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Public Health England

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Behaviour change: digital and mobile health interventions

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All problems (adverse events) related to a medicine or medical device used for treatment or in a procedure should be reported to the Medicines and Healthcare products Regulatory Agency using the Yellow Card Scheme.

Local commissioners and providers of healthcare have a responsibility to enable the guideline to be applied when individual professionals and people using services wish to use it. They should do so in the context of local and national priorities for funding and developing services, and in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities. Nothing in this guideline should be interpreted in a way that would be inconsistent with complying with those duties.

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This guideline is the basis of QS167.

Overview

This guideline covers interventions that use a digital or mobile platform to help people eat more healthily, become more active, stop smoking, reduce their alcohol intake or practise safer sex. The interventions include those delivered by text message, apps, wearable devices or the internet. The guideline only includes those that are delivered by the technology itself and not by healthcare professionals using technology to deliver interventions.

NICE has also produced guidelines covering general approaches to behaviour change and individual approaches to behaviour change.

Who is it for?

- Local policy makers and commissioners
- Individuals, groups or organisations wishing to work or working with health and social care service providers
- Designers and providers of digital and mobile health interventions and programmes
- Behaviour change practitioners
- Trained staff working in health and social care services who have contact with the general public
- People who want to improve their health-related behaviours (concerning diet and physical activity, smoking, alcohol use and safer sex), their families or carers, and other members of the public

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Recommendations

People have the right to be involved in discussions and make informed decisions about their care, as described in your care.

Making decisions using NICE guidelines explains how we use words to show the strength (or certainty) of our recommendations and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity) and safeguarding.

1.1 Developing digital and mobile health interventions

These recommendations support adopting healthy behaviours in the health and lifestyle areas covered in this guideline (eating more healthily, becoming more active, stopping smoking, reducing alcohol intake, practising safer sex).

1.1.1 Refer to the NICE evidence standards framework for digital technologies when developing and evaluating digital and mobile health interventions for behaviour change.

1.1.2 Follow the advisory frameworks for assessment when developing and evaluating digital and mobile health interventions for behaviour change (such as Public Health England's guidance on evaluating digital health products, NHS Digital's digital assessment questions and the Department of Health and Social Care's code of conduct for data-driven health and care technology).

1.1.3 When designing digital and mobile health interventions, use evidence-based behaviour change techniques that help people start and maintain changes. These include: goals and planning, feedback and monitoring, and social support (see NICE's guideline on behaviour change: individual approaches).

1.1.4 Consider designing interventions that allow the user to tailor goals to their own

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needs.

1.1.5 Do not develop interventions or components that allow people to set unhealthy or dangerous goals, for example goals that would lead to the person being underweight.

1.1.6 Design interventions so they have the flexibility to be:

- scaled up
- customised for local needs and use.

1.1.7 Make information available about:

- how users can check and set preferences for how their personal information and data may be used
- when the intervention is likely to use mobile data, and how much mobile data it is likely to use
- any additional costs
- terms and conditions.

1.1.8 When developing digital and mobile health interventions, involve a wide range of stakeholders, including potential users, as early as possible and throughout development to:

- Develop and review the content, structure, interface and flow of the intervention.
- Identify the best digital platforms for the target population.
- Identify and address any aspects of the intervention that may unintentionally increase inequity and digital exclusion.
- Discuss and ensure that users understand who the intervention is for, which behaviour it is trying to change, its aims, any possible harms, the time needed to establish behaviour change and how frequently users are likely to interact with the intervention.

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1.1.9 Use feedback from testing and after releasing the intervention to continually improve the intervention.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on developing digital and mobile health interventions.

Full details of the evidence and the committee's discussion are in evidence review A: smoking behaviour, evidence review B: alcohol, evidence review C: diet, physical activity and sedentary behaviour and evidence review D: sexual health behaviour.

1.2 Commissioning digital and mobile health interventions

These recommendations support adopting healthy behaviours in the health and lifestyle areas covered in this guideline (eating more healthily, becoming more active, stopping smoking, reducing alcohol intake, practising safer sex).

