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Improving health outcomes for adults with severe mental illness and comorbid diabetes: is supporting diabetes self-management the right approach?

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Manuscripts

Review

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4 **Improving health outcomes for adults with severe mental illness and comorbid**
5 **diabetes: is supporting diabetes self-management the right approach?**
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11 **Key words**

12
13 Psychosis, severe mental illness, diabetes, self-management, structured education,
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15 multi-morbidity
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20 **Introduction**

21
22 Diabetes is a common problem in people with severe mental illness (SMI is an umbrella
23 term used to describe disorders in which psychosis occurs, and includes schizophrenia
24 and bipolar disorder), and is associated with poor health outcomes and reduced life
25 expectancy (Holt and Mitchell, 2015). Prevalence estimates pooled across 42
26 international studies suggest that around 13% of the SMI population has diabetes (Ward
27 and Druss, 2015), a figure more than twice that in the general population (Shaw, *et al.*,
28 2010). This inequality is likely to increase, as recent analyses of primary care data
29 show diabetes prevalence increasing year-on-year for the whole population, with the
30 *difference* between people with and without SMI widening (Reilly, *et al.*, 2015, Ward
31 and Druss, 2015).
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45 We have established a multidisciplinary research programme called DIAMONDS
46 (**D**ibetes and **M**ental Illness: Improving **O**utcomes and **S**ervices), which aims to
47 increase understanding about the comorbid relationship between diabetes and SMI, and
48 develop effective interventions for people living with both these conditions. In this
49 paper, we explore whether supporting diabetes self-management, which is the
50 cornerstone of good diabetes management, offers the right approach. We draw on
51 evidence from the diabetes and mental health literature to outline why improving
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1
2 diabetes care for people with SMI is important; consider why diabetes self-management
3
4 education offers the potential to improve health outcomes; discuss the risks of using this
5
6 approach for people with SMI; set out the key research questions that need to be
7
8 answered in order to make this approach work; and consider the implications for mental
9
10 health nursing.
11

12 13 14 15 **Why is it an important area?** 16

17
18 People with SMI have poorer physical health and a reduced life expectancy by around
19
20 15-20 years when compared to the general population (Brown, *et al.*, 2010), with higher
21
22 rates of modifiable cardiovascular risk factors (Osborn, *et al.*, 2015), and increased
23
24 prevalence of a range of chronic health conditions including metabolic syndrome,
25
26 diabetes, cardiovascular disease, stroke, and asthma (Reilly, *et al.*, 2015). The increased
27
28 risk of developing diabetes and its associated complications, (which include
29
30 cardiovascular disease, retinopathy, cerebrovascular disease, nephropathy and
31
32 neuropathy), contributes significantly to the poor physical health and shorter life
33
34 expectancy seen in people with SMI compared to the general population (Vinogradova,
35
36 *et al.*, 2010).
37
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39
40 Reasons for the comorbid relationship between diabetes and SMI are related to a
41
42 combination of factors, which are likely to be synergistic and interactional in ways that
43
44 we are yet to understand (Ward and Druss, 2015). These include: genetic features and
45
46 symptomology associated with the mental illness; metabolic side effects of psychotropic
47
48 medications; lifestyle factors, such as higher rates of smoking and alcohol intake,
49
50 physical inactivity and poor diet; presence of other physical co-morbidities; and wider
51
52 socio-economic inequalities (Holt and Mitchell, 2015, Ward and Druss, 2015). The
53
54 organisation of health services also plays a part, meaning that, for people with SMI,
55
56 their physical health needs are often neglected (Crawford, *et al.*, 2014). Explanations for
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1
2 this include poor assessment, monitoring and recording practices; diagnostic
3
4 overshadowing, whereby physical health problems are attributed to the underlying
5
6 mental illness; ineffective co-ordination between primary and secondary care; and
7
8 ambiguity about who should manage the physical health needs of this patient group
9
10
11 (Lawrence and Kisely, 2010, Blythe and White, 2012, Crawford, *et al.*, 2014).
12

13
14 As with other multi-morbid populations, individuals with co-existing diabetes and SMI
15
16 are reported to receive fragmented and ineffective care (Scott, *et al.*, 2012). Diabetes
17
18 services for the general population vary considerably, and an international survey of
19
20 people living with diabetes, their carers, and healthcare staff, identified a need to
21
22 improve the provision of and access to appropriate diabetes care across all 17 countries
23
24 taking part (Holt, *et al.*, 2013, Nicolucci, *et al.*, 2013). Diabetes care for people with
25
26 SMI is likely to be even more variable, as it will depend on who provides their mental
27
28 health care and the level of knowledge among these clinicians about how to support
29
30 diabetes management (Blythe and White, 2012, Reilly, *et al.*, 2012). Additionally,
31
32 healthcare professionals can sometimes make unfounded assumptions about why people
33
34 with SMI have poor physical health, attributing blame to poor lifestyle and life choices,
35
36 and therefore fail to address other pertinent issues (Happell, *et al.*, 2012).
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40
41 Tackling diabetes is a global priority, the cost of which accounts for approximately 12%
42
43 of the world's total health expenditure (Zhang, *et al.*, 2010). A large proportion of this
44
45 relates to treatment of complications that could be prevented through improvements in
46
47 diabetes management (Hex, *et al.*, 2012). The psychosocial impact of having diabetes
48
49 adds to the disease burden, with an increased risk of depression and distress reported in
50
51 numerous studies across varying patient populations (Nicolucci, *et al.*, 2013, Snoek, *et*
52
53 *al.*, 2015). Costs of diabetes in the SMI population have not been estimated, but are
54
55 likely to be disproportionately high given its increased prevalence and complications,
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1
2 and underlying psychological vulnerability and associated burden of care (Bajor, *et al.*,
3
4 2015).
5

