fitness classes, weight reduction schemes), etc. etc. We should consider funding a high quality GP service

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4 The study by Platt et al can be found at: http://bmjopen.bmj.com/content/bmjopen/6/8/e011473.full.pdf
5 The analysis by McCambridge and Saitz can be found at: http://www.bmj.com/content/bmj/356/bmj.j116.full.pdf
6 An editorial by Kate Pickett and Richard Wilkinson can be found on page 223 of the 11 February issue of the British Medical Journal: http://www.bmj.com/bmj/section-pdf/938609?path=/bmj/356/8092/This_Week.full.pdf
with continuity as the aim rather than disable general practice and then hope to solve the many problems that are inevitable in a divided society by adding a series of fragmented problem-specific programmes aimed at patching up the inadequate primary care service that results.

Finally, the relatively large sums that are currently spent on public health programmes (Appendix) should be reviewed as part of a comprehensive review of the outputs of such programmes.

2 How can health boards and integrative authorities overcome the (financial and political) pressures that lead to reactive spending/ a focus on fulfilling only statutory duties and targets, to initiate and maintain preventative spend?

As part of a sensible wider review of all statutory duties and targets, the SG needs to urgently review and downgrade targets such as the 4 hour A&E target and judge the A&E on the basis of complaints and visual inspection of corridors and crowdedness and other measures of performance and quality, including the views of clinical staff and patient satisfaction. For example, does it matter if the target is breached if the clinical and public environment appeared under control on the same day? This may seem controversial but is actually a reasonable approach, particularly if combined with an emphasis on redirection policies that keep trivial presentations out of the A&E.

The 4 hour target served a useful purpose in 2007 when it was introduced, attracting attention and resources to the A&E department which meant services were much improved and more staff employed. However, the chronic failure to comply since 2010 seen throughout the UK, including in many health boards in Scotland, and most conspicuously in Greater Glasgow and Clyde, highlights the fact that the main determinants of this compliance failure lie upstream and downstream from the A&E itself. We need to target the root causes of the problems rather than constantly react to the poor statistics by hiring more A&E staff and developing A&E pressure valves such as acute assessment units adjacent to the A&E. The latter provide a backdoor to the hospital, thereby increasing short and longer emergency stays, and a place patients can languish with no clock ticking. Current approaches, including the fixation on the 4 hr compliance, help to suck resources into secondary unscheduled care rather than target primary care (including general practice and district nursing) and community care, including the ability of social care of the elderly to keep the very elderly in the community and find accommodation/packages of care for them once they are ready to leave hospital.

However, the question is worded in such a way as to make it an unhelpfully leading question; it implies that reactive spend is bad and should be reduced and that preventive spend is good and should be increased. The truth is that our first obligation as a national health service is to react effectively to the genuine need in front of us in real time and that has to be prioritised over a theoretical ability to prevent problems in the future. Furthermore, employing more district nurses and GPs is necessary to enable them to react to genuine need in the community so as to minimise unnecessary reliance on secondary and tertiary care in the future. That is not preventative medicine as we think of it in public health terms. That is just intelligent, cost-effective health service planning because an early GP consultation is
inexpensive and a stay in hospital, when the problem is more advanced, so much more costly. The decision to reduce the percentage of NHS expenditure on general practice in 2006 and continue doing so until the present in 2017, in all four countries of the UK, was misguided but it was deliberate; it was not forced upon the English, Scottish, Irish and Welsh governments, because of statutory duties and targets, as coined in the question. It was inspired by a belief that the NHS could gradually transfer responsibility for community health services to a wide range of other multidisciplinary staff managed by integrated health and social care partnerships whilst minimising the role of GPs, who had gone out of fashion. That strategy however is doomed because it failed to grasp the need for the biomedical knowledge of the GP in:

1) deciding who can safely stay in the community and who needs to be admitted for hospital care; ie robust triage in primary care to avoid unnecessary deaths in the community and unnecessary admission to hospital.
2) Identifying unmet need in the socially deprived and responding to it with a view to reducing their dependency on A&E and emergency inpatient admission.
3) Preventing unnecessary investigation, diagnosis and treatment in the worried well, which only a skilled and experienced GP can be relied on to do on a consistent basis.
4) Responding to acute illness in the very elderly at an early stage with a view to preventing unnecessary reliance on unscheduled care. (This can only be done with adequate support from district nursing and social care of the elderly.)

My view, as a public health doctor, is that we are obsessively interested in prevention, almost to the point where we want to screen all patients for everything, and this is undesirable, unaffordable and unnecessary. Life expectancy is still rising and this is largely because of better nutrition, better housing, better employment law, more protective health and safely legislation, cleaner water, and other structural determinants of health. The falling prevalence of smoking is perhaps the most major relevant life style factor contributing to the fall, highlighting the importance of the ban on smoking in public places and ongoing attempts to introduce more public health protective policy in the area of tobacco (eg point of sales visibility of cigarettes, packaging, pricing etc).