1.2.1 Consider digital and mobile health interventions as options for behaviour change.

1.2.2 If commissioning digital and mobile health interventions, do this as a supplement to existing services, not as a replacement.

1.2.3 Assess whether specific digital and mobile health interventions could meet some of the needs of the local population by using a needs assessment, including the need to address digital exclusion.

1.2.4 Check expert sources (such as the NHS apps library) for any existing evidence-based digital and mobile health interventions that can meet local needs. Do this before commissioning the development of a new one.

1.2.5 Select interventions that meet current frameworks, regulatory advice and evidence standards for the development and use of digital and mobile health interventions (see the NICE evidence standards framework for digital technologies).

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1.2.6 If a new digital and mobile health intervention is needed, assess whether a local-level multidisciplinary collaboration, or partnerships with other health and care organisations, would be appropriate to share development costs.

1.2.7 When commissioning digital and mobile health interventions, take into account equality of access as part of an equality impact assessment. For example:

- anything that might limit usability of the intervention (such as literacy, sensory impairments and language barriers)
- potential related costs for users (such as cost of apps and data usage)
- availability of the necessary hardware and operating system
- access to the internet, phone signal and data networks (for example in rural communities, closed institutions and detention settings)
- protected characteristics and levels of deprivation.

1.2.8 Be aware that interventions without adverts are preferable, but interventions with adverts may help reduce costs for users.

1.2.9 Do not commission digital and mobile health interventions that are funded or developed by the tobacco industry.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on commissioning digital and mobile health interventions.

Full details of the evidence and the committee's discussion are in evidence review A: smoking behaviour, evidence review B: alcohol, evidence review C: diet, physical activity and sedentary behaviour and evidence review D: sexual health behaviour.

1.3 Using digital and mobile health interventions

These recommendations support adopting healthy behaviours in the health and lifestyle areas covered in this guideline (eating more healthily, becoming more active, stopping smoking, reducing alcohol intake, practising safer sex). These are to support healthcare

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professionals.

1.3.1 Consider digital and mobile health interventions as an option for behaviour change as an adjunct to existing services. Be aware that their effectiveness is variable.

1.3.2 When discussing the use of a digital or mobile health intervention with the person, take into account:

- their preferences and behaviour change goals, and interventions that allow tailoring towards these
- their capability, opportunity and motivation for change
- their digital, health and reading literacy
- the digital platforms available
- the aim of the intervention
- how frequently and intensely they are willing to use interventions
- that some interventions may not have evidence of effectiveness
- how it would fit into their current care pathway.

1.3.3 Advise people who may use a digital and mobile health intervention to:

- use one from an expert source if available (such as the NHS apps library) because it is likely to have been assessed for safety, effectiveness and data security
- check and set preferences for how their personal information and data may be used
- be aware of any possible extra costs
- check they are willing and able to pay any associated costs
- be aware that the intervention may use mobile data after it is downloaded
- seek advice from a healthcare professional if they have health concerns while

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using the intervention

- read the terms and conditions.

1.3.4 When advising on the use of a digital and mobile health intervention, take into account whether the content is appropriate for the user and any possible adverse effects. For example, whether the intervention could:

- lead to people self-managing with digital interventions when their behaviour could be more effectively modified with existing health or social care services that involve clinical expertise, face-to-face interaction or treatment
- prevent vulnerable people from accessing face-to-face services and interventions
- have components that could encourage the person to adopt unhealthy behaviours, such as excessive exercise or disordered eating
- have a negative impact on some people's mental health, possibly from using social media components
- increase anxiety about health and lead people to consult healthcare professionals more often.

For a short explanation of why the committee made these recommendations and how they might affect practice, see rationale and impact section on using digital and mobile health interventions.

Full details of the evidence and the committee's discussion are in evidence review A: smoking behaviour, evidence review B: alcohol, evidence review C: diet, physical activity and sedentary behaviour and evidence review D: sexual health behaviour.

1.4 Diet and physical activity

1.4.1 Consider digital and mobile health interventions as an option for people who would benefit from improving their diet or increasing their physical activity levels as an adjunct to existing services. Be aware that their effectiveness is variable.