6
7 The World Health Organisation is committed to improving the physical health of people
8
9 with SMI (World Health Organisation, 2013), and there is growing interest in
10
11 developing lifestyle interventions to help achieve this (McGinty, *et al.*, 2015), mirroring
12
13 developments in the general population through the national diabetes prevention
14
15 programmes (Ali, *et al.*, 2012). Focusing on diabetes management is equally as
16
17 important because achieving even modest improvements in key biological markers of
18
19 diabetic control, including HbA1c, blood pressure and cholesterol, reduces the risk of
20
21 complications and mortality, and associated healthcare costs (Kontopantelis, *et al.*,
22
23 2015). However, there is little evidence to suggest that this broader approach helps to
24
25 improve diabetes management in addition to promoting lifestyle changes (Schellenberg,
26
27 *et al.*, 2013). Additionally, there are few targeted diabetes interventions for people with
28
29 SMI, and little understanding about how to effectively support this vulnerable patient
30
31 group (Chwastiak, *et al.*, 2015).
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38 **Why focus on diabetes self-management education (DSME)?**

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40 Self-management aims to provide people with “the knowledge, skills and confidence to
41
42 manage their condition effectively in the context of their everyday life” (Coulter, *et al.*,
43
44 2013). In diabetes, self-management has been a core component of clinical management
45
46 since the 1950’s, aimed at improving glycaemic control through lifestyle changes, self-
47
48 monitoring of symptoms, and medication. Diabetes self-management refers to the skills,
49
50 practices and behaviours that a person with diabetes engages in to protect and promote
51
52 their health. These include: improving diet; increasing physical activity; smoking
53
54 cessation; monitoring glycaemic control, blood pressure and lipids; preventing
55
56 complications; and improving treatment adherence (Ahola and Groop, 2013).
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1
2 A growing number of systematic reviews provide evidence that, for diabetes and other
3
4 long-term conditions such as chronic obstructive pulmonary disease and hypertension,
5
6 (which are also more prevalent in the SMI population (Reilly, *et al.*, 2015)),
7
8 interventions targeting self-management have clinically significant effects on a range of
9
10 important health outcomes (Taylor, *et al.*, 2014). In diabetes specifically, recent
11
12 systematic reviews of DSME programmes provide evidence that patients receiving
13
14 these interventions show significantly improved self-management, and more
15
16 importantly, diabetic control (as measured by HbA1c) when compared to patients
17
18 receiving routine care (Fan and Sidani, 2009, Steinsbekk, *et al.*, 2012, Chvala, *et al.*,
19
20 2015).
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24
25 DSME is already supported by international policy (International Diabetes Federation,
26
27 2012). Additionally in the UK, general practitioners are offered financial incentives (as
28
29 part of the Quality and Outcomes Framework) to refer patients for DSME, and there are
30
31 a number of established DSME programmes rolled out in practice, delivered by trained
32
33 dieticians, nurses and other healthcare staff (National Diabetes Audit, 2014). Adapting
34
35 an intervention that is already acceptable and feasible is more likely to be adopted by
36
37 healthcare staff and their patients (Greenhalgh, *et al.*, 2004). Being able to draw on
38
39 existing packages, resources and staff with the skills to deliver these also offers a
40
41 distinct advantage over developing new interventions, the feasibility of which is
42
43 unknown and may inadvertently increase rather than decrease existing health
44
45 inequalities.
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49
50 Adopting a behavioural approach such as DSME may also be more acceptable than
51
52 offering adjunctive pharmacological therapies to alleviate the metabolic side effects of
53
54 anti-psychotic medications. It may also be preferable to the alternative of switching
55
56 from an anti-psychotic that has proven effectiveness in preventing relapse in SMI for an
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1
2 individual, to one which has uncertain efficacy, but a more favourable metabolic profile
3
4 (Chwastiak, *et al.*, 2015). Multiple drug therapy is increasingly used for managing SMI
5
6 and is associated with poorer health outcomes (Correll, *et al.*, 2015). Compared to
7
8 people with diabetes alone, people with SMI and comorbid diabetes are more likely to
9
10 be prescribed multiple medications, which may change over time and interact in ways
11
12 that require careful monitoring (Ward and Druss, 2015). Although problems with
13
14 medication adherence, (the extent to which patients take their medications as prescribed
15
16 by their healthcare provider (Osterberg and Blaschke, 2005)), is reported across many
17
18 patient groups and health conditions, evidence suggests that it is a particular problem
19
20 for people with SMI (Kreyenbuhl, *et al.*, 2010). DSME programmes offer the potential
21
22 to address barriers to medication adherence encountered in this population.
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26
27 A further advantage of this approach is that people who successfully self-manage their
28
29 diabetes are less likely to experience diabetes-related distress or depressive symptoms
30
31 compared to those who do not, although the evidence to support this is somewhat
32
33 contradictory (Snoek, *et al.*, 2015). This is particularly important for people with SMI,
34
35 due to their underlying psychological and emotional vulnerability, and their increased
36
37 risk of comorbid depression and other affective disorders (Buckley, *et al.*, 2009).
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40 Finally, focusing on improved self-management may have positive effects on SMI
41
42 management. In chronic health, the self-management model “lays emphasis on
43
44 following essential process elements: (a) building self-efficacy; (b) self-monitoring; (c)
45
46 goal-setting and action-planning; (d) decision-making; (e) problem-solving; (f) self-
47
48 tailoring; and (g) partnership between the views of patients and health professionals”
49
50 (Du, *et al.*, 2011). These behavioural strategies are commonly used in effective
51
52 behavioural therapies for treating SMI, which are known to be acceptable to patients
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54 and those who support them (Jauhar, *et al.*, 2014).
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What are the risks of using this approach for people with SMI?

