

# APPLYING BEHAVIORAL INSIGHTS

## SIMPLE WAYS TO IMPROVE HEALTH OUTCOMES

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Report of the WISH Behavioral Insights Forum 2016

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## FOREWORD

Health professionals, policymakers and patients are well aware that a swath of today's health issues have behavioral roots. Smokers know that their habit is dangerous, yet struggle to quit. Healthcare systems spend billions on the treatment of diabetes, yet little on addressing the consumption that drives it. Emergency departments (EDs) treat a catalog of 'accidents' every day, but do little or nothing to prevent those accidents happening in the first place.

Gone are the days when the 'diseases of affluence' were limited to the industrialized West. For every 10 percent of gross domestic product (GDP) growth in developing nations, childhood stunting falls by 6 percent, but obesity rises by 7 percent.<sup>1</sup> The massive costs that are associated with such lifestyle shifts are a heavy enough burden for wealthy nations, but for poorer nations they will be crippling.

The real challenge is to move from a general awareness that behavior is pivotal to health, to a working knowledge of what to do about it. That is what this report is about. It seeks to arm the professional or policymaker with a simple set of tools that can be used to help shape patient or population health behavior for the better.

The application of behavioral science is already saving lives: patient charts can be formatted to reduce errors and pick up risks earlier; missed appointments can be reduced; treatment compliance improved; and healthcare systems refashioned to help patients make lifestyle changes that will keep them living longer and better.

Alongside this growing understanding, we need to apply the same rigorous experimental methods to behavioral and service design that have characterized drug-based clinical treatments. What is the best way to help someone quit smoking? What is the best wording a clinician can use to encourage their pre-diabetic patient to lose a little weight and exercise more? And more fundamentally, how can we use the insights from behavioral science to shape a society and economy in which living healthily is easy and pleasant?

If behavioral and lifestyle factors increasingly drive the majority of years of healthy life lost, then isn't it time we attack these issues at their causal roots, not just the symptoms?



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# EXECUTIVE SUMMARY

Applying new insights about behavior can lead to better health outcomes at a lower cost. This report gives an overview of these insights and shows how they can be applied in practice. It has four key messages:

## **1. In order to improve health outcomes, we need a better understanding of behavior**

There are three main areas where a lack of understanding or attention to human behavior causes problems in the health sector:

- Public health. Much of the global burden of disease arises from unhealthy behaviors, but people still struggle to change these behaviors – even if they have the awareness, intention and ability to do so.
- Healthcare provision. Healthcare systems are often designed in ways that facilitate errors and poor decision-making by health practitioners.
- Policy decisions. Policy processes may lead policymakers to make suboptimal decisions – for example, by treating evidence in a biased or inconsistent way.

## **2. Behavioral insights offer new solutions to policy problems**

Research from the last 40 years shows that our decisions are often not deliberate and considered, but habitual, automatic and heavily influenced by the environment in which they are made. These factors are often neglected in traditional policy analysis. Applying these behavioral insights can unveil new and better ways of achieving policy goals, as well as enhancing existing policy tools (like making laws or providing incentives). Governments around the world are increasingly doing this, but there is the potential to go much further.

## **3. Behavioral insights can improve health and healthcare**

The Easy, Attractive, Social and Timely (EAST) framework is a simple way of applying behavioral insights to policy and making behavior change more likely:

- Easy. We want to avoid expending effort wherever possible. For example, because we often avoid making an active choice, we often end up with the ‘default’ option. Therefore, making the default option the healthy one is likely to be effective: if the default option is to receive an HIV test, then testing will be much more frequent than if the default is to not receive one. Requiring even small amounts of effort (‘friction costs’) can make it much less likely that a behavior will happen. For example, making it just slightly more difficult to obtain large amounts of over-the-counter drugs has been shown to greatly reduce overdoses.

*Reduce even very small barriers to make a healthy behavior more likely.*

- Attractive. Our attention is limited and so we need new ways of attracting it. One way of doing this is to identify the messages that work best. For example, a study in the United Kingdom (UK) found that missed hospital appointments could be cut by a quarter if a reminder stated the specific cost of a missed appointment to the health system. Another way is to attract attention through visual or spatial design: accidental deaths on railways in India were cut by painting reference lines on railway tracks to make it easier for people to judge the speed of trains.

*Create simple and clear messages, or new design features, to attract our limited attention.*

- Social. Humans are social beings who are strongly influenced by what others do – ‘social norms’. Making healthy behaviors more visible can make them seem more prevalent and easier to copy. For example, the ‘Ebola handshake’ that was introduced in Nigeria to reduce physical contact (and thus the spread of disease) acted as a highly visible replacement greeting. Even simply telling people what others do in the same situation is effective – doctors prescribed antibiotics at a lower rate when told that most of their peers were doing this.

*Show or tell people that others are performing a healthy behavior.*

- Timely. People are more receptive to changes at some times than others. Therefore, some moments will be more effective times for intervention, such as religious or cultural holidays, the start of the year or significant life events. For example, a successful diabetes screening program in Qatar timed the intervention (which required fasting) to coincide with Ramadan, when many people were fasting anyway.

*Launch interventions at times when people are most receptive to change.*

The EAST principles apply equally to policymakers themselves. Those who are making health policy should consider how their own actions may be affected by these factors, and how to apply them to ensure policy is made in the best way.

#### **4. Trialing interventions brings important advantages**

Since behavior is complex, context is powerful, and details matter, we cannot be sure of the exact best way to implement interventions. Therefore, it is important for policymakers to incorporate simple trials to evaluate the effect of behavioral interventions on healthcare services. These trials are often cheap and can deliver results quickly, particularly if routinely collected data is used.

Trialing interventions like this has shown that behavioral insights can make a real difference to healthcare systems. Trialing also shows when, how and for whom interventions work best – since the size and duration of their impact can be affected by cultural differences and details of implementation.

The ideas and examples in this report can be used by anyone involved with healthcare or public health. However, we think that the report will be particularly valuable to policymakers who are responsible for designing and stewarding health systems.

There are many opportunities to improve health and healthcare worldwide by applying behavioral insights. Many of these opportunities can be realized by applying simple tools to make practical changes. We encourage policymakers to use these tools.