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1.4.2 Advise people to use digital and mobile health interventions that include self-monitoring, such as recording by activity trackers, or food or physical activity diaries. This can help the person to review their own progress towards their diet or physical activity goals.

1.4.3 If you are aware that the person is at risk of developing or resuming an eating disorder or another unhealthy behaviour such as excessive exercise, consider interventions that do not include self-monitoring.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on diet and physical activity.

Full details of the evidence and the committee's discussion are in evidence review C: diet, physical activity and sedentary behaviour.

1.5 Smoking

1.5.1 Consider digital and mobile health interventions as an option to help people stop smoking as an adjunct to existing services. Be aware that their effectiveness is variable.

1.5.2 Advise the person who wants to stop smoking using a digital or mobile health intervention that text message-based interventions with tailored messages may be more effective than other digital and mobile health interventions.

1.5.3 Do not offer digital and mobile health interventions that are known to be funded or developed by the tobacco industry.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on smoking.

Full details of the evidence and the committee's discussion are in evidence review A: smoking behaviour.

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1.6 Alcohol use

1.6.1 Consider digital and mobile health interventions as an option to reduce alcohol intake as an adjunct to existing services. Be aware that their effectiveness is variable.

1.6.2 Advise the person that some interventions may include particular components that suit them better and reduce their alcohol intake more than other components. For example, a component that compares the person's intake with that of their peers (a personalised normative feedback approach).

1.6.3 Advise the person that interventions they interact with multiple times may be better than a one-off intervention, but a one-off intervention is better than no intervention at all.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on alcohol use.

Full details of the evidence and the committee's discussion are in evidence review B: alcohol.

1.7 Unsafe sexual behaviour

1.7.1 Consider online brief interventions as an option to help reduce unsafe sexual behaviour as an adjunct to existing services. Be aware that their effectiveness is variable.

1.7.2 If advising people to use online brief interventions, consider ones that include videos with set choice points, scripted scenarios or dramatisation.

1.7.3 When advising on the use of online brief interventions, tell the person that some may have sexually explicit content.

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For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on unsafe sexual behaviour.

Full details of the evidence and the committee's discussion are in evidence review D: sexual health behaviour.

Terms used in this guideline

This section defines terms that have been used in a particular way for this guideline. For other definitions see the NICE glossary or, for public health and social care terms, the Think Local, Act Personal Care and Support Jargon Buster.

Choice points

In an interactive scripted scenario, choice points give the person using the intervention options on what the character should do next at key moments. This models how the person would react in a similar situation in real life, and the consequences of their actions. The intervention can give feedback on how choosing differently may help them change their behaviour.

Characteristics

A characteristic is an attribute that applies to the whole intervention. For example, how often it will be performed, or if it is specific for a group with a certain condition.

Components

A component is one part of an intervention. For example, a diary that people can use to track their eating habits. Interventions can be made up of many components.

Digital and mobile health interventions

Digital health interventions are delivered through: hardware and electronic devices, such as smartwatches; software, such as computer programs or apps; and websites. Mobile health interventions can be delivered through phones, for example by texts, apps or

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interactive voice response calls. These technologies can deliver interventions independently from healthcare professionals, or healthcare professionals can use them to deliver interventions remotely. This guideline covers digital and mobile health interventions delivered by the technology itself and not by healthcare professionals using technology to deliver interventions.

Digital exclusion

Digital exclusion describes circumstances in which people are unable or do not want to use digital services. This may be because of a lack of digital skills, confidence, motivation or internet access, or the services may not be accessible. See the NHS information on digital exclusion.

Digital platforms

Examples include apps, computer programs, websites, smartwatches, interactive voice response systems, or texts.

Disordered eating

Disordered eating describes a range of irregular eating behaviours. These can include symptoms that reflect many but not all of the symptoms of eating disorders, such as anorexia nervosa, bulimia nervosa and binge eating disorder. Examples of disordered eating include fasting or chronic restrained eating, skipping meals, binge eating, self-induced vomiting, restrictive dieting, and laxative or diuretic misuse.

(For further information on eating disorders refer to the NHS information on eating disorders.)