Although supporting diabetes self-management may offer advantages over pharmacological and other behavioural approaches, many people struggle to make the necessary lifestyle changes to prevent complications (Ahola and Groop, 2013, Nicolucci, *et al.*, 2013). People with SMI face additional barriers to managing their health and having the confidence to do so (Roberts and Bailey, 2011). For example, illnesses like schizophrenia and bipolar disorder are characterised by disturbed thoughts, perception, affect, and behaviour, resulting in loss of motivation, impaired self-efficacy and poorer self-care (Chen, *et al.*, 2014). SMI is also associated with wider inequalities across a range of domains, with individuals obtaining fewer qualifications, more likely to be out of work and experience poverty, and to lack social support and live alone (Department of Health, 2011).

These features impact on lifestyle choices, for example people with SMI are more likely to smoke and engage in risky behaviours such as drug taking and alcohol abuse, have poorer diet and higher levels of physical inactivity (McGinty, *et al.*, 2015). People with SMI may therefore need to make multiple lifestyle changes upon being diagnosed with diabetes, and it may be that a gradual approach focusing on one aspect at a time, e.g. diet, exercise or medication adherence, is more appropriate than an intervention modelled on existing DSME, which tends to address multiple lifestyle factors (Steinsbekk, *et al.*, 2012). DSME programmes also expect people to attend regular group sessions, and there is some evidence to suggest that group-based DSME is more effective than an individual approach (Hwee, *et al.*, 2014). Unfortunately, this can be especially problematic for people with SMI who despite having more frequent and sustained contact with health services (Reilly, *et al.*, 2012) report numerous barriers to

1
2 engaging in health interventions, for example not having support from others, or lacking
3
4 the financial resources or transport to attend regular sessions (Kaufman, *et al.*, 2012).
5
6

7
8 Barriers to access are an important concern. In the general population, many people
9
10 with diabetes are often not referred for DSME (Holt, *et al.*, 2013), and anecdotal
11
12 evidence suggests that people with SMI are less likely to be referred or to attend DSME
13
14 programmes unless they are appropriately adapted. For example, ambiguity about who
15
16 is responsible for managing the physical health of people with SMI may mean that
17
18 individuals supported by specialist mental health services may not be in regular contact
19
20 with their general practitioner, who often acts as the gatekeeper to diabetes services.
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22

23
24 Conversely, patients who are only supported in primary care, which are reported to be
25
26 around 20-30% of people with SMI, may not benefit from interventions situated within
27
28 mental health (Reilly, *et al.*, 2012).
29

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31 A further risk of adopting this approach is that DSME programmes tend to be
32
33 predicated on normative assumptions about health literacy (defined as “the degree to
34
35 which people have the capacity to obtain, process, and understand basic health
36
37 information and services needed to make appropriate health decisions” (Parker, *et al.*,
38
39 2003)), and there is some evidence to suggest this is compromised in people with SMI
40
41 (Clausen, *et al.*, 2015). DSME interventions require participants to play an active role in
42
43 managing their health as well, and commonly employ techniques such as goal setting,
44
45 problem solving, and self-monitoring (Presseau, *et al.*, 2015). Although people with
46
47 SMI may be familiar with these strategies through management of their mental health,
48
49 they may well have lower self-efficacy and be less activated to make the necessary
50
51 lifestyle changes (Hibbard and Gilbert, 2014). People with SMI can also experience
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53 multiple relapses of their mental illness, and may have chaotic lifestyles and cognitive
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1
2 impairments which affect their ability to incorporate self-monitoring regimens into their
3
4 daily routines (Harvey and Strassnig, 2012).
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6
7 Recent developments in DSME may be problematic for this patient group too. For
8
9 example, a growing number of programmes are using mobile phone and online
10
11 technologies to support lifestyle changes and medication adherence (Pal, *et al.*, 2014).
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13 Although this approach has shown some promise in the SMI population, these patients
14
15 are less likely to own a smart phone than the general population and may have financial
16
17 constraints that compromise the feasibility of delivering an intervention that requires
18
19 users to regularly access the internet on their mobile phone (Naslund, *et al.*, 2015). How
20
21 to effectively utilise the increasing opportunities available through mobile health
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23 technologies therefore requires careful consideration; however, at the same time not
24
25 using this technology may increase health inequalities if people with SMI are excluded
26
27 from an approach increasingly used to monitor and manage chronic health conditions.
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31 Furthermore, while DSME interventions have shown some promising results, there is
32
33 considerable heterogeneity between individual studies, and few conclusions can be
34
35 drawn about the causal mechanisms and active ingredients that might be transferable to
36
37 specific populations (Fan and Sidani, 2009, Steinsbekk, *et al.*, 2012, Chrvala, *et al.*,
38
39 2015). For example, although the trial evaluation of DESMOND (a programme
40
41 commonly used in the UK) demonstrated greater weight loss and lower levels of
42
43 depression at 12 months, it in fact showed no significant improvements in diabetic
44
45 control (as measured by HbA1c) compared to usual care (Davies, *et al.*, 2008). In a
46
47 three-year follow up, there were no significant improvements in any of these outcomes,
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49 which highlight uncertainties about the long-term effects of DSME, and the challenges
50
51 individuals face in sustaining lifestyle changes (Khunti, *et al.*, 2012). Additionally,
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1
2 these interventions have not been tested in real world settings, where the positive effects
3
4 are sometimes not realised in practice (Ali, *et al.*, 2012).
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8 **How can we make sure this approach works?**

