Technoleg Iechyd Cymru
Health Technology Wales

Evidence Appraisal Report[1]

Solution-focused assessment tools (DIALOG+) for improving the treatment of people with psychosis and schizophrenia within secondary mental health services

Appraisal summary

Why did Health Technology Wales (HTW) appraise this topic?

Schizophrenia and psychosis are severe, long-term mental illnesses that can affect a person's perception, mood and behaviour – often with a large impact on their lives and relationships. For healthcare professionals in the community setting, understanding how the therapeutic relationship and the care provided to a person with schizophrenia or psychosis can affect their wellbeing, and how it can assist them with attaining their goals and improving their circumstances is a critical element of effective care.

DIALOG+ is a free to use, open-source assessment tool that is administered via a web app. DIALOG+ is informed by the principles of solution-focused therapy (SFT) which allows people receiving care to rate their satisfaction with eight life domains and three treatment aspects on a seven-point scale in collaboration with their healthcare professional. These scores are used to develop future treatment goals and judge their progression in a structured way. The tool generates a score for a person's subjective quality of life and their satisfaction with treatment, providing a basis for improving patient outcomes and the quality of the therapeutic relationship when compared to standard care.

What evidence did HTW find?

This evidence appraisal report (EAR) aimed to identify and summarise evidence that addresses the following question: 'What is the clinical and cost effectiveness of solution-focused assessment tools for improving the treatment of people with schizophrenia and psychosis in secondary mental health services?'

HTW researchers identified three randomised controlled trials (RCTs) on the use of DIALOG and DIALOG+ for psychosis and schizophrenia in secondary mental health services. All publications related to the three RCTs identified that met the inclusion criteria for this EAR were included.

[1] Cyfieithu dogfennau HTW wedi'u cyhoeddi o'r Saesneg i'r Gymraeg
Translation of published technical HTW documents from English into Welsh

All three RCTs identified reported significant improvements in subjective quality of life (as measured by the Manchester Short Assessment of Quality of Life, MANSA) using either DIALOG or DIALOG+ in addition to standard care when compared to standard care alone.

Data for other outcomes were mixed. Unmet need data were collected in two RCTs, with only one trial identifying a significant reduction in the number of unmet needs at 12 months. Similarly, treatment satisfaction data were captured in all three RCTs using the client satisfaction questionnaire-8 (CSQ-8), with only one trial identifying a significant difference in treatment satisfaction at 12 months. For psychological symptoms, no statistically significant difference was observed in positive symptoms at 12 months and negative symptoms at 12 months. Of the two RCTs that measured general symptoms, only one found a statistically significant difference at 12 months.

Areas of uncertainty:

- Concerns around the generalisability of the evidence to Wales, given that two RCTs are multi-country, with UK representation limited to one London NHS foundation trust.
- Considerable drop off in the implementation of the DIALOG/DIALOG+ intervention was observed in two of three RCTs after six months, when clinicians were given the option to discontinue use of the tool.
- The standard care provided varies between trials owing to the multi-country nature of two RCTs. This may affect generalisability of the evidence.
- One RCT (Jovanović et al. 2022) warns against interpretation of the 12-month data due to the study being incomplete, but still interprets and presents that data. They have been included in this EAR, but there are concerns regarding their validity.
- All UK evidence comes from a population with starting MANSA less than five.

The health economic review identified two studies which suggest that DIALOG+ is unlikely to increase overall health and social care costs compared with standard care. One UK cost-effectiveness analysis found that the additional cost of DIALOG+ was offset by reductions in health and social care service use compared with standard care (Priebe et al. 2017). For people with MANSA scores under five at baseline, this 12-month within-trial analysis reported no statistically significant difference in total costs between DIALOG+ and standard care. This result was presented alongside improvements in MANSA scores for DIALOG+ versus standard care. As no cost-effectiveness threshold exists for MANSA it was not possible to interpret the health economic value of this improvement. HTW estimated that the average differences in general symptoms reported in this study could translate to gains of around 0.02 quality-adjusted life years (QALYs) per person, based on published EQ-5D mapping algorithms. This small QALY gain would be worth around £300 to £500 at a cost-effectiveness threshold of £20,000 per QALY gained; however, there is considerable uncertainty around these estimates. The exclusion of people with high MANSA scores at baseline may limit the generalisability of the UK cost-effectiveness study to a broader population in Welsh clinical practice.