Excessive exercise

Exercising more than is recommended if it is detrimental to the person's mental, social or physical wellbeing.

Scaled up

Technology needs to be designed so it has the ability to cope with an increasing number

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of people or organisations using it across different parts of the country. The digital architecture must be able to support this. How the technology is supported and regulated is different when more people are using it. An intervention that supports few people in one region is a smaller scale intervention than one that supports more people across multiple regions.

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Recommendations for research

The guideline committee has made the following recommendations for research.

1 Engaging people with digital and mobile health interventions

How can providers and healthcare professionals identify groups that do not initially engage, or do not stay engaged, with digital and mobile health behaviour change interventions?

2 Effective components of behaviour change interventions

What components and characteristics of digital and mobile health behaviour change interventions are most effective, separately and in combination, to achieve behaviour change?

3 Effects of behaviour change interventions on low socioeconomic and other underserved groups

What is the effectiveness and cost effectiveness of digital and mobile health behaviour change interventions in low socioeconomic and other underserved groups?

4 Populations that will benefit most from digital and mobile health interventions

Are digital and mobile health behaviour change interventions as effective as face-to-face, standard care, or combination approaches for some populations?

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5 Harms of behaviour change using digital and mobile health interventions

What are the harms and adverse effects associated with different digital and mobile health behaviour change interventions?

For a short explanation of why the committee made the recommendations for research, see the rationale on recommendations for research.

Full details for all of the recommendations for research for this guideline are in evidence review A: smoking behaviour.

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Rationale and impact

These sections briefly explain why the committee made the recommendations and how they might affect practice.

Sections on developing, commissioning, and using interventions are applicable to the behaviours covered in this guideline.

Developing digital and mobile health interventions

Recommendations 1.1.1 to 1.1.9

Why the committee made the recommendations

The committee discussed the lack of evidence surrounding which components and characteristics of interventions would lead to healthy behaviour change in different populations. This is common to all behaviours and is why the recommendations cannot be more specific. The committee made recommendations for research to fill this gap in evidence.

The committee noted that digital and mobile health interventions is a rapidly changing and developing area. As such, they agreed it was important to develop them in line with national supporting frameworks such as the NICE evidence standards framework for digital technologies to ensure they are as effective as possible. In addition, the committee agreed that the government digital service standard could be followed when creating interventions for public services.

The committee discussed the views from expert testimony that said many developers of these interventions do not have a background in healthcare. This is another reason why the committee wanted to stress the importance of using these advisory frameworks, as well as NICE frameworks.

In the committee's experience regarding approaches to behaviour change in general, the specific behaviour change techniques they recommended have been shown to be effective. But based on the evidence, the committee were unable to draw firm conclusions about how effective these techniques are when used with digital and mobile health

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interventions. However, they agreed that interventions with the listed behaviour change techniques are more likely to be effective than those without them. The conclusions of the committee also agreed with those in the NICE guideline on behaviour change: individual approaches, which notes that behaviour change interventions should include behaviour change techniques including goals and planning, feedback and monitoring, and social support.

The committee discussed and agreed that it is important for those developing interventions to consider their possible future use, which may be on a wide scale or much more localised. They agreed that it was important for interventions to be designed so that they can be scaled up and can be customised for local needs.

The committee agreed that people are more likely to change their behaviour using interventions that allow them to tailor goals to their needs. The evidence showed that interventions have variable effectiveness, and it is not clear which interventions result in positive behaviour change or in whom. So the committee agreed that developers should include tailored goals in interventions but should be transparent about how the interventions tailor more complex goals to people's needs.

NICE looked for evidence on adverse effects but did not find any. Based on expert testimony and their experience, the committee discussed interventions that may allow people to set goals that may be unhealthy for them. They were particularly concerned about the possibility of setting goals that would lead to the person becoming underweight, and the potential for this to cause disordered eating, exacerbate eating disorders or cause relapse. So they emphasised that interventions should not be designed to allow people to do this.

The committee were aware that developers have a responsibility to make information about their interventions clear. This allows people to make informed decisions on the interventions they choose. Some differences, such as ongoing data use after the intervention has been downloaded, are not obvious and may lead to unwanted costs for the user.