9
10 We know that DSME programmes can be effective for improving diabetes outcomes,
11
12 but we do not know how to make this approach work for people who are diagnosed with
13
14 diabetes alongside SMI. There is a risk that unless current strategies to improve diabetes
15
16 self-management are adapted to take account of the particular characteristics and needs
17
18 of people with SMI, inequalities in morbidity and mortality experienced by this
19
20 population may widen as generic DSMEs are scaled up to meet international
21
22 recommendations for diabetes care.
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27 We propose that a bespoke DSME programme for people with SMI has the potential to
28
29 improve diabetes outcomes and reduce modifiable cardiovascular risk factors. Such
30
31 programmes may also lead to better mental health through improved illness
32
33 management and lifestyle changes. However, there are some key research questions that
34
35 need to be answered in order to develop an evidence-based DSME intervention that is
36
37 acceptable to people with SMI and those who support them, and also effective in both a
38
39 trial and real world setting.
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45 **What are the determinants of self-management in people with SMI?**

46
47 We already have a good understanding of the motivational, cognitive and psychological
48
49 deficits associated with SMI, and can speculate on how these might influence diabetes
50
51 management. Nevertheless, there are gaps in knowledge about the factors that inhibit or
52
53 alternatively enhance good diabetes management in people with comorbid SMI. These
54
55 include key characteristics about the population and their diabetes outcomes and care;
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1
2 determinants of good and poor diabetes self-management; and the role of carers and
3
4 others who support them, including, for example, mental health services.
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7
8 Thanks to the increasing availability of large databases containing anonymised
9
10 individual patient healthcare records, we have new opportunities to understand more
11
12 about the factors that may influence diabetes onset and outcomes in people with SMI;
13
14 including identifying which people with SMI are likely to receive poor diabetes care
15
16 and are at greatest risk of poor diabetes outcomes (Herrett, *et al.*, 2015). We can also
17
18 learn more about the potential mechanisms of action for improving self-management
19
20 through configurative synthesis and modelling of multiple evidence sources (Gough,
21
22 2013). This approach to reviewing the literature and combining different evidence types
23
24 can help to identify the most promising components and strategies to include in an
25
26 intervention, as well as shed light on other important features that are likely to increase
27
28 successful implementation and adoption.
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31
32 Understanding the lived experience of diabetes alongside SMI is equally as important;
33
34 and we are aware of only one qualitative study exploring diabetes experience in people
35
36 with SMI (Blixen, *et al.*, 2016). Further research is required to explore barriers to
37
38 accessing healthcare and support for diabetes; opportunities to exploit existing
39
40 healthcare resources and new mobile health technologies to ensure feasibility of the
41
42 programme; and consider whether a support or assets-based approach is needed due to
43
44 the psychological and social vulnerabilities in this population. Including the views of
45
46 health service staff, managers and commissioners will also allow for an exploration of
47
48 the opportunities for delivering the intervention within secondary mental health, where
49
50 staff already have the skills to effectively support people with SMI, and an appreciation
51
52 of the motivational deficits and barriers inherent in this population.
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What are the active ingredients for an effective DSME programme?

The combination of educational and behavioural elements distinguishes DSME, which aims to increase self-management behaviours, from traditional forms of didactic patient education, which tend to focus primarily on improving patient knowledge (Bodenheimer, *et al.*, 2002). Unfortunately, a significant proportion of published evidence in diabetes self-management fails to report interventions in sufficient detail, including not specifying which behaviour change techniques (BCTs), (defined as a “component of an intervention designed to alter or redirect causal processes that regulate behaviour; that is, a technique is proposed to be an “active ingredient” (e.g., feedback, self-monitoring, and reinforcement)” (Michie, *et al.*, 2013, p.82)), are used to effect change (Presseau, *et al.*, 2015). This lack of detail makes it difficult to select suitable existing interventions to adapt for populations who have particular comorbidities or motivational deficits requiring a more targeted approach.

With increased knowledge of the determinants of and resources for diabetes self-management in our target population, we can identify BCTs and other important components and delivery mechanisms that are likely to be most effective. This knowledge will also help us to consider how to utilise mobile health technologies to deliver tailored DSME, and to ensure that people with SMI do not miss out on the increasing opportunities to manage their health and illness remotely. For example, mobile phones may be used for goal setting, or providing feedback or practical support, which are commonly employed BCTs for diabetes management (Presseau, *et al.*, 2015). Modelling effective BCTs for diabetes self-management that correspond to key determinants of self-management behaviour in people with SMI offers a promising approach, already successfully employed for smoking cessation in this population (Gilbody, *et al.*, 2015). Using this approach also helps to ensure that any intervention

1
2 we develop can be replicated by others and implemented effectively (Craig, *et al.*,
3
4 2008).
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6
7

8 9 **What is acceptable and feasible for people with SMI?**

10
11 Because of the limited evidence in this area, there is little known about what is
12
13 acceptable for people with SMI and comorbid diabetes, and what is feasible to deliver
14
15 and implement for a patient population receiving care from primary, mental health and
16
17 diabetes care providers. To address issues of acceptability and feasibility, it is essential
18
19 to work in partnership with service users, carers and healthcare professionals in addition
20
21 to using qualitative enquiry to increase knowledge about what is needed. In the
22
23 DIAMONDS programme mentioned above, we plan to use co-design methods to ensure
24
25 that the bespoke intervention, including its goals, mode of delivery, structure and
26
27 content, is acceptable to people with SMI and diabetes, and to maximise future take-up
28
29 and engagement (Boyd, *et al.*, 2012).
30
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35 Identifying and agreeing goals and outcomes is an essential step of intervention
36
37 planning (Bartholomew, *et al.*, 2011) and can enhance implementation success by
38
39 ensuring that the needs of different stakeholders are accounted for (Greenhalgh, *et al.*,
40
41 2004, Taylor, *et al.*, 2015). There is little consensus, however, about what to measure
42
43 for people with multiple morbidities (Barnett, *et al.*, 2012), including comorbid diabetes
44
45 and SMI. It will therefore be important to work in partnership with service users and
46
47 carers, healthcare staff and others involved in managing and commissioning services to
48
49 agree goals and outcomes to support future evaluation and implementation of
50
51 interventions that are developed (Williamson, *et al.*, 2012).
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56 Clinical adoption is also an important consideration (Greenhalgh, *et al.*, 2004), as
57
58 mental health, primary care and diabetes clinicians are likely to be involved in
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1
2 identifying a need for supporting diabetes self-management and referring patients for
3 appropriate interventions. Finally, while user and frontline staff acceptance is a key
4 driver of our work, we are also mindful to develop an intervention that can be
5 implemented into a changing healthcare landscape in which commissioning
6 arrangements and service priorities are continually evolving. Local commissioners will
7 therefore need to be involved to ensure that financial, technological and procurement
8 barriers, including intervention costs, are addressed as part of developing the
9 intervention (Taylor, *et al.*, 2015).
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20 21 22 **What are the implications for mental health nursing?** 23