The introduction of the QOF in 2004 increased the micromanagement of coronary artery disease many fold but did not change the already falling mortality rate of coronary artery disease, implying that the falling trajectory was pre-determined and the result of all these other factors. The lack of impact of QOF also suggests that the strict regulation of GP activity towards screening and prevention, perhaps counter-intuitively, is not the answer. Employing more GPs in deprived areas and allowing them the time they need to respond to genuine unmet need would make a huge positive difference. This is why investment in general practice generally, followed by the creation of a steeper funding formula for general practice (via the Scottish Allocation Formula), followed by deregulation of general practice is so important. The recent abolition of the requirement to link funding with QOF data collection was an important step in the right direction.
In conclusion, the SG needs to remember that the most important genuinely preventative strategy is to reduce the opportunity and income/wealth gap between the rich and the poor with a view to reducing inequalities in health, which will benefit all of Scottish society. Raising income tax in Scotland, which the devolved administration has had the power to do since 1999, is an important way to redistribute wealth and opportunities. Its failure to do so suggests a lack of conviction when it comes to actually applying its socially progressive principles. The SG should resist the temptation to blame the requirement to comply with statutory duties and targets for its current problems and avoid creating a false dichotomy between reactive and preventive spend in the context of the health service.

3 How could spend that is deemed to be preventative be identified and tracked more effectively? What is required in terms of data, evidence and evaluation to test interventions for producing ‘best value for money’?

The implication in the question is that there are wonderful initiatives out there that prevent ill health and premature death but we simply can’t measure their cost-effectiveness and we need to try harder to demonstrate their existence and their value for money. The truth is that the wonderful initiative is staring us in the face: equalise opportunity and reduce the income/wealth gap. Use existing powers to do so.

The other implication in the question is that we are still short of data and evidence when many believe that we are drowning in both. We now have enough routinely collected data, available online, to evaluate many risk factors and interventions without having to leave our offices. What we are short of, are the skilled and numerate people who know how to interpret that data and evidence, despite the large numbers of staff employed by the NHS who have no contact with patients.

There are large sums currently being spent, and wasted, given the evidence above on the breast screening programme, to name just one preventative programme, that are not at all difficult to quantify and we need to start with these initiatives and limit their use, for example in the form of targeted screening, thereby liberating resources that have been needlessly tied up in national untargeted screening programmes that were ill conceived from the beginning.

On a positive note, the costs and benefits involved with the primary vaccination schedule for children are fairly well measured. The cost-effectiveness of other vaccination programmes, including the promotion of the flu vaccine for all NHS clinical staff is harder to fully evaluate but published attempts have been made and the programme is intuitively sensible. But is it worth collecting realms more data and spending hundreds of hours to fully measure its benefits?

And finally, given that the most important preventative strategy is to equalise opportunity, including by reducing the income/wealth gap between rich and poor, the identification and tracking of that ‘preventive spend’ would be relatively easy to do. Measuring the impact of a rise in taxation is straightforward. The reason the task of quantifying preventive spend to achieve best value for money, as implied by the question, has become so apparently overwhelming and onerous is because we have been determined to substitute the right solution (what is needed and ethically
justified which is reducing the opportunity/income/wealth gap) with a very wide and expanding range of alternative solutions that provide a suboptimal return on our investment.

4 How can the shift of spending from reactive/acute services to primary/preventative services be speeded up and/or incentivised?

Again, this leading question makes the assumption that spending yet more resource on prevention is going to solve our problems when what is required is an intelligent review of what we are already potentially wasting on large public health programmes.

Bearing in mind the responses to the first three questions, it is obvious that one of the first things we need to do is downgrade targets (eg 4 hr target in unscheduled care) and review all national and ad hoc\textsuperscript{7} screening programmes with a view to seriously considering abolishing cost-ineffective programmes that do more harm than good. This would free up considerable financial resource which is essential given the fiscal pressures that will only get worse over the next 10 years.

However, it needs to be borne in mind that huge resource is still, despite recent improvements, tied up in hospitals in the form of unnecessary emergency admission including delayed discharges, particularly for the elderly. Some health professionals at the coal face also believe that far too much resource is needlessly tied up in community hospitals and nursing homes because patients enter these too soon in the natural history of their deterioration, because of inadequacy of community based services\textsuperscript{8}.

Extracting these resources will be difficult for obvious reasons. Consideration should be made to providing a bridging loan to kick start GPs, (and district nursing and SCoE) on the grounds that general practice has already demonstrated itself to be a highly cost-effective service and GPs the only professional group that could be expected to lead a community based health and social care service. Again, bearing in mind the response to the previous question, it is important to remember that primary care services need to be adequately funded to react to genuine need in the community and that is precisely what was disabled by the introduction of the QOF payment system in 2004 via the GP Contract and the subsequent clawing back of GP funding from 2006 onwards. GPs need to be trusted to apply the art of medicine to the individual patient in front of them and temptation to micromanage them resisted, particularly as no other medical group has been subjected to this level of control.

The SG has already promised similar types of funding for IJBs to enable them to shift the balance of care from acute hospitals to community settings. Whether they will be able to use this resource, as efficiently as GPs would, remains to be seen.

\textsuperscript{7} This includes initiatives that do not qualify as national screening programmes but have a similar impact, including those that reduce the threshold at which the public are subject to unnecessary tests. An obvious example is the policy from central government to encourage the public to visit a GP and seek a diagnostic imaging test if they have been coughing for more than three weeks.

\textsuperscript{8} Based on discussions with Dr Alastair Noble, retired GP and proponent of community hospitals and GP-led locality planning.
Appendix: Extract from Chapter 4 Health and Wellbeing expenditure for two recent fiscal years available at: [http://www.gov.scot/Publications/2014/10/2706/7](http://www.gov.scot/Publications/2014/10/2706/7)

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