Based on limited evidence and expert testimony the committee understood that it can be challenging to get people to use these interventions on an ongoing basis. They agreed that more collaboration between developers, stakeholders and potential users would be likely to produce more useful and engaging interventions.

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For example, if people with physical disabilities and sensory impairments or children and young people are given the opportunity to contribute, they are more likely to use the interventions, and the interventions are more likely to be effective. Some users may say how frequently they would prefer to use the intervention. For example, it could be a one-off intervention, multiple brief interventions or interventions that people interact with multiple times.

Owing to the impact of COVID-19, development might be conducted remotely using digital technology. This could mean that people who are not digitally literate may not be well represented. Developers should make efforts to include these people if possible, for example in design or testing.

The committee discussed expert testimony and agreed that interventions may be used differently after they have been released. This may mean components that worked well in development may work differently in real life. They agreed it is important to gather feedback after release to improve the intervention based on real world use.

How the recommendations might affect practice

Designing interventions that can be scaled up to be used by many people may help reach more people at a lower average cost. Wider implementation would allow local usage patterns to be monitored and services to be standardised between regions.

Developers will need to work with topic experts to develop content that meets evidence standards. This may mean sharing development costs with other organisations, which would help to reduce the resource impact.

Return to recommendations

Commissioning digital and mobile health interventions

Recommendations 1.2.1 to 1.2.9

Why the committee made the recommendations

There is inconsistent evidence that digital and mobile health interventions may be

effective for behaviour change. There is insufficient evidence to suggest that they can be used instead of other services.

Some services that include face-to-face contact are currently being delivered remotely (such as by phone or video calls) by healthcare professionals while social distancing measures are in place. It is important to keep these services available, whether face to face or remotely delivered, to ensure that digital exclusion does not increase health inequalities.

The committee agreed that it is important that existing services are not simply replaced by a digital or mobile health intervention that may be less effective. There were very few studies that compared digital and mobile health interventions with usual care, which made it difficult to make a reliable comparison. But they recognised that the interventions could be effective for some people. So, they recommended considering them as an adjunct to other individual behaviour change services.

During the COVID-19 pandemic, many face-to-face services are being delivered remotely, such as by phone or video calls. The committee discussed the possible impact of this on the commissioning process, including the possibility that some services may be delivered in this way for an unknown time period, or possibly permanently. Commissioners may need to be aware of this possibility, assess any effects on health and wellbeing or on inequalities, and mitigate this.

The committee discussed the importance of differences in local populations and assessing local needs when commissioning a digital or mobile health intervention. These needs would be routinely assessed by a Joint Strategic Needs Assessment.

They agreed that these new technologies should cater for groups that face inequalities in accessing remotely delivered interventions. For example, by making them accessible for people with learning disabilities, problems with hearing or vision, mobility requirements, neurodevelopmental disorders, cancer, cognitive impairment, or mental health problems.

The committee also agreed that expert sources would only list interventions that have been assessed for safety, effectiveness and data security. So they highlighted the need to check those sources before commissioning any new interventions.

Commissioning the development of new interventions can be costly. By collaborating, trusts, local authorities and developers may be able to reduce costs. Collaboration could

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also lead to coordinated implementation so the interventions can reach a wider audience. Normal procedures and policies for collaborative working should be followed before starting development and when adapting an existing intervention.

Expert testimony suggested that interventions are often developed independently by either healthcare, policy or digital professionals, not collaboratively. Multidisciplinary teams would ensure that interventions are as useful and relevant as possible.

There was no specific evidence on equalities, but the committee agreed that not everyone may have access to digital and mobile interventions. An equality impact assessment can inform how interventions affect different groups. So, they made a recommendation to ensure that any communication, access and cost issues identified are addressed.

The committee were aware that interventions can contain adverts, some of which may counter the aims of the intervention and harm users. But interventions with adverts may reduce costs, thereby allowing more people to access them. On balance, the committee concluded that the benefits of adverts reducing costs for users outweighed the potential harms of inappropriate adverts.