24 The interplay of biological, psychosocial, economic and healthcare factors that
25 contribute to poor diabetes outcomes in people with SMI highlights the need to develop
26 targeted support for people living with both conditions, to reduce unacceptable health
27 inequalities and improve life expectancy for these patients. Diabetes is increasingly
28 common in the SMI population, and mental health nurses and other staff involved in
29 supporting people with SMI therefore need to have appropriate skills and knowledge to
30 support patients living with comorbid diabetes. This could be achieved through
31 increased opportunities for training and professional development around management
32 of physical health conditions common in SMI, or by attending DSME programmes
33 alongside individual patients where skills and knowledge need improving.
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47 Having diabetes can cause diabetes-related distress and depressive symptoms,
48 potentially impacting on SMI management and psychological wellbeing. Mental health
49 nurses and care co-ordinators, therefore, have an important role to play in addressing
50 individual patient barriers to accessing and attending DSME programmes and other
51 diabetes care interventions, and identifying the resources and additional support that
52 patients may need to make and sustain positive lifestyle changes, self-monitor their
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1
2 diabetes symptoms, and adhere to new treatments. Better monitoring of the effects of
3
4 new medications used to treat SMI alongside diabetes, due to the metabolic side effects
5
6 of anti-psychotic medications and the unknown effects of combining multiple
7
8 medications for more than one health condition, is also needed.
9

10
11 More broadly, there is a need to better monitor diabetes risk in the SMI population, not
12
13 only to allow patients at high risk of diabetes to benefit from the growing number of
14
15 diabetes prevention programmes being rolled out in the UK and other countries, but also
16
17 to ensure that patients are diagnosed early and offered support to manage their diabetes.
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20
21 This will require an integrated and collaborative approach between primary, mental
22
23 health and diabetes care providers, and mental health care co-ordinators have an
24
25 important role in facilitating this. Finally, the metabolic effects of anti-psychotic
26
27 medications are now well known, and associated weight gain can happen very rapidly
28
29 for people prescribed these medications. Mental health nurses have an important
30
31 educational role to ensure that patients are aware of this risk, and to help them manage
32
33 the metabolic side effects alongside managing their mental illness.
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38 **References**

39
40 Ahola A.J. and Groop P.H. (2013) Barriers to self-management of diabetes. *Diabet Med*
41
42 30(4), 413-20.
43

44
45 Ali M.K., Echouffo-Tcheugui J. and Williamson D.F. (2012) How effective were
46
47 lifestyle interventions in real-world settings that were modeled on the Diabetes
48
49 Prevention Program? *Health Aff (Millwood)* 31(1), 67-75.
50
51

52
53 Bajor L.A., Gunzler D., Einstadter D., Thomas C., McCormick R., Perzynski A.T.,
54
55 Kanuch S.W., Cassidy K.A., Dawson N.V. and Sajatovic M. (2015) Associations
56
57 between comorbid anxiety, diabetes control, and overall medical burden in patients
58
59 with serious mental illness and diabetes. *Int J Psychiatry Med* 49(4), 309-20.
60

- 1
2 Barnett K., Mercer S.W., Norbury M., Watt G., Wyke S. and Guthrie B. (2012)
3
4 Epidemiology of multimorbidity and implications for health care, research, and
5
6 medical education: a cross-sectional study. *Lancet* 380(9836), 37-43.
7
8
9 Bartholomew L., Parcel G., Kok G., Gottlieb N. and Fernández M. (2011) *Planning*
10
11 *health promotion programs: an intervention mapping approach*. 3rd edn., Jossey
12
13 Bass, San Francisco, CA.
14
15 Blixen C.E., Kanuch S., Perzynski A.T., Thomas C., Dawson N.V. and Sajatovic M.
16
17 (2016) Barriers to Self-management of Serious Mental Illness and Diabetes. *Am J*
18
19 *Health Behav* 40(2), 194-204.
20
21
22 Blythe J. and White J. (2012) Role of the mental health nurse towards physical health
23
24 care in serious mental illness: an integrative review of 10 years of UK literature. *Int J*
25
26 *Ment Health Nurs* 21(3), 193-201.
27
28
29 Bodenheimer T., Lorig K., Holman H. and Grumbach K. (2002) Patient self-
30
31 management of chronic disease in primary care. *Jama* 288(19), 2469-75.
32
33
34 Boyd H., McKernon S., Mullin B. and Old A. (2012) Improving healthcare through the
35
36 use of co-design. *N Z Med J* 125(1357), 76-87.
37
38
39 Brown S., Kim M., Mitchell C. and Inskip H. (2010) Twenty-five year mortality of a
40
41 community cohort with schizophrenia. *Br J Psychiatry* 196(2), 116-21.
42
43
44 Buckley P.F., Miller B.J., Lehrer D.S. and Castle D.J. (2009) Psychiatric Comorbidities
45
46 and Schizophrenia. *Schizophr Bull* 35(2), 383-402.
47
48
49 Chen S.R., Chien Y.P., Kang C.M., Jeng C. and Chang W.Y. (2014) Comparing self-
50
51 efficacy and self-care behaviours between outpatients with comorbid schizophrenia
52
53 and type 2 diabetes and outpatients with only type 2 diabetes. *J Psychiatr Ment*
54
55 *Health Nurs* 21(5), 414-22.
56
57
58
59
60