A cost-utility analysis was identified for the broader IMPULSE population (Feng et al. 2022). However, this study was deemed only partially applicable because it was conducted in five low- to middle-income countries in Southeast Europe. It is unknown how relevant resource use in these settings is to Wales. The analysis only considered the first 6-months' follow-up of IMPULSE because of disruption related to COVID-19. QALY gains estimated in the study were not statistically significant over this time horizon.

What was the outcome of HTW's appraisal?

HTW is a national body working to improve quality of care in Wales. We collaborate with partners across health, social care, and industry to issue independent guidance that informs commissioning within Wales health and social care. We are supported by an Assessment Group, who ensure our work adheres to high standards of methodological and scientific rigour, and an Appraisal Panel, who consider evidence within the Welsh context and produce HTW guidance. More details on our appraisal process, the assessment group, and the appraisal panel can be found on the HTW website.

In this case, the HTW Assessment Group considered the evidence presented in this Evidence Appraisal Report (EAR050) and concluded there was sufficient evidence for the development of guidance. Please refer to the HTW website for full guidance details.

Evidence Appraisal Report 050 follows below and provides full details for this topic. More comprehensive details of the HTW Guidance and HTW Appraisal Panel considerations can be found on the HTW website.

1. Purpose of the Evidence Appraisal Report

This report aims to identify and summarise evidence that addresses the following question: 'What is the clinical and cost effectiveness of solution-focused assessment tools for improving the treatment and management of people with schizophrenia and psychosis in secondary mental health services?'

Evidence Appraisal Reports are based on rapid systematic literature searches, with the aim of published evidence identifying the best clinical and economic evidence on health technologies. Researchers critically evaluate this evidence. The draft Evidence Appraisal Report is reviewed by experts and by Health Technology Wales multidisciplinary advisory groups before publication.

2. Context

Psychosis, and the specific diagnosis of schizophrenia are severe, long-term mental health conditions which affect approximately 1% of the population (NICE 2014).

Psychosis and schizophrenia may affect a person's perception, thoughts, mood and behaviour, which can impact on multiple areas of their life, as well as the quality of their relationships. Typically, schizophrenia symptoms are described as 'positive' or 'negative', based on how they add or take away from a person's life. 'Positive' symptoms may include persistent delusions or hallucinations, or feelings of influence, control or passivity – such as a person's thoughts being broadcast, placed in their mind or coming from another source. 'Negative' symptoms may include limited speech, decreased motivation or emotional experience, and restricted or agitated movements. (Mind 2020, WHO 2022)

Complications of psychosis and schizophrenia include an increased risk of premature death. On average, people with schizophrenia die approximately 15 years earlier than those in the general population, with a lifetime risk of suicide of 5%, which is particularly effected by the occurrence of psychotic episodes and the onset of the illness. People with schizophrenia are also at increased risk of substance misuse, with up to one-third of people currently diagnosed with the condition misusing drugs. This is a complex problem, as the person's health is at risk due to the misuse of substances, as well as an increased risk of blood-borne viruses or similar that can occur depending on the type of substance misused. (Mind 2020, WHO 2022)

Psychosis and schizophrenia are associated with significant and intense stigma which can result in associated discrimination, furthering social exclusion and limiting access to healthcare, education, housing and employment. As such, effective care options for people with psychosis and schizophrenia are often multifaceted, involving medication, psychoeducation and support with living, housing and employment. Both the World Health Organisation (WHO) and the National Institute for Health and Care Excellence (NICE) recommend that treatment should be recovery-oriented, with supportive and empathetic relationships as an essential part of care (WHO 2022, NICE 2014).

Current treatment for psychosis and schizophrenia is dependent on the person's condition at the point of care – should a person be referred from primary care, they may be referred either to a specialist community-based mental health service or an early intervention service, depending on their risk of developing psychosis. The intervention of interest for this appraisal, DIALOG+, is intended for use in the community setting.