# SECTION 1: UNDERSTANDING BEHAVIOR TO IMPROVE HEALTH OUTCOMES

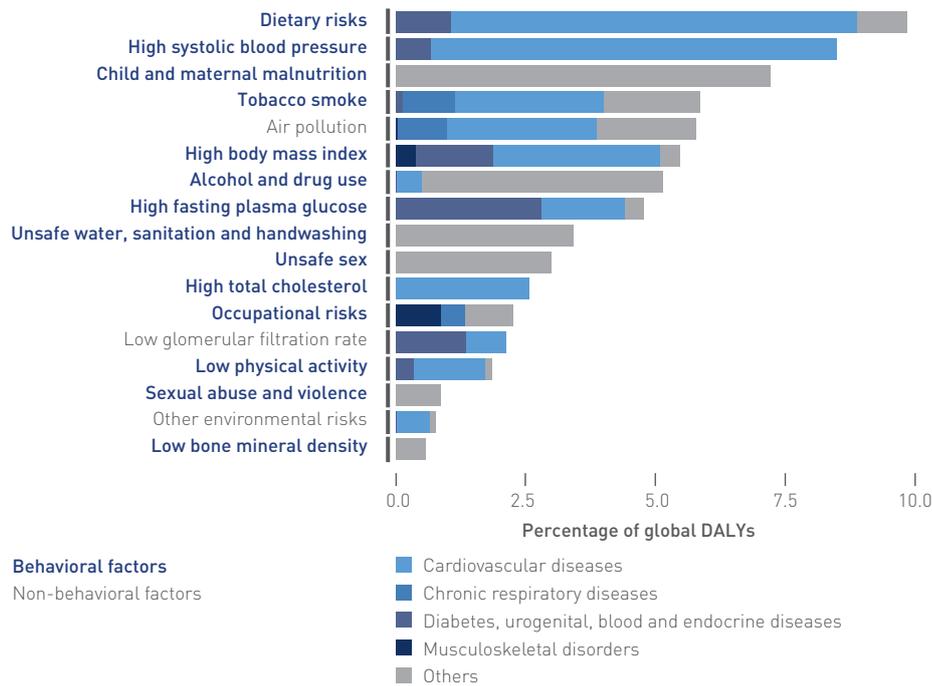
A common goal of health policymakers is to reduce the number of disability-adjusted life years lost due to ill-health as cost-effectively as possible. The question is: why do they need to understand human behavior better – and how best to influence it – to achieve these goals? We can find clear reasons in three important aspects of health systems: the ways that ill-health develops; the behaviors of healthcare practitioners providing treatment for this ill-health; and the way policymakers oversee health systems.

## We need to better understand why unhealthy behaviors happen

Although the conditions in which people are born, live and work are very important for their health, around half of the global burden of disease arises from behavioral and lifestyle factors.<sup>2, 3</sup> Unhealthy eating, smoking and alcohol consumption contribute to the development of long-term conditions such as diabetes; cardiovascular diseases; chronic respiratory diseases; and musculoskeletal disorders. These conditions account for the greatest disease burden in industrialized nations and increasingly worldwide (see Figure 1),<sup>4</sup> and are estimated to cost \$30.4 trillion in lost output and treatment costs over the next 20 years.<sup>5</sup>

Leading causes of mortality in developing countries can also be greatly reduced through behaviors such as breastfeeding; using mosquito nets effectively; using oral rehydration therapy; and attending vaccination appointments.<sup>6</sup> However, healthy behaviors may not occur even when awareness, intention and ability are present,<sup>7</sup> resulting in ill-health for individuals, waste for health systems and lost productivity for economies. Therefore, to improve health outcomes, health systems need to apply the best evidence of how to influence the behavior of the populations they serve.

Figure 1: Global disability-adjusted life years (DALYs) attributed to risk factors in 2013



Source: Adapted from Forouzanfar et al. (2015)<sup>8</sup>

## We need to better understand how health systems influence the behavior of health practitioners

Healthcare systems consist of many different relationships. As well as the direct patient–practitioner relationship, there are patient–family/community relationships, practitioner–practitioner relationships, provider–commissioner relationships, and so on. Understanding what drives and influences the way these people interact could result in better outcomes for less money.

Unfortunately, health systems are often not designed with this kind of understanding. For example, errors such as giving the wrong medication typically result from processes involving complex language or unclear presentation of choices. Despite knowing this, we are still creating and using processes that facilitate these errors.<sup>9,10</sup> We also now know more about why health professionals, policymakers and politicians find it difficult to focus on preventative care: we tend to focus on the immediate problem in front of us, rather than potential future problems that seem distant and abstract. Nevertheless, we continue to create incentive structures for professionals that emphasize treatment over prevention, which leads to greater expenditure and poorer health overall.<sup>11</sup>

## We need to better understand the behavior of those who oversee health systems

Finally, we can consider how behavioral insights can, and should, influence those who oversee health policies because their decisions are often influenced by factors that may not lead to the best outcomes. For example, a health minister may visit a hospital and notice a particular cancer treatment because it is novel and easy to understand – even if it is not the most effective option. As we show below, behavioral insights explain why our attention can be attracted like this, and suggest ways of drawing attention to the best options. What can also happen is that, once a minister or policymaker decides to prioritize a particular treatment, it can be very difficult to convince them otherwise – to the extent that they will not pay attention to evidence that other options are better. In the field of behavioral insights, this is known as ‘confirmation bias’.<sup>12</sup> If we can recognize these issues and try to adapt policymaking to address them, we will have better health policies and, in turn, better health outcomes.

A better understanding of behavior can improve the use, delivery and management of healthcare. Research from the last 40 years from disciplines such as psychology, economics and anthropology, together with healthcare research, has generated knowledge to support this aim. Collectively, this knowledge is often referred to as ‘behavioral insights’, and some examples of how these are used in health are presented in the next section.

## SECTION 2: BEHAVIORAL INSIGHTS OFFER NEW SOLUTIONS TO POLICY PROBLEMS

'Behavioral insights' is a term used to refer to the use of findings from behavioral science to understand how people behave in practice, and thereby design policy and public services better. This section explains behavioral insights in more detail and explains how they have been used recently.

### Challenging existing ways of understanding behavior

Health policy – like other policy areas – considers how to achieve certain outcomes using restricted resources. In general terms, policy decisions are often informed by the discipline of economics.<sup>13</sup> More specifically, they are often based on the assumption that people will process all the available information, carefully weigh up the costs and benefits of acting, and select the option that maximizes the benefits to themselves.<sup>14</sup>

Findings from the behavioral sciences have increasingly shown that this kind of decision-making happens less often than economic models assume. Instead of weighing up the costs and benefits carefully, behavioral science has produced much evidence that we often use mental shortcuts or 'rules of thumb' to select an option that is good enough, although perhaps not the best.<sup>15</sup> Examples of these shortcuts might be 'choose what everyone else has chosen' or 'do the same thing I did last time'. If this evidence is ignored, the policy may not affect behavior the way it intended.<sup>16</sup>

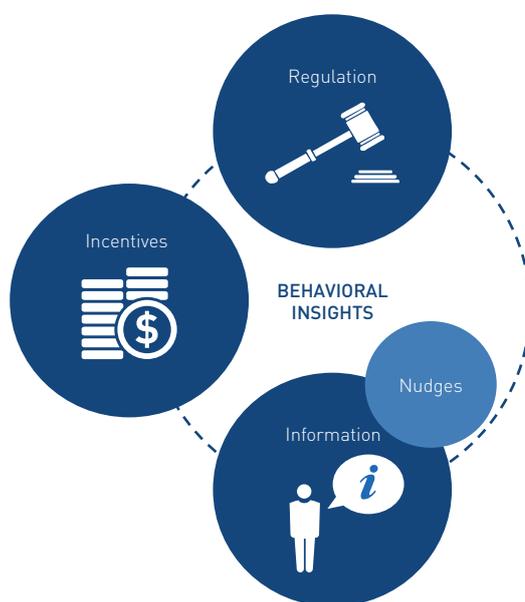
While mental shortcuts often work well – doing what everyone else does is usually a good survival strategy – they can harm health if used in the wrong context. Moreover, behavioral science also shows that conscious thought has a minimal influence on much of our behavior. Instead, behavior is often guided by 'automatic' responses to our environment and the things we encounter.<sup>17</sup> Changing apparently insignificant aspects of the context or the way a decision is presented may therefore lead to important changes in behavior. For example, a large body of evidence shows that most of our eating behavior is not conscious or deliberate. We are heavily influenced by cues in our 'eating environment', such as the size of the plate from which you eat food. The larger the plate, the more we eat without realizing.<sup>18</sup> Therefore one way of making it easy to eat less is to change the default so that packages, serving items and tableware are smaller.