How the recommendations might affect practice

Commissioners would use the NICE evidence framework and a needs assessment when choosing digital or mobile interventions.

Networks may be needed for collaboration between regions and people, which may need to be set up if they do not already exist. These networks will help to share costs.

Return to recommendations

Using digital and mobile health interventions

Recommendations 1.3.1 to 1.3.4

Why the committee made the recommendations

The committee could not conclude which interventions and for whom digital and mobile health interventions would be effective on their own because of the variable evidence.

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They also noted that most of the evidence was not compared against current practice. Therefore, the committee agreed that they would not recommend that these interventions replace existing evidence-based services. But they agreed that they may be more suitable for people who want a more discreet tool to help change their behaviour or who cannot get to face-to-face consultations.

During social distancing, many face-to-face services are being delivered remotely, such as by phone or video calls. Digital and mobile interventions can therefore still be used as an adjunct to these services. The committee anticipate there may be a drift from remotely delivered non-digital services to digital-only services. Healthcare professionals should be wary not to push digital and mobile health interventions onto people they are unsuitable for, because this may exacerbate inequalities in some groups.

Based on their experience, the committee agreed that behaviour change is complex. The person's preferences and goals have to be taken into account alongside other considerations, such as in the COM-B model (capability, opportunity and motivation), to identify what type of interventions may be the most beneficial. It is important to discuss motivations because wanting to set unhealthy goals could indicate an underlying cause that needs to be treated.

In addition, if a consultation is conducted remotely during social distancing, healthcare professionals can assess and discuss with the person how comfortable they are with using technology for this purpose. If they are not happy using technology for this, digital or mobile health interventions may not be suitable for them.

Because digital and mobile technology is a fast-moving field, the committee agreed that in any discussions it was best to focus on components and characteristics rather than on specific named individual interventions. This is because individual interventions may become unavailable or their content may change.

The committee agreed with expert testimony that said users, particularly people from vulnerable groups, need to be made aware of certain issues relating to digital and mobile health interventions and how they work. For example, they may use the person's personal data if the person does not opt out of this option. There are many interventions available and the quality varies.

The committee discussed that potential users may trust digital and mobile health interventions more than other (non-health-related) digital and mobile technologies and

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believe that they are safer to use. So they may not be as alert to data security issues as they would be normally. Therefore, the committee recommended using interventions from an expert source, to reduce the risk to the user.

Data usage is another point to be aware of and is likely to be higher for interventions that continually track activity than those that only use data when they are first downloaded.

They also agreed that using digital and mobile health interventions may lead to some people having limited interaction with healthcare professionals and that this may not be suitable for everyone, in particular those in vulnerable groups. These include people being trafficked and young people who are vulnerable to sexual exploitation. Both groups may be kept hidden by abusers, using these apps instead of a consultation that would expose the person to authorities.

The committee discussed evidence from expert testimony that digital and mobile health interventions can lead to some unintended consequences, specifically to unhealthy behaviours such as disordered eating, excessive exercise or health anxiety.

The committee agreed that it was important to make healthcare professionals aware of these risks to try to mitigate them if possible. This can be done during the consultation when digital and mobile health interventions are first discussed and followed up at future appointments.

How the recommendations might affect practice

Extra time may be needed for healthcare professionals and users to discuss digital and mobile health interventions as an option for behaviour change. But after the initial consultation, because people use these interventions on their own, healthcare resources may be freed up for other activities. Use of these interventions may also lead to people not taking up other resource-intensive services. This may lead to cost savings. There may be increased costs due to adverse consequences of using the intervention, for example increased consultations related to increased anxiety.

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Diet and physical activity

Recommendations 1.4.1 to 1.4.3

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Why the committee made the recommendations

Evidence showed that digital and mobile health interventions may help people to reduce their weight, increase their fruit and vegetable intake and become more physically active. The committee were confident that some interventions may work and some people would benefit from using them. But the evidence was variable, so they were not able to say which interventions would work or in whom. Therefore, they recommended considering these interventions as an option alongside other individual behaviour change services.