3. Health technology

DIALOG+, and the earlier iteration of the intervention DIALOG, is a therapeutic tool designed to assist in structuring the routine meetings between clinicians and service users in the community mental health setting. DIALOG+ is informed by the principles of solution-focused therapy (SFT), which concentrates on centring the service user in their care and working in collaboration with professionals to identify avenues and mechanisms for change for the future, rather than focusing on the specific illness that brings them to treatment. Solution focused therapy is goal oriented and future-focused, and when used as a tool in the community mental health setting may be a valuable aid in improving the therapeutic relationship and enhancing collaborative care planning. The DIALOG+ intervention includes a computer-mediated outcome measure that is used to assess service users' satisfaction with their quality of life and treatment across eight social domains and three treatment aspects on a seven-point scale ('The DIALOG scale'). The measure then generates an overall score for subjective quality of life and treatment satisfaction, which may be used to guide the session and to provide a basis for developing future goals and judging a service users' progress against them. A DIALOG+ session is comprised of completing the DIALOG scale, followed by an in-depth discussion and assessment of the person's views and concerns to identify areas for change and assist them in developing problem-solving skills.

4. Technology assessments and guidance

HTW identified existing UK guidance relevant to this topic.

NICE (2011) Guideline 136 'Service user experience in adult mental health: improving the experience of care for people using adult NHS mental health services' recommends that professionals, when working with people using community mental health services, should aim to foster individual autonomy and promote active participation in treatment decisions (1.1.2) by developing collaborative care plans with the service user that encourage social inclusion – by way of activities such as employment, education and leisure, and supporting the service user in realising this plan (1.4.2).

NICE (2014) Guideline 178 'Psychosis and schizophrenia in adults: prevention and management' recommends that professionals should work in partnership with people with schizophrenia and their carers, taking time to build a relationship that is both empathic and supportive as an essential part of care (1.1.1.1). The guidance also notes that central to the promotion of recovery and effective future care, the community-based team should place emphasis on engagement with the service user and providing them with treatment that is free of stigma and restriction (1.5.1.1).

NICE (2020) Guideline 181 'Rehabilitation for adults with complex psychosis' recommends that rehabilitation services should provide a recovery-orientated approach that is individualised, person-centred and collaborative in nature (1.2.1). The guidance also makes a recommendation for universal staff competencies that all staff should establish and maintain a relationship with people with complex psychosis that is non-judgmental and collaborative (1.6.9).

5. Clinical effectiveness

HTW searched for and summarised evidence on the effectiveness of DIALOG+ and its earlier iteration, DIALOG, compared to standard models of care. For details on the methodology used to identify evidence for this report, refer to section 12.

We identified three RCTs: DIALOG (Hansson et al. 2008, Priebe et al. 2007, van den Brink et al. 2011); DIALOG+ (Priebe et al. 2017, Priebe et al. 2015); and IMPULSE (Jovanović et al. 2022). Some trial details came from more than one publication; where this was the case all relevant publications related to these three trials that met the inclusion criteria are included in our review.

The DIALOG trial (Hansson et al. 2008, Priebe et al. 2007, van den Brink et al. 2011) was a cluster-randomised trial which aimed to assess the impact of DIALOG on the quality of life and care needs of people with schizophrenia in six countries. 507 patients with a diagnosis of schizophrenia or related disorder (ICD-10 codes F20-29) were included and randomised either to standard care or the DIALOG intervention. In total, 56 people were lost to follow up, with 451 being included in intention-to-treat analyses (Priebe et al. 2007). Hansson et al. (2008) investigated the effectiveness of the DIALOG intervention, moderated by patient sociodemographic, clinical and social characteristics. Van den Brink et al. (2011) performed an international comparison of the intervention to investigate whether the effectiveness of DIALOG varies between different secondary mental health services and countries, and whether effectiveness is associated with patient characteristics and the type of care provided.

The DIALOG+ trial (Priebe et al. 2017, Priebe et al. 2015) was a cluster-randomised controlled trial which aimed to test the effectiveness of DIALOG+ in the treatment of community patients with a diagnosis of psychosis or related disorder (ICD-10 codes F20-29) in London, UK. Primary outcomes for the trial were reported in Priebe et al. (2015), with a larger NIHR programme grants for applied research (NIHR) report providing more information about the DIALOG+ software, trial and methodology (Priebe et al. 2017).