We can improve health outcomes if we recognize that our decisions are often not deliberate and considered, but habitual, automatic and heavily influenced by the environment in which they are made.

## Applying behavioral insights in a policy context

The behavioral insights literature does not imply that existing ways of making policy are totally wrong: people do often act in line with costs and benefits. Nor does taking a behavioral insights approach mean that policymakers automatically have to dispense with more traditional 'hard' measures, such as legislation, in favor of simply reframing choices. This is a misunderstanding that often occurs if people focus purely on the idea of 'nudging', rather than looking more widely at the potential for applying behavioral science to policy.<sup>19</sup> As Figure 2 shows, nudges are only one aspect of behavioral insights, and generally concern the way that choices are presented.

**Figure 2: The relationship between policy tools, nudges and behavioral insights**



Instead, behavioral insights should be seen as an approach to policymaking as a whole, as well as a specific set of tools in a toolkit. The dotted line in the diagram shows that behavioral insights can cover the whole range of government action. Applying behavioral insights is not necessarily an alternative to legislation – rather, it provides a set of findings and a way of thinking that can help ensure that legislation is in line with how people behave in reality. It is a lens through which all government and practitioner action needs to be seen. It is not an optional extra because most government policies are concerned with influencing behavior. Behavioral insights, therefore, will have something to say about most policies. Nor is the contribution of behavioral insights limited to small tweaks to existing arrangements. A behavioral insights approach can be used to reassess, rethink and redesign whole health systems.

Finally, policymakers need to use behavioral insights responsibly. If they are introducing an intervention that deliberately taps into habitual, automatic actions, then people may be less aware that they are being influenced. This is a complex debate that cannot be summarized in this report.<sup>20,21,22</sup> Regardless, there is a strong case for policymakers to be:

- transparent as to the intent and actions of an intervention; and
- engaged in discussion with citizens, possibly through some kind of deliberative mechanism, about what kinds of action they find acceptable.

## Recent developments

In recent years, governments around the world have begun to apply the findings from behavioral science in an explicit and sustained way. A 2014 report noted that “51 countries have central state-led policy initiatives that have been influenced by the new behavioral sciences.”<sup>23</sup> In particular, various governments have created dedicated behavioral science teams, including in the UK, United States (US), Germany, Australia, Canada and the Netherlands. In addition, both the World Bank and the European Commission have launched major new initiatives to apply behavioral insights to policy.<sup>24, 25, 26</sup> Many of the teams involved have also made an explicit commitment to evaluate their initiatives robustly, so it is possible to build an increasingly rich evidence base of how behavioral insights can bring the most benefit.

Despite these advances and the momentum they have created, it is clear that the full potential of a behavioral insights approach is yet to be realized – particularly in health. The goal is to integrate these insights into mainstream health policymaking and care provision. To help this, the next section outlines a simple set of principles, along with relevant examples, to translate behavioral insights into practice.

## SECTION 3: BEHAVIORAL INSIGHTS CAN IMPROVE HEALTH AND HEALTHCARE

The UK's Behavioural Insights Team (BIT) was set up in 2010 as the world's first government institution dedicated to the application of behavioral sciences to mainstream policy. A core part of its work has been to explain behavioral science concepts to government officials. Through testing with policymakers around the world, the EAST framework, presented below, has emerged as a way of addressing this challenge.<sup>27</sup>

The EAST framework claims that a behavior is more likely to occur if it is made Easy, Attractive, Social and Timely (EAST). Each of these categories is underpinned by a body of evidence from behavioral science, some of which we summarize below. We also illustrate each with examples from around the world where these ideas have been applied to improve health and healthcare (although we have not attempted to achieve comprehensive coverage of every health policy issue).

Readers who are interested in accessing a particular policy area can refer to the table in the Appendix.

### Make it easy

The insight that we are less likely to do things that require more effort may seem unsurprising. However, behavioral science adds to our understanding of how we can make a healthy behavior easier by using defaults and reducing even small barriers to achieving it.

#### **Make the default option a desired health behavior**

Behavioral science has shown that people have a strong tendency to avoid making an active decision wherever possible.<sup>28</sup> This tendency means that people often end up with the default option – in other words, the option provided if an individual does not actively choose otherwise. The most powerful way of making something easy is to ensure that a person does not have to do anything for it to be achieved. For example, if the default option is to receive a flu vaccination, then vaccination rates will be higher than if the default is to not receive one.<sup>29</sup>

Default settings also exert a powerful influence on healthcare providers. For example, clinicians must decide how much air is blown into the lungs of patients on breathing support, and how often this happens. The lungs can be injured if too much air is delivered too often. A famous study showed that patients' mortality could be reduced by 25 percent if the default setting of the ventilator was changed to blow lower volumes of air into their lungs.<sup>30,31</sup> An even better option is to offer tailored defaults designed for particular situations or system users.

## Reduce or eliminate even small barriers to the behavior

Behavioral science also demonstrates that even very small barriers can have a large impact on behavior. Apparently insignificant costs (of whatever kind) can affect whether or not a behavior occurs. One type of cost simply concerns the amount of effort required to perform the action. The following case study refers to how these costs can affect even very important decisions, such as deterring suicide.

### Introducing small barriers to deter suicides

#### Background

Paracetamol overdose is a common method of suicide and non-fatal self-harm worldwide.<sup>32</sup> Suicidal behavior is often impulsive and people tend to use drugs already available in their homes. People are also more likely to consume more than 25 tablets, the amount associated with acute liver dysfunction, when they are in a loose pack instead of a blister pack.<sup>33</sup>

#### The project

In 1998, the UK changed the laws on paracetamol packaging so that the drug could not be sold loose in large containers. The packs were restricted to blister packs with a maximum of 32 tablets in pharmacies and 16 tablets elsewhere. In addition, multiple packs could not be bought at the same shop. The change in legislation presented only a small barrier because people could still buy packs at multiple outlets if they wanted to.

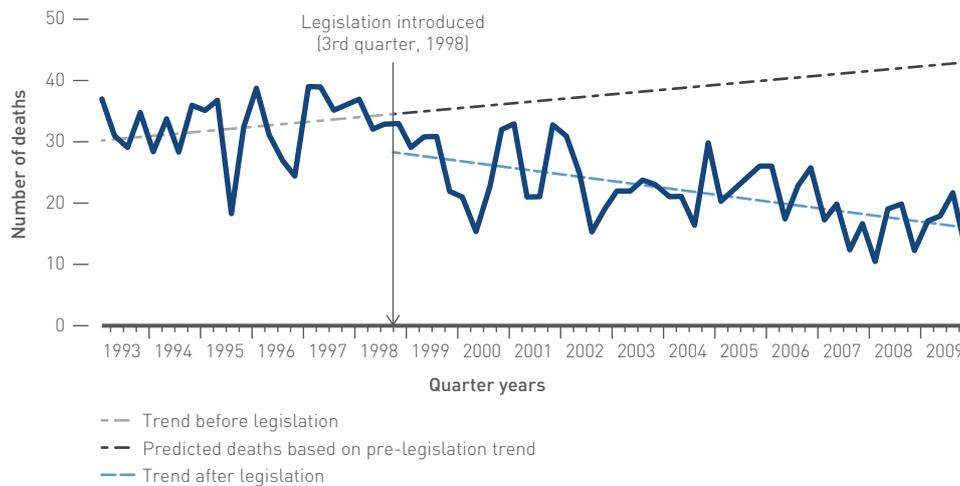
#### Results

These small barriers ('friction costs') led to an estimated 43 percent reduction in suicides in the 11 years following the legislation – that's 765 fewer deaths; 990 including accidental poisonings (see Figure 3). There was also a 61 percent reduction in registrations for liver transplants caused by paracetamol poisoning.<sup>34</sup>