- 1
2 Chrvala C.A., Sherr D. and Lipman R.D. (2015) Diabetes self-management education
3
4 for adults with type 2 diabetes mellitus: A systematic review of the effect on
5
6 glycemic control. *Patient Educ Couns*, doi: 10.1016/j.pec.2015.11.003.
7
8
9 Chwastiak L.A., Freudenreich O., Tek C., McKibbin C., Han J., McCarron R. and
10
11 Wisse B. (2015) Clinical management of comorbid diabetes and psychotic disorders.
12
13 *The Lancet Psychiatry* 2(5), 465-476.
14
15
16 Clausen W., Watanabe-Galloway S., Bill Baerentzen M. and Britigan D.H. (2015)
17
18 Health Literacy Among People with Serious Mental Illness. *Community Ment Health*
19
20 *J*, doi: 10.1007/s10597-015-9951-8.
21
22
23 Correll C.U., Detraux J., De Lepeleire J. and De Hert M. (2015) Effects of
24
25 antipsychotics, antidepressants and mood stabilizers on risk for physical diseases in
26
27 people with schizophrenia, depression and bipolar disorder. *World Psychiatry* 14(2),
28
29 119-136.
30
31
32 Coulter A., Roberts S. and Dixon A. (2013) Delivering better services for people with
33
34 long-term conditions: Building the house of care. Available at
35
36 [http://www.kingsfund.org.uk/sites/files/kf/field/field_publication_file/delivering-](http://www.kingsfund.org.uk/sites/files/kf/field/field_publication_file/delivering-better-services-for-people-with-long-term-conditions.pdf)
37
38 [better-services-for-people-with-long-term-conditions.pdf](http://www.kingsfund.org.uk/sites/files/kf/field/field_publication_file/delivering-better-services-for-people-with-long-term-conditions.pdf) [accessed 24/03/2016]
39
40
41 Craig P., Dieppe P., Macintyre S., Michie S., Nazareth I., Petticrew M. and Medical
42
43 Research Council G. (2008) Developing and evaluating complex interventions: the
44
45 new Medical Research Council guidance. *Bmj* 337(a1655) doi: 10.1136/bmj.a1655.
46
47
48 Crawford M.J., Jayakumar S., Lemmey S.J., Zalewska K., Patel M.X., Cooper S.J. and
49
50 Shiers D. (2014) Assessment and treatment of physical health problems among
51
52 people with schizophrenia: national cross-sectional study. *Br J Psychiatry* 205(6),
53
54 473-7.
55
56
57 Davies M.J., Heller S., Skinner T.C., Campbell M.J., Carey M.E., Craddock S., Dallosso
58
59 H.M., Daly H., Doherty Y., Eaton S., Fox C., Oliver L., Rantell K., Rayman G. and
60

- 1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
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40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
- Khunti K. (2008) Effectiveness of the diabetes education and self management for ongoing and newly diagnosed (DESMOND) programme for people with newly diagnosed type 2 diabetes: cluster randomised controlled trial. *Bmj* 336(7642), 491-5.
- Department of Health (2011) No health without mental health: A cross-government mental health outcomes strategy for people of all ages. HMSO, London.
- Du S., Yuan C., Xiao X., Chu J., Qiu Y. and Qian H. (2011) Self-management programs for chronic musculoskeletal pain conditions: a systematic review and meta-analysis. *Patient Educ Couns* 85(3), e299-310.
- Fan L. and Sidani S. (2009) Effectiveness of Diabetes Self-management Education Intervention Elements: A Meta-analysis. *Canadian Journal of Diabetes* 33(1), 18-26.
- Gilbody S., Peckham E., Man M.-S., Mitchell N., Li J., Becque T., Hewitt C., Knowles S., Bradshaw T., Planner C., Parrott S., Michie S. and Shepherd C. (2015) Bespoke smoking cessation for people with severe mental ill health (SCIMITAR): a pilot randomised controlled trial. *The Lancet Psychiatry* 2(5), 395-402.
- Gough D. (2013) Meta-narrative and realist reviews: guidance, rules, publication standards and quality appraisal. *BMC Med* 11(22) doi: 10.1186/1741-7015-11-22.
- Greenhalgh T., Robert G., Macfarlane F., Bate P. and Kyriakidou O. (2004) Diffusion of innovations in service organizations: systematic review and recommendations. *Milbank Q* 82(4), 581-629.
- Happell B., Scott D., Platania-Phung C. and Nankivell J. (2012) Should we or shouldn't we? Mental health nurses' views on physical health care of mental health consumers. *Int J Ment Health Nurs* 21(3), 202-10.
- Harvey P.D. and Strassnig M. (2012) Predicting the severity of everyday functional disability in people with schizophrenia: cognitive deficits, functional capacity, symptoms, and health status. *World Psychiatry* 11(2), 73-9.