During social distancing, many face-to-face services are being delivered remotely, such as by phone or video calls. Digital and mobile interventions can therefore still be used as an adjunct to these services.

The committee discussed evidence and heard from expert testimony that self-monitoring may help people lose weight and become more physically active. This is because it gives people the opportunity to review their own progress towards their diet and physical activity goals. (See also NICE's guideline on behaviour change: individual approaches).

Expert testimony also warned that self-monitoring may be harmful to people who have, or who have previously had, an eating disorder or exercise addiction because it may become excessive. (Self-monitoring is part of disordered eating and excessive exercise.) So the committee agreed that interventions without self-monitoring might be more appropriate for this group.

How the recommendations might affect practice

Professionals need time and resources to check that potential users are not at risk of harmful behaviours by using these interventions, especially if they contain self-monitoring aspects.

More people using digital or mobile health interventions may mean fewer face-to-face appointments, making resources available for other services and saving costs.

Return to recommendations

Smoking

Recommendations 1.5.1 to 1.5.3

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Why the committee made the recommendations

There was evidence that digital and mobile health interventions can help people to stop smoking, although it was unclear which interventions and in whom they would work. Most of the evidence did not compare against typical services for smoking cessation in the UK. On the basis of the evidence, the committee recommended considering these interventions as an option alongside other individual behaviour change services.

During social distancing, existing face-to-face services are being delivered remotely, such as by phone or video calls. Digital and mobile interventions can therefore still be used as an adjunct to these services.

The committee discussed the limited evidence that suggested that interventions using tailored text messages may be more effective than other digital and mobile health interventions. They used this and their expertise to agree a recommendation on the use of tailored messages. There was also evidence that using text messages as a supplement to usual care was cost effective.

The committee agreed that interventions developed or funded by the tobacco industry are not appropriate. This is in line with NICE's obligation under Article 5.3 of the World Health Organization Framework Convention on Tobacco Control to protect public health policies from the commercial and other vested interests of the tobacco industry.

How the recommendations might affect practice

More people using digital or mobile health interventions may mean fewer face-to-face appointments, making resources available for other services and saving costs.

Return to recommendations

Alcohol use

Recommendations 1.6.1 to 1.6.3

Why the committee made the recommendations

There was limited evidence that digital and mobile health interventions can help people reduce their alcohol intake. But the committee agreed that some interventions may work

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and for some people, so they recommended considering them as an option alongside other individual behaviour change services.

During social distancing, existing face-to-face services are being delivered remotely, such as by phone or video calls. Digital and mobile interventions can therefore still be used as an adjunct to these services.

Some evidence showed that presenting people who drink at hazardous levels with details of how much they consume may help to reduce their drinking. Effective components may be different from person to person based on their lifestyle and health.

Limited evidence showed that interventions that people need to interact with several times were more effective than one-off interventions – although a one-off intervention is more effective than doing nothing. Because the committee did not want anyone to be excluded from the advice provided, they made a recommendation to reflect this.

How the recommendations might affect practice

More people using digital or mobile health interventions may mean fewer face-to-face appointments, making resources available for other services and saving costs.

Return to recommendations

Unsafe sexual behaviour

Recommendations 1.7.1 to 1.7.3

Why the committee made the recommendations

The evidence identified covered several populations including adolescents, men who have sex with men, people with HIV and university students. But because it was very limited, the committee agreed that they could not make individual recommendations for each of these groups. Most of the evidence related to online brief interventions (for example, a 15-minute interactive condom use intervention). There was limited evidence that these interventions showed some effectiveness in helping people change their sexual behaviour.

Limited evidence showed that interactive videos can help people change their sexual

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behaviour. These are scripted scenarios that need the person to take part in the story. Dramatisations, with the person just watching the story, are also effective. The committee agreed that people putting themselves in these 'virtual' situations allows them to experience difficult sexual situations and develop healthy response mechanisms that can be applied in real life. The committee also agreed that this approach is unlikely to be as effective for changing other behaviours because it works well for sexual behaviour in particular.

The committee were aware that some interventions may contain sexually explicit content. They were also aware that some people should not or may not want to view this material. They agreed that raising awareness of this issue would help people choose interventions that are appropriate for them.