#### Conclusion

Decreasing ease of access to large amounts of painkillers may be a successful way to decrease suicide rates.<sup>35</sup> Evidence suggests that people do not find another route for suicide when faced with these kind of costs, but rather discontinue the attempt altogether.<sup>36</sup>

**Figure 3: Reduction in UK deaths by overdose after change in law relating to paracetamol packaging**



Adapted from Hawton et al. (2013)<sup>37</sup>

By the same logic, reducing friction costs can make a desirable behavior, such as taking the right medicine at the right time, more likely. For example, BIT is currently working with the United Nations Development Program to address low adherence to tuberculosis treatment in Moldova.<sup>38</sup> Low drug adherence has contributed to Moldova being one of the 27 countries with the highest incidence of drug-resistant tuberculosis.<sup>39</sup> One of the main problems is that current treatment regimes require patients to take pills daily in the presence of a medical professional to ensure compliance, which is costly in terms of time and money for both the patient and the healthcare system. In order to reduce the friction costs of visiting a doctor’s practice, the process will be changed so that compliance is verified over a Skype session – 36 percent of Moldovan tuberculosis patients had experience of using Skype.<sup>40</sup>

Another way of reducing friction costs by changing defaults is to substitute a harmful behavior for one that is very similar, but which produces less harm, rather than asking people to give up the harmful behavior. This makes the healthier outcome easier by requiring little to no change. Perhaps the greatest potential for substitution may be in diet. For example, excessive salt consumption is a major cause of high blood pressure. An intervention in Peru aims to maintain behavioral patterns (adding salt to meals), but replaces the salt with a low sodium substitute. The substitute has been constructed so that people will not detect any changes in taste.<sup>41</sup> Salt substitution has proved to be an effective and acceptable policy in other countries.<sup>42</sup>

These lessons about friction costs also apply to professionals delivering services. The purpose of the Allillanchu project in South America is to make it easy and standard for primary care providers to assess the emotional wellbeing of any person who comes for treatment. The providers were given an electronic tablet to carry out a simple screening questionnaire and make a referral. People who were referred were then sent motivational text messages to remind them to seek mental healthcare. The system screened 733 people and helped to identify 165 people with mental ill-health. Of the people identified, 143 were enrolled in the study; 92 sought mental healthcare; and 73 accessed mental healthcare.<sup>43</sup>

## Make it attractive

The second principle is to attract attention to an idea or behavior, which is often difficult to do.<sup>44</sup>

### Why people may not notice health-related information

As the world becomes increasingly complex, we are exposed to more information. Twenty-five years ago, it was claimed that an edition of the *New York Times* contained more information than the average person in 17th century England would have been exposed to in their lifetime.<sup>45</sup> Behavioral science has shown that we have only a limited capacity for focusing on and processing information.<sup>46</sup> Therefore, we have developed strategies for separating important or relevant pieces of information from the rest. Some of these strategies can be very effective. One everyday example is the way we are able to notice our name being spoken, even if we are concentrating on something else and there is much background noise.<sup>47</sup>

However, these strategies also mean that the way we notice and process information can harm our health. For instance, our attention may be drawn to unhealthy items without us realizing. It has been shown that overweight people unconsciously focus on words and images relating to food – and the same is true for those people who are dependent on alcohol and smoking.<sup>48, 49, 50</sup> Alternatively, we may simply not notice things that benefit our health, or that of others. This is what psychologists call ‘inattention blindness’.<sup>51</sup>

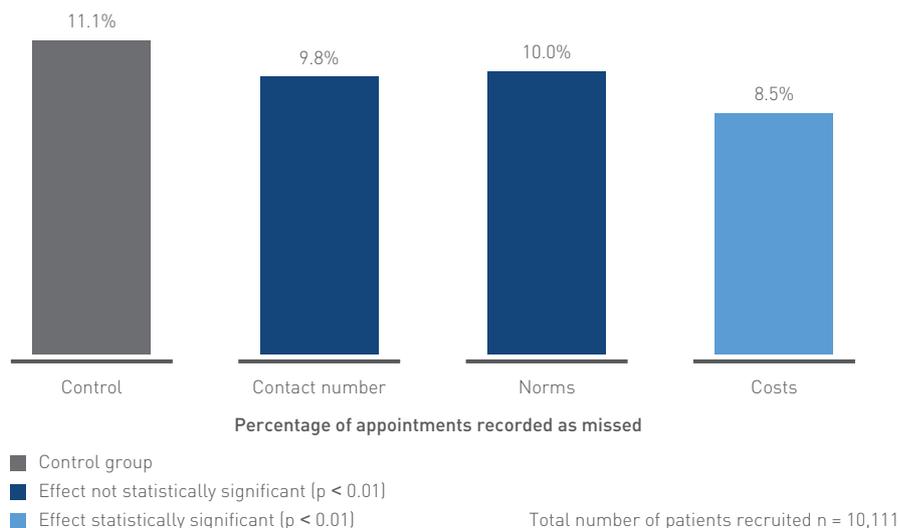
These problems of attention are particularly bad when people have a heavy ‘cognitive load’ – in other words, they have a lot to think about. This is particularly relevant as one cause of cognitive load can be concerns about a medical condition.<sup>52</sup> Another widespread cause of cognitive load is poverty. People who are poor find that the struggle to survive consumes their attention, often without them realizing, which can in turn lead to healthier behaviors.<sup>53, 54</sup> Clinicians working in high-pressure environments also experience distractions and cognitive load, which increases the likelihood that they commit errors.<sup>55</sup>

We suggest two main ways of addressing the challenge of attracting attention.

## 1. Find health-related messages that attract attention effectively

First, we can identify the message content that is most likely to attract attention. For example, a set of studies from the UK have shown how referring to healthcare costs can attract attention. A team of researchers sought to tackle the problem of missed hospital appointments, which constitute one-in-10 of all outpatient appointments in England. To do this, they tried to attract attention by introducing new message content to existing SMS appointment reminders. They found that the most effective message highlighted the exact cost to the health system of a missed appointment. This message reduced no-shows by 25 percent and, importantly, the trial also showed that it was the specific wording that attracted attention – the same cost message presented in general terms was less effective (see Figure 4).<sup>56</sup> The results have been replicated using a similar message in Australia. This kind of cost message can also attract the attention of healthcare practitioners. In another study where hospital clinicians were given the cost of a discretionary laboratory test, ordering levels were reduced by 32 percent.<sup>57</sup> Of course, other messages may also attract attention, and simple, cheap trials can show what content works best in a particular situation.

**Figure 4: Reduction in missed appointments from changing message content in appointment reminder**



Source: Adapted from Hallsworth et al. (2015)<sup>58</sup>

## 2. Attract attention through visual or spatial design

Second, we can attract attention through visual or spatial design, as highlighted in the following case study looking at reducing the number of rail incidents in Mumbai.