- 1
2 Herrett E., Gallagher A.M., Bhaskaran K., Forbes H., Mathur R., van Staa T. and
3
4 Smeeth L. (2015) Data Resource Profile: Clinical Practice Research Datalink
5
6 (CPRD). *Int J Epidemiol* 44(3), 827-36.
7
8
9 Hex N., Bartlett C., Wright D., Taylor M. and Varley D. (2012) Estimating the current
10
11 and future costs of Type 1 and Type 2 diabetes in the UK, including direct health
12
13 costs and indirect societal and productivity costs. *Diabet Med* 29(7), 855-62.
14
15
16 Hibbard J.H. and Gilbert H. (2014) Supporting people to manage their health - An
17
18 introduction to patient activation. The King's Fund, London.
19
20 Holt R.I. and Mitchell A.J. (2015) Diabetes mellitus and severe mental illness:
21
22 mechanisms and clinical implications. *Nat Rev Endocrinol* 11(2), 79-89.
23
24
25 Holt R.I., Nicolucci A., Kovacs Burns K., Escalante M., Forbes A., Hermanns N., Kalra
26
27 S., Massi-Benedetti M., Mayorov A., Menendez-Torre E., Munro N., Skovlund S.E.,
28
29 Tarkun I., Wens J. and Peyrot M. (2013) Diabetes Attitudes, Wishes and Needs
30
31 second study (DAWN2): cross-national comparisons on barriers and resources for
32
33 optimal care--healthcare professional perspective. *Diabet Med* 30(7), 789-98.
34
35
36 Hwee J., Cauch-Dudek K., Victor J.C., Ng R. and Shah B.R. (2014) Diabetes education
37
38 through group classes leads to better care and outcomes than individual counselling
39
40 in adults: a population-based cohort study. *Can J Public Health* 105(3), e192-7.
41
42
43 International Diabetes Federation (2012) Global Guideline for Type 2 Diabetes.
44
45 Available at <https://www.idf.org/sites/default/files/IDF%20T2DM%20Guideline.pdf>
46
47 [accessed 24/03/2016]
48
49 Jauhar S., McKenna P.J., Radua J., Fung E., Salvador R. and Laws K.R. (2014)
50
51 Cognitive-behavioural therapy for the symptoms of schizophrenia: systematic review
52
53 and meta-analysis with examination of potential bias. *Br J Psychiatry* 204(1), 20-9.
54
55
56
57
58
59
60

- 1
2 Kaufman E.A., McDonnell M.G., Cristofalo M.A. and Ries R.K. (2012) Exploring
3
4 barriers to primary care for patients with severe mental illness: frontline patient and
5
6 provider accounts. *Issues Ment Health Nurs* 33(3), 172-80.
7
8
9 Khunti K., Gray L.J., Skinner T., Carey M.E., Realf K., Dallosso H., Fisher H.,
10
11 Campbell M., Heller S. and Davies M.J. (2012) Effectiveness of a diabetes education
12
13 and self management programme (DESMOND) for people with newly diagnosed
14
15 type 2 diabetes mellitus: three year follow-up of a cluster randomised controlled trial
16
17 in primary care. *Bmj* 344(e2333) doi: 10.1136/bmj.e2333.
18
19
20 Kontopantelis E., Springate D.A., Reeves D., Ashcroft D.M., Rutter M., Buchan I. and
21
22 Doran T. (2015) Glucose, blood pressure and cholesterol levels and their
23
24 relationships to clinical outcomes in type 2 diabetes: a retrospective cohort study.
25
26 *Diabetologia* 58(3), 505-18.
27
28
29 Kreyenbuhl J., Dixon L.B., McCarthy J.F., Soliman S., Ignacio R.V. and Valenstein M.
30
31 (2010) Does adherence to medications for type 2 diabetes differ between individuals
32
33 with vs without schizophrenia? *Schizophr Bull* 36(2), 428-35.
34
35
36 Lawrence D. and Kisely S. (2010) Inequalities in healthcare provision for people with
37
38 severe mental illness. *J Psychopharmacol* 24(4 Suppl), 61-8.
39
40 McGinty E.E., Baller J., Azrin S.T., Juliano-Bult D. and Daumit G.L. (2015)
41
42 Interventions to Address Medical Conditions and Health-Risk Behaviors Among
43
44 Persons With Serious Mental Illness: A Comprehensive Review. *Schizophr Bull*, doi:
45
46 10.1093/schbul/sbv101.
47
48
49 Michie S., Richardson M., Johnston M., Abraham C., Francis J., Hardeman W., Eccles
50
51 M.P., Cane J. and Wood C.E. (2013) The behavior change technique taxonomy (v1)
52
53 of 93 hierarchically clustered techniques: building an international consensus for the
54
55 reporting of behavior change interventions. *Ann Behav Med* 46(1), 81-95.
56
57
58
59
60