The committee agreed that they would only recommend that people consider these interventions, and only as an option alongside other individual behaviour change services, for people who are considered to be Gillick competent (see the Department for Health and Social care's reference guide to consent for examination or treatment for information on Gillick competence).

During social distancing, existing face-to-face services are being delivered remotely, such as by phone or video calls. Digital and mobile interventions can therefore still be used as an adjunct to these services.

How the recommendations might affect practice

More people using digital or mobile health interventions may mean fewer face-to-face appointments, making resources available for other services and saving costs.

Return to recommendations

Recommendations for research

Why the committee made the recommendations

There is limited evidence on why and when people engage with and disengage from digital and mobile health interventions. This is important because initial engagement is lower in people with lower socioeconomic status, and there may be other members of the

population not currently visible to services.

The committee agreed that research into ways that healthcare professionals can identify and encourage people to engage with and continue using digital and mobile health interventions is needed (see the recommendation for research on engaging people with digital and mobile health interventions).

The committee was aware that specific components or characteristics may be more effective at changing or targeting specific behaviours. Evidence on this is complex, and digital and mobile health interventions is a rapidly changing field. The committee agreed that research is needed to evaluate the effectiveness of specific components and characteristics (see the recommendation for research on effective components of behaviour change interventions).

There is limited information on the effectiveness of digital and mobile health interventions for different socioeconomic groups, people with disabilities or underserved populations. The committee discussed the potential difficulties with recruitment and possible additional costs associated with reaching underserved populations. They agreed that more information on this topic would help to tackle health inequalities (see the recommendation for research on effects of behaviour change interventions on low socioeconomic and other underserved groups).

The committee agreed that, as the field develops, it will be helpful to know if there are specific groups that may get as much benefit from digital and mobile health interventions used alone as they would from existing services. This question is more significant in light of the current context of the COVID-19 pandemic because the committee expect more people to consider using remote interventions (see the recommendation for research on populations that will benefit most from digital and mobile health interventions).

No published evidence was found on adverse effects or potential harms for any of the behaviour change areas considered. The committee discussed this and heard from expert testimony about potential harms related to digital and mobile health interventions. The committee noted that more published research is needed on harms, adverse effects or unintended consequences (see the recommendation for research on harms of behaviour change using digital and mobile health interventions).

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Context

Digital and mobile health interventions, such as apps, online programmes, websites, text messages and wearable devices, are widely used. Using these technologies may help people change their behaviour, which in turn, can help improve their health.

Addressing health-related behaviours such as those relating to physical activity, smoking and alcohol intake can help reduce the risk of developing chronic conditions such as diabetes, cardiovascular diseases, respiratory conditions, cancer and liver disease. Digital and mobile interventions may also help people to self-manage, self-monitor or improve these behaviours and improve their mental, social and emotional wellbeing.

This guideline covers everyone, including children and young people (and their families or carers), who would benefit from changing current unhealthy behaviours. It includes interventions that are delivered by the technology and do not need input from healthcare professionals.

Digital and mobile technology is a fast-moving field, so the guideline did not look at specific digital and mobile health interventions, as these may change or are likely to be updated and superseded. Instead, it assesses the components and characteristics of interventions.

The guideline also doesn't cover people who have already changed their behaviours and want to maintain the change.

This guideline was developed before the COVID-19 pandemic. It is uncertain how practice and consultations will be carried out after the pandemic has ended but it may result in more people using remote consultations. We have highlighted likely impacts on the guideline in the rationale sections, but we have not changed any recommendations as a result of the pandemic or its possible effects on future practice.

The behaviours included in this guideline align with those in NICE's guideline on behaviour change: individual approaches.

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Finding more information and committee details

To find NICE guidance on related topics, including guidance in development, see the NICE topic page on behaviour change.

For full details of the evidence and the guideline committee's discussions, see the evidence reviews. You can also find information about how the guideline was developed, including details of the committee.

NICE has produced tools and resources to help you put this guideline into practice. For general help and advice on putting our guidelines into practice, see resources to help you put NICE guidance into practice.

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