## Decreasing rail incidents in Mumbai using visual cues

### Background

Between 2002 and 2012, 36,152 people died or were injured on the tracks of Mumbai's Suburban Railway – nearly 10 a day.<sup>59</sup> Huge investments in increasing awareness of the dangers posed by the tracks did not improve these statistics.<sup>60</sup>

### The project

One possible explanation for the incidents is that people find it difficult to judge the speed of an approaching train. Therefore, the team tried an alternative approach: they painted reference lines on the track to improve pedestrians' judgment of speed. This is a method that has previously been used to reduce road traffic incidents. Stripes on the road that get closer together give drivers the impression that their speed is increasing and leads them to slow down.<sup>61</sup>

### Results

The reference lines meant that people's attention was attracted to fast-moving trains more quickly, which led to a 75 percent decline in trespassing deaths at the test location. Follow-up tests showed a 30–70 percent reduction in trespassing deaths.<sup>62</sup>

### Conclusion

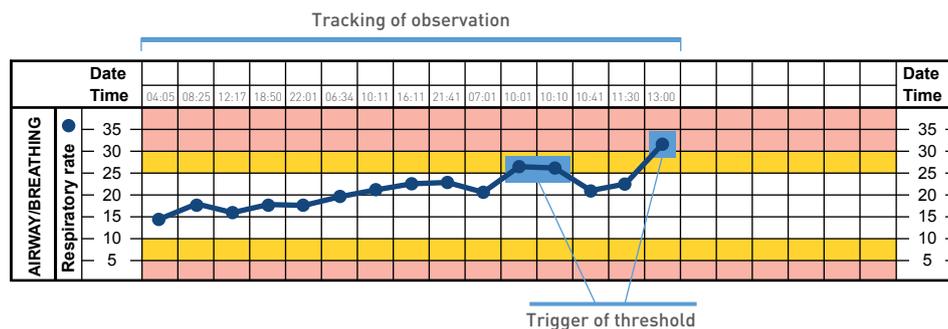
Behavioral spatial design can provide people with important visual cues that can prevent rail incidents.

Clear visual representations can also attract attention to the way diseases are transmitted. For example, one Ebola prevention technique showed a man with clean hands shaking hands with another man who had blue powder on his hands representing the Ebola virus. After the handshaking, the color blue appeared in the palm of the first man, implying he had come into contact with the virus. Without washing his hands, the man picked up a loaf of bread and immediately the color appeared on the bread. This demonstration significantly increased knowledge and improved hygiene techniques to prevent Ebola transmission, compared with traditional teaching.<sup>63</sup>

There are opportunities to reduce non-communicable diseases as well. For example, in 2014 Singapore's Health Promotion Board launched the Healthier Choice Symbol (HCS), which is a visual identifier that clearly highlights healthier produce in supermarkets. The HCS was designed to reduce the cognitive load required to read food labels. As a result, more consumers are choosing HCS products; there has been an 8–11 percent annual growth in key categories such as oil and wholegrain bread and rice. Also, more manufacturers are making their products healthier; there has been a 9 percent annual growth in HCS products.<sup>64</sup>

Healthcare providers can also benefit from effective ways of attracting their attention towards important information. For example, it can be difficult to notice and treat a change in a patient's condition if it happens gradually. Australia's Between the Flags initiative addresses this problem by including colored bands in observation charts where a patient's vital signs are recorded (see Figure 5). These colors help health-care practitioners easily see when patients are deteriorating. Observations that are recorded in the yellow zone trigger a clinical review of the patient. Observations in the red zone trigger a rapid response.<sup>65</sup> The program as a whole is associated with a 25 percent reduction in unexpected cardiac arrests and is popular among staff.<sup>66</sup>

Figure 5: Between the Flags observation chart



Source: Clinical Excellence Commission (2016) <sup>67</sup>

Of course, visual and spatial design of our everyday environment is often used by private companies and others in ways that may harm health. One example is the way that unhealthy foods may be sold, such as at the end of aisles in shops. A recent study showed that putting drinks on end-of-aisle displays increased sales of both alcoholic and non-alcoholic drinks. For alcohol, the increase in the volume of sales was similar to what you would see if there had been a 4–9 percent decrease in price.<sup>68</sup> Clearly, there are many ways to address this situation, from regulating the private sector to working with them to redirect our attention towards healthier options. But, these options will only be explored if policymakers understand how our attention is captured.

## Make it social

The third principle concerns tapping into the social dimension of behavior. Humans are a social species and we are strongly influenced by what we observe – or infer from – others doing in the same situation.<sup>69</sup> These social norms are often considerably more powerful than messages about health risks or benefits, which have been the traditional focus of health improvement efforts.<sup>70</sup> In addition, behaviors that become social norms can spread quickly and unpredictably through social networks. Below are three ways that our social nature can be leveraged to influence our health behaviors.

## Make the behavior visible

Perhaps the most basic way that social norms can be used is through enabling people to see that others are performing a behavior, thereby making healthy behaviors more visible and seemingly more prevalent and easier to copy. For example, an intervention in Kenya that installed simple automated chlorine dispensers at a spring increased water chlorination by 30 percent. Importantly, the intervention allowed people to see their peers using chlorine when they collected water. The chlorine was also easy to use and timely because it was available at the point of need.<sup>71</sup>

Similarly, during the Ebola outbreak, the Nigerian government and others officially discouraged handshaking in order to reduce the spread of the disease.<sup>72</sup> But an edict of this kind is unlikely to be successful without the introduction of a substitute behavior as well. Therefore, the 'Ebola handshake' was introduced, where each person offers a clenched fist and a bent elbow, without touching or touching only with the elbow.<sup>73</sup> The handshake recognizes the need to create a new social norm, and introduces a highly visible behavior to fulfil that purpose.

## Report that others are doing the behavior

Another effective way of using social norms is to simply tell people what others do in the same situation. People may overestimate the extent to which their peers are engaging in unhealthy behaviors, or vice versa.<sup>74</sup> Simply pointing out that a beneficial behavior is more prevalent than expected can increase levels of that behavior. Equally, informing someone that few other people perform the same behavior can lead them to stop doing it. This can work for both general and clinical populations. The following case study demonstrates how the technique is effective at reducing the prescription of antibiotics by doctors if they are compared to their peers.

### Reducing antibiotic prescribing by doctors through peer comparisons<sup>75</sup>

#### Background

Antimicrobial resistance (AMR) occurs when bacteria become resistant to antibiotics. The result is that common operations or minor incidents may become fatal. As the World Health Organization (WHO) puts it: "The achievements of modern medicine are put at risk by antimicrobial resistance."<sup>76</sup> A recent review estimated that AMR will result in 10 million deaths and \$100 trillion in unachieved GDP a year by 2050.<sup>77</sup> The effects will fall disproportionately on developing countries: 25 percent of deaths in Nigeria could be caused by AMR if trends are not altered.<sup>78</sup> [A more extensive overview and potential actions can be found in the **WISH 2013 Antimicrobial Resistance: In Search of a Collaborative Solution** report.<sup>79</sup>]

See WISH 2013  
Antimicrobial  
Resistance  
report

(Continued)

### The project

One cause of AMR is the overuse of antibiotics in medicine. UK data shows that some doctors are prescribing antibiotics much more often than others.<sup>80</sup> BIT worked with England's Chief Medical Officer to send a letter to the highest antibiotic prescribers, which informed them that they were prescribing at a higher rate than 80 percent of their peers.