- 1
2 Naslund J.A., Marsch L.A., McHugo G.J. and Bartels S.J. (2015) Emerging mHealth
3
4 and eHealth interventions for serious mental illness: a review of the literature. *J Ment*
5
6 *Health* 24(5), 321-32.
7
8
9 National Diabetes Audit (2014) National Diabetes Audit 2012-2013 Report 1: Care
10
11 Processes and Treatment Targets. Available at <http://www.hscic.gov.uk/nda>
12
13 [accessed 23/11/2015]
14
15 Nicolucci A., Kovacs Burns K., Holt R.I., Comaschi M., Hermanns N., Ishii H.,
16
17 Kokoszka A., Pouwer F., Skovlund S.E., Stuckey H., Tarkun I., Vallis M., Wens J.
18
19 and Peyrot M. (2013) Diabetes Attitudes, Wishes and Needs second study
20
21 (DAWN2): cross-national benchmarking of diabetes-related psychosocial outcomes
22
23 for people with diabetes. *Diabet Med* 30(7), 767-77.
24
25
26 Osborn D.P., Hardoon S., Omar R.Z., Holt R.I., King M., Larsen J., Marston L., Morris
27
28 R.W., Nazareth I., Walters K. and Petersen I. (2015) Cardiovascular risk prediction
29
30 models for people with severe mental illness: results from the prediction and
31
32 management of cardiovascular risk in people with severe mental illnesses
33
34 (PRIMROSE) research program. *JAMA Psychiatry* 72(2), 143-51.
35
36
37 Osterberg L. and Blaschke T. (2005) Adherence to medication. *N Engl J Med* 353(5),
38
39 487-97.
40
41
42 Pal K., Eastwood S.V., Michie S., Farmer A., Barnard M.L., Peacock R., Wood B.,
43
44 Edwards P. and Murray E. (2014) Computer-based interventions to improve self-
45
46 management in adults with type 2 diabetes: a systematic review and meta-analysis.
47
48 *Diabetes Care* 37(6), 1759-66.
49
50
51 Parker R.M., Ratzan S.C. and Lurie N. (2003) Health literacy: a policy challenge for
52
53 advancing high-quality health care. *Health Aff (Millwood)* 22(4), 147-53.
54
55
56 Presseau J., Ivers N.M., Newham J.J., Knittle K., Danko K.J. and Grimshaw J.M.
57
58 (2015) Using a behaviour change techniques taxonomy to identify active ingredients
59
60

- 1
2 within trials of implementation interventions for diabetes care. *Implement Sci* 10(1),
3
4 55.
5
6 Reilly S., Olier I., Planner C., Doran T., Reeves D., Ashcroft D.M., Gask L. and
7
8 Kontopantelis E. (2015) Inequalities in physical comorbidity: a longitudinal
9
10 comparative cohort study of people with severe mental illness in the UK. *BMJ Open*
11
12 5(12), 10.1136/bmjopen-2015-009010.
13
14 Reilly S., Planner C., Hann M., Reeves D., Nazareth I. and Lester H. (2012) The role of
15
16 primary care in service provision for people with severe mental illness in the United
17
18 Kingdom. *PLoS One* 7(5), e36468.
19
20 Roberts S.H. and Bailey J.E. (2011) Incentives and barriers to lifestyle interventions for
21
22 people with severe mental illness: a narrative synthesis of quantitative, qualitative
23
24 and mixed methods studies. *Journal of Advanced Nursing* 67(4), 690-708.
25
26 Schellenberg E.S., Dryden D.M., Vandermeer B., Ha C. and Korownyk C. (2013)
27
28 Lifestyle interventions for patients with and at risk for type 2 diabetes: a systematic
29
30 review and meta-analysis. *Ann Intern Med* 159(8), 543-51.
31
32 Scott D., Platania-Phung C. and Happell B. (2012) Quality of care for cardiovascular
33
34 disease and diabetes amongst individuals with serious mental illness and those using
35
36 antipsychotic medications. *J Healthc Qual* 34(5), 15-21.
37
38 Shaw J.E., Sicree R.A. and Zimmet P.Z. (2010) Global estimates of the prevalence of
39
40 diabetes for 2010 and 2030. *Diabetes Res Clin Pract* 87(1), 4-14.
41
42 Snoek F.J., Bremmer M.A. and Hermanns N. (2015) Constructs of depression and
43
44 distress in diabetes: time for an appraisal. *The Lancet Diabetes & Endocrinology*
45
46 3(6), 450-460.
47
48 Steinsbekk A., Rygg L.O., Lisulo M., Rise M.B. and Fretheim A. (2012) Group based
49
50 diabetes self-management education compared to routine treatment for people with
51
52
53
54
55
56
57
58
59
60

1
2 type 2 diabetes mellitus. A systematic review with meta-analysis. *BMC Health Serv*
3
4 *Res* 12(213), doi: 10.1186/1472-6963-12-213.

5
6 Taylor J., Coates E., Wessels B., Mountain G. and Hawley M.S. (2015) Implementing
7
8 solutions to improve and expand telehealth adoption: participatory action research in
9
10 four community healthcare settings. *BMC Health Services Research* 15(1), 1-11.

11
12 Taylor S., Pinnock H., Epiphanou E., Pearce G., Parke H., Schwappach A.,
13
14 Purushotham N., Jacob S., Griffiths C., Greenhalgh T. and Sheikh A. (2014) A rapid
15
16 synthesis of the evidence on interventions supporting self-management for people
17
18 with long-term conditions: PRISMS - Practical systematic Review of Self-
19
20 Management Support for long-term conditions. *Health Serv Deliv Res* 2(53), doi:
21
22 10.3310/hsdr02530.

23
24
25 Vinogradova Y., Coupland C., Hippisley-Cox J., Whyte S. and Penny C. (2010) Effects
26
27 of severe mental illness on survival of people with diabetes. *Br J Psychiatry* 197(4),
28
29 272-7.

30
31
32 Ward M. and Druss B. (2015) The epidemiology of diabetes in psychotic disorders. *The*
33
34 *Lancet Psychiatry* 2(5), 431-451.

35
36
37 Williamson P.R., Altman D.G., Blazeby J.M., Clarke M., Devane D., Gargon E. and
38
39 Tugwell P. (2012) Developing core outcome sets for clinical trials: issues to
40
41 consider. *Trials* 13(132), doi: 10.1186/1745-6215-13-132.

42
43
44 World Health Organisation (2013) Mental Health Action Plan 2013 - 2020. Available at
45
46 http://www.who.int/mental_health/action_plan_2013/bw_version.pdf?ua=1
47
48 [accessed 24/03/2016]

49
50
51 Zhang P., Zhang X., Brown J., Vistisen D., Sicree R., Shaw J. and Nichols G. (2010)
52
53 Global healthcare expenditure on diabetes for 2010 and 2030. *Diabetes Res Clin*
54
55 *Pract* 87(3), 293-301.