### Results

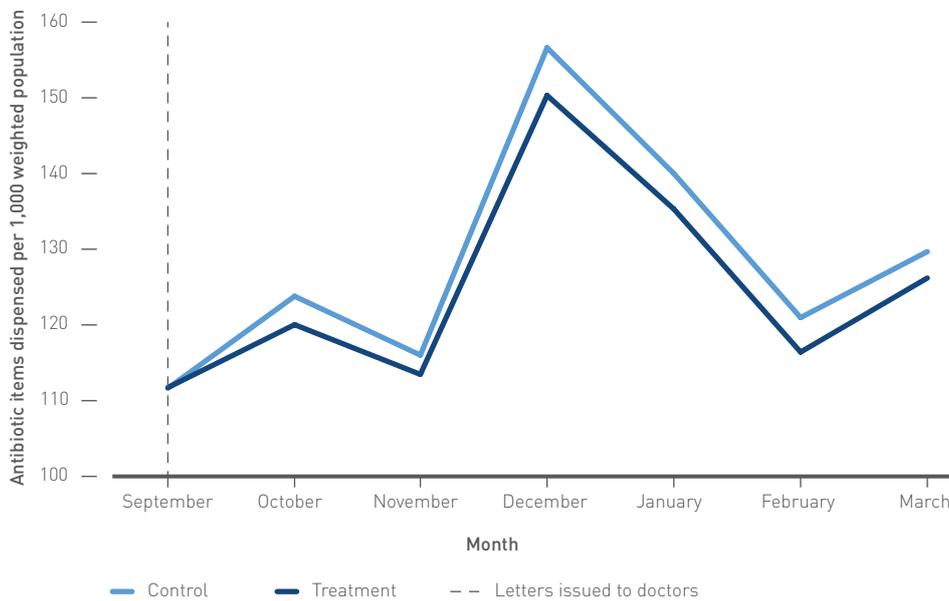
Over six months, the doctors who received the letter reduced their antibiotic prescribing by 3.3 percent compared to those who were not sent the letter (see Figure 6). This reduction amounted to 75,000 fewer doses across 800 practices.

The intervention cost only £4,000, but achieved a similar effect to that aimed for by an incentive scheme costing £23 million.

### Conclusion

Giving social norm feedback can reduce antibiotic prescribing. This approach could be applied to other areas where there are undesirable variations in clinical practice or outcomes.

**Figure 6: Reduction in antibiotic prescribing rates after social norm feedback to doctors**



Source: Adapted from Hallsworth et al. (2016)<sup>81</sup>

## Use social networks to spread behaviors

Social connections can influence health. There is much evidence that behaviors spread through social networks in rapid and potentially unexpected ways. A US study that analyzed decades of health behaviors across social networks found that when a person's spouse quits smoking, their chances of smoking in turn decrease by 67 percent. Friends quitting decreases the likelihood that another member of a friendship group will smoke by 36 percent, co-workers by 34 percent and siblings by 25 percent.<sup>82</sup> Obesity seems to be similarly linked to social networks.<sup>83</sup>

Networks therefore enable the spread of new practices.<sup>84</sup> A famous study showed that uptake of a new drug prescription occurred quickest among doctors most integrated into a medical social network.<sup>85</sup> Another showed that the rate of adoption of family planning methods in Korean villages was determined by the strength of their connections to other people knowledgeable in family planning, abortion and other health matters.<sup>86</sup>

One obvious question for anyone who wants to encourage the spread of behaviors in a social network is who to target. Some studies have suggested that interventions should target individuals who have many social connections, but the evidence for this idea is contested.<sup>87</sup> A recent study in Honduras looked at how social connections could be used to increase adoption of water chlorination and multivitamin usage. Villages were randomly assigned to one of three different approaches: either the intervention was introduced first to villagers with the most social ties; to randomly selected villagers; or to the friends that randomly selected villagers nominated. This last approach was inspired by the 'friendship paradox', which the researchers explain as: "On average, the friends of randomly selected individuals are more central in the [social] network than the individuals who named them; colloquially, 'your friends have more friends than you do'."<sup>88</sup>

The study found that the third approach, which targeted nominated friends of randomly selected villagers, led to the highest overall uptake of the multivitamin intervention. In contrast, targeting highly connected villagers was not more effective than the approach where villagers were randomly selected. There is a real practical value to adopting the 'friends of randomly selected people' approach because it is cheap and can be changed in size and scale (it is not necessary to map entire social networks, for example).

Network studies show that there is a great deal of peer-to-peer influence that is independent of authorities. Tapping into informal peer-to-peer networks and allowing the people themselves to spread changes can therefore be the most effective strategy. The general lesson for leaders of health systems is to try to understand how such networks function and then experiment with different ways of introducing new behaviors into social networks.

## Make it timely

While there are a range of interventions and policies that can help people adopt healthier choices, it is also important to consider *when* interventions are introduced, since people are more receptive to changes at certain points in their life.<sup>89</sup>

### Prompt changes when people are most receptive

People are more receptive to changes at moments that seem significant to them. These moments can be prompted by external events that disrupt existing patterns of behavior, or by a person's internal reflection on their current situation.<sup>90, 91</sup> There are many other moments that may offer effective points of intervention, such as religious or cultural holidays, the start of the year, month or week, and positive or negative life events (for example, becoming a parent, losing a close relative or moving house).<sup>92</sup> The case study below highlights an example of how religious holidays are used to increase diabetes screening in Qatar. Similarly, Ramadan was found to be a particularly timely moment to ask Muslims to join a smoking cessation program in Singapore: over 18 times as many Malay Muslims joined the program during Ramadan alone (3,342) compared to all other months (2,010).<sup>93</sup>

### Increasing pre-diabetes screening in Qatar<sup>94</sup>

#### Background

Qatar has an estimated prevalence of type 2 diabetes in 13 percent of its adult population (17 percent in the Qatari population). Around one-third of the people with diabetes have not been diagnosed and are unaware of their disease. For all those who have developed type 2 diabetes, at least the same number again have pre-diabetes and, without lifestyle changes, are likely to go on to develop the disease.

There are two main ways of diagnosing diabetes or pre-diabetes. Point-of-care capillary blood glucose (CBG) testing is cheaper and more effective at identifying early or pre-diabetes than the alternative hemoglobin A1c. However, CBG requires participants to fast for some time to give accurate results, and this is difficult to arrange in a whole community.

#### The project

A team from Hamad Medical Corporation (the main hospital provider in Qatar), and the NGO Action on Diabetes identified a timely moment to use CBG. During Ramadan 2014, the team set up 20 screening stations at the State Grand Mosque of Qatar, each staffed by two nurses. Adult Muslims fast during the hours of sunlight and daily prayers during Ramadan. Worshippers at Juma'a prayer, who had been fasting since sunrise (more than nine hours), were invited to CBG testing. Imams, as the leaders of the religious community, were involved in encouraging worshippers to take the opportunity for testing.

(Continued)

### **Results**

During the Ramadan pilot 2,177 people were screened. Of those screened, 11.7 percent already knew that they had diabetes from a previous diagnosis. However, 5.3 percent were found to have undiagnosed diabetes, and 26.6 percent were identified as being pre-diabetic. Therefore, almost one-third of those screened were unaware that they had diabetes or were likely to develop the disease. These people were referred to dietary and lifestyle education programs to prevent or reverse the progression of the disease. The success of the screening program meant it was repeated in 2015 with similar results.

### **Conclusion**

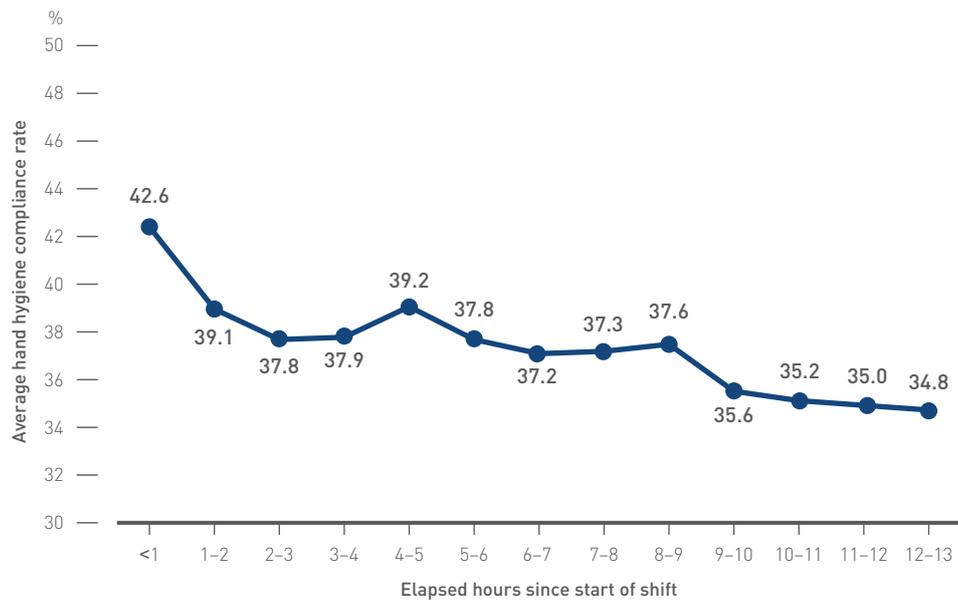
The particular behavioral patterns of fasting and prayer during the holy month of Ramadan provide a timely moment in Islamic communities to screen for diabetes or pre-diabetes. This approach is reinforced when championed by religious leaders, who are important messengers in the community.

Health-related events can also act as moments for change. A large study from the US suggests that having major surgery doubles the likelihood of quitting smoking. This is particularly true for surgery related to smoking such as treatment of cancer and heart disease.<sup>95</sup> Even minor operations increased stop smoking rates by 28 percent and, due to their high occurrence, they have a major impact on population-level quitting rates.<sup>96</sup> Timing an intervention around the surgery can increase this effect. People given a brief preoperative consultation by a nurse (involving smoking cessation brochures, referral to a quit helpline and access to six weeks of nicotine replacement), were 2.7 times more likely to achieve long-term cessation than people who received treatment as usual.<sup>97</sup>

Timing is also crucial when considering the behavior of healthcare professionals. Professionals' hand hygiene compliance deteriorates over the course of a shift, with small peaks in compliance directly after breaks (see Figure 7).<sup>98</sup> This highlights that self-control may be a limited resource, and that interventions need to be timed to counter the 'decision fatigue' that can develop over a demanding shift. Indeed, there are several behaviorally informed handwashing interventions that could be used to do this. For example, many use messages to prompt handwashing, but some others are more creative and use ideas such as creating 'clean' smells as triggers.<sup>99, 100, 101</sup>

We need to understand what times to select for maximum impact because it is often not possible or effective to run a campaign or deliver a message continually.

Figure 7: Compliance with handwashing rules over the course of a shift



Source: Adapted from Dai et al. (2015)<sup>102</sup>

## SECTION 4: TRIALING INTERVENTIONS BRINGS IMPORTANT ADVANTAGES

The previous sections explored potential ways of improving health and healthcare. However, to apply these insights in practice it is necessary to consider: the importance of testing; the extent to which study findings can be applied across different groups; and the sustainability of improvements.

### The importance of trialing interventions

Since behavior is complex, context is powerful, and details matter, we cannot be sure of the exact best way to implement interventions. While we have general principles to guide us (such as the EAST framework), we cannot be sure how these principles will work in practice. Therefore, it is important for policymakers to incorporate simple trials to evaluate the effect of behavioral interventions on healthcare services and outcomes. Trials are often cheap and can deliver results quickly, especially if routinely collected data is used.<sup>103</sup> For example, where appointment reminders are sent and a record is made of which patients attend, reminder messages can be varied to determine which are most effective.

The first step in conducting a trial like this is to establish a clear outcome measure, such as the proportion of healthcare appointments that are missed. However, there are various ways of understanding how an intervention affects the outcome measure. An obvious approach is to measure the outcome before and after, but this can be unreliable because other things may have occurred that affect the outcome. For example, the season may have changed to winter between the start and the end of the intervention making the journey to medical centers more difficult.

Another way might be to compare a group of patients who received one message with a group that received a different one. This can give reliable results if the groups have been selected carefully. However, the two groups may differ in unknown ways that affect the success of the intervention. For example, perhaps one of the group of patients is sicker than the other one.

In general, the most reliable way of determining the effect of an intervention is to allocate the people or groups to take part in the initiative randomly. Choosing at random means that on average, the two groups are the same as each other – that is, the people have the same characteristics: height, weight, wealth, and so on. Ensuring the groups are the same on average is important because it means that any change in the outcome measure must be due to the intervention, not other factors.

‘Randomized controlled trials’ have a reputation for being the gold standard for evidence, but also for being expensive, slow and complex. They do not need to be. There are many opportunities to run quick, low-cost trials that find out the best way of delivering healthcare.

There is another reason why testing interventions is important. Although applying behavioral insights should be seen as improving mainstream policymaking, it can still be seen as a separate, strange and challenging activity. Behavioral change interventions can still be met with skepticism regarding their purpose.<sup>104</sup> These concerns are being addressed by a commitment to trial and assess outcomes reliably. Sharing the results, even where no improvement was observed, also increases credibility.<sup>105</sup> The evidence of impact has changed attitudes and increased the demand for applying behavioral insights.<sup>106</sup>

## How behavioral insights findings can be used across different groups

It is important to understand how behavioral insights findings can be applied in different contexts. In other words: to what extent are results that have been found in one place also achievable elsewhere? There are two main concerns about generalizing findings:

- whether the behavioral concepts mentioned (for example, the power of social norms) hold true across different cultures and contexts; and
- the variability in implementation.

One influential critique highlights how many of the studies in behavioral science have been conducted using people from Western, educated, industrialized, rich and democratic populations.<sup>107</sup> The argument is that findings from these studies may not translate well to different cultures or contexts, other Western countries, or even towards different populations in the same society.<sup>108</sup>

There is some evidence of variability in the extent to which certain biases exist in various societies.<sup>109</sup> Perhaps some of the strongest evidence concerns bias in individualistic versus collectivist self-concepts. This is where people in Western cultures tend to see themselves more as individual, autonomous actors, while people in Eastern cultures tend to see themselves as more connected to others and the situation.<sup>110</sup> These differences may affect how some of the above case studies might work in a specific context. For example, a large review suggests that social norm effects may be larger in non-Western societies.<sup>111</sup> However, humans also share a substantial amount of basic aspects of cognition, motivation and, therefore, behavior.<sup>112</sup> For example, different cultures have been found to have similar emotional expressions<sup>113</sup> and personality characteristics,<sup>114</sup> and are equally mildly dishonest.<sup>115</sup>

The question of generalizing is complex and the evidence is not yet clear. We can offer two main responses. First, as this report shows, there is evidence that interventions that draw on behavioral science concepts can be effective in countries around the world. Second, these questions only increase the importance of trialing interventions to measure their impact.

However, this emphasis on testing and adapting leads onto the second concern: that outcomes may be affected by variations in context and implementation.<sup>116</sup> This concern is not specific to behavioral insights interventions, but is worth noting because of the effect of context on behavior. For example, there is evidence that making HIV testing the default, so people have to actively choose to opt out, greatly increases testing rates. However, some health services in some countries had lower test uptake rates due to shortcomings in leadership, infrastructure, incentives and acceptability of testing.<sup>117</sup> Also, in some cases, increased test rates did not increase *detection* rates. This means that, in some countries, the default was only increasing testing among people who did not actually have HIV. The results show that, in some cases, changing the default to opt out could increase costs without improving outcomes.<sup>118</sup> In other words, there is much evidence that the details of implementation matter.

## Sustainability of behavioral insights interventions

Another evaluation of behavioral insights interventions suggests that they only target short-term or one-off changes in behavior. It is true that many studies only assess short-term outcomes, and that some interventions into long-term weight loss<sup>119</sup> or smoking cessation<sup>120</sup> failed to find a lasting impact.

However, long-term outcomes are particularly sensitive to the way that an intervention is implemented.<sup>121</sup> There are well-known ways to increase the likelihood that a behavior is sustained:

- **Implement the intervention so the target behavior remains the default, becomes a rule of thumb or becomes a habit.** For example, paying people to go to the gym once had no long-lasting effects on behavior, while paying people to go at least eight times in a month led to a sustained increase in gym use, even when this incentive was removed.<sup>122</sup>
- **Carry out the intervention at a time that is close to when the target behavior is to be performed.** For example, reminding drivers to wear seat belts immediately before driving increased seat belt use, while prompting drivers five minutes in advance did not.<sup>123</sup> Therefore, implementing an alarm that goes off when driving without a seat belt is likely to have a bigger impact than a seat belt campaign.
- **Implement reminders.** Repeated reminders for dental check-ups did not lessen their impact on behavior.<sup>124</sup> However, it may be important not to make these reminders too frequent. For example, weekly texts that reminded people to take their HIV medication increased medical adherence, while daily text messages tended to be ignored and did not have an effect on behavior.<sup>125</sup>

# CONCLUSION: EMBEDDING BEHAVIORAL INSIGHTS INTO HEALTH POLICYMAKING

This report makes the case for using behavioral insights to improve health and healthcare worldwide. We provide case studies where this approach has already been put into practice successfully, and offer practical advice about how to apply behavioral insights. There are many opportunities to improve health and healthcare by using simple tools to make practical changes.

Many public sector bodies around the world have already created specific teams or units dedicated to using behavioral insights. This has resulted in the creation of a core set of experts who can be deployed quickly and with reliable results. However, there are several factors that influence whether the team will succeed or fail. The experience of the UK's Behavioural Insights Team suggests that its success was based on the following factors:

## APPLES: Setting up a successful behavioral insights team<sup>126</sup>

| Factor                 | Description  |
|------------------------|--|
| Administrative support | Having the support of senior officials in a government administration sends a valuable signal that behavioral insights are a core function of government.  |
| Political support      | Having public political support for the project can be very important. Even if this is not possible, the team should understand how to present its work so it is aligned with the main political priorities – and public opinion.  |
| People                 | The team needs the right combination of skills, experience and perspectives. Unsurprisingly, one requirement is knowledge of behavioral insights (see below). However, it is equally important to have team members who have experience of working in government and understand how to 'get things done'.  |
| Location               | In many governments, there are a set of locations where decisions about policy and administration are often made. Being physically near these locations means that team members can take advantage of chance meetings and opportunities, which can lead to major breakthroughs.  |
| Experimentation        | Trialing new approaches is not just good practice from a scientific perspective. As noted above, skeptics can be won over if you give them strong evidence that a new approach works, and to what extent.  |
| Scholarship            | A team like this needs to be expert in the latest theories and findings from behavioral science. Strengthening this expertise by creating an advisory panel of academics can provide an external perspective on your work. Having only superficial knowledge can lead to poorly constructed interventions that backfire. At the same time, the team's focus should be on making change in the real world, not solving academic problems. |

However, behavioral insights should not be applied by a dedicated team alone: they offer wider lessons for government. Those who are making health policy should consider how their own actions are influenced by the factors highlighted in this report. We encourage policymakers to investigate new ways of applying the EAST framework to health policymaking.

Although these ideas may require greater effort and self-reflection, adopting them will be essential to maximize the benefits from the finite resources that can be spent on health and healthcare. We hope this report will help decision-makers see health and healthcare differently, provide them with new ideas and enable them to act on those new insights.

## APPENDIX: CASE STUDIES

| Domain                       | Policy area  | Example  | Page |
|------------------------------|--|--|------|
| Public health and prevention | Improved diet                                      | Substituting salt with a low sodium alternative reduces sodium intake  | 15   |
|                              |  | Making default items like packages and tableware smaller means we eat less   | 10   |
|                              |  | Placing healthy, rather than unhealthy, foods in prominent places in food shops – particularly at the end of aisles – increases healthy choices          | 19   |
|                              |  | Introducing a symbol to signify healthier food choices increases purchases of products showing this symbol   | 18   |
|                              |  | Using existing social networks within a community to aid implementation of interventions that improve uptake of multivitamins across the wider community | 22   |
|                              | Suicide prevention                                 | Introducing a new law on painkiller packaging to make it difficult to buy large amounts at once reduces suicides by overdose                             | 14   |
|                              | Accident prevention                                | Putting reference lines on train tracks to attract pedestrians' attention to fast-moving trains reduces fatalities                                       | 18   |
|                              | Smoking cessation                                  | People are more likely to quit smoking when they are required to have surgery – particularly if they receive an intervention at this time                | 24   |
|                              | Reducing the transmission of communicable diseases | Using a substitute such as the highly visible 'Ebola handshake' creates safer social norms for greeting  | 20   |
|                              |  | Targeting handwashing initiatives at professionals at the end of shifts increases compliance   | 24   |

| Domain                              | Policy area  | Example  | Page |
|-------------------------------------|--|--|------|
| Use and delivery of healthcare      | Improved engagement with healthcare  | Creating new reminder messages that attract attention reduces missed appointments  | 17   |
|                                     |  | Timing the offer to coincide with Ramadan fasting increases uptake of diabetes screening   | 23   |
|                                     | Medicine adherence   | Using Skype calls to verify adherence to tuberculosis medicine, rather than requiring patients to visit doctors in persons improves medicine adherence | 15   |
|                                     | Patient safety   | Using color-coded observation charts clearly flags when a patient's condition is deteriorating   | 19   |
|                                     |  | Lowering the default amount of air blown into patients' lungs in intensive care units reduces mortality rates  | 13   |
| Preventing antimicrobial resistance | Telling doctors when they are prescribing antibiotics at a higher rate than their peers reduces unnecessary antibiotic prescribing | 20   |      |

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Any errors or omissions remain the responsibility of the authors.

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