The IMPULSE trial (Jovanović et al. 2022) was a hybrid effectiveness-implementation cluster-randomised controlled trial which aimed to examine the effectiveness of DIALOG+ compared to standard care on both clinical and social outcomes. This trial also explored intervention fidelity – a noted issue in previous trials (Priebe et al. 2017). In total, 468 patients with a diagnosis of psychosis or related disorder (ICD-10 codes F20-29 and F31-33) were randomised. Patients in the intervention arm were offered DIALOG+ six times across 12 months. The trial was significantly impacted by the COVID-19 pandemic at 12 months. Data are provided for 12-month follow-up, but are not to be interpreted.

5.1 Clinical outcomes

Clinical outcome data are reported in Table 1.

5.1.1 Subjective quality of life

An RCT by Priebe et al. (2007) assessed service users' quality of life using the Manchester short assessment of quality of life (MANSA) at baseline and 12 months. Data were collected for 448 of the 507 participants in the study (88.3%). The study found that MANSA scores were significantly higher for participants in the intervention group than the control group at 12 months (p=0.04), where a higher score is indicative of a better quality of life.

An RCT by Priebe et al. (2015) also assessed service users' quality of life using the MANSA tool at baseline, 6 and 12 months. Data were collected for 147 of 179 participants at 6 months (82.1%), and 129 of 179 participants at 12 months (72.1%). The study found no significant increase in quality of life for participants in the intervention group at 6 months (p=0.058) but did find a significant increase at 12 months (p=0.01).

An RCT by Jovanović et al. (2022) assessed quality of life using MANSA at baseline, 6 and 12 months. Data were collected from 424 of 468 participants at 6 months (90.6%) and 397 of 468 participants at 12 months (84.8%). A statistically significant increase in quality of life was observed in the intervention group at 6 months (p=0.03) but no significant increase was found at 12 months (p=0.12). However, data collection for this RCT at 12 months was impacted by the COVID-19 pandemic, with the authors cautioning against interpretation of the 12-month results.

5.1.2 Treatment satisfaction

An RCT by Priebe et al. (2007) assessed service users' satisfaction with the treatment received using the Client Satisfaction Questionnaire-8 (CSQ-8) at baseline and 12 months. Data were collected for 448 of 507 participants (88.4%) at 12 months. The study found a statistically significant increase in treatment satisfaction for participants in the intervention group (p=0.01) compared to treatment as usual.

An RCT by Priebe et al. (2015) assessed treatment satisfaction using CSQ-8 at baseline and at 12 months. Data were collected for 126 of 179 participants (70.4%) at 12 months. The study found no significant difference in treatment satisfaction between groups (p=0.35).

An RCT by Jovanović et al. (2022) assessed treatment satisfaction using CSQ-8 at baseline, 6 and 12 months. Data were collected for 424 of 468 participants (90.6%) at 6 months, and 216 of 468 participants (46.2%) at 12 months. No statistically significant difference in treatment satisfaction was observed between groups at 6 (p=0.13) or 12 (p=0.59) months.

5.1.3 Health and social needs

An RCT by Priebe et al. (2007) assessed the level of need for care using the Camberwell Assessment of Need Short Appraisal Schedule (CANSAS) at baseline and 12 months. Using CANSAS, participants are asked to rate their need on a scale of 0 to 2, where 0 indicates no need, 1 indicates a met need and 2 indicates an unmet need. A decreasing CANSAS score is indicative of a reduction in unmet need. Data were collected for 449 of 507 participants (88.5%) at 12 months. The study identified a significant reduction in the number of unmet needs (p= 0.04) for participants in the intervention group.

An RCT by Priebe et al. (2015) assessed the level of need for care using CANSAS at baseline, 3, 6 and 12 months. Data were collected for 127 of 179 participants (70.9%) at 12 months. No statistically significant reduction in unmet need was observed between groups at 12 months (p=0.14) despite significant reductions being observed at 3 and 6 month follow-up (p=0.02 and p=0.01, respectively).

5.1.4 Psychological symptoms

5.1.4.1 Positive symptoms

An RCT by Priebe et al. (2007) measured positive symptoms using the positive and negative syndrome scale (PANSS) at baseline and 12 months. Data were collected for 447 of 507 participants (88.1%) at 12 months. No statistically significant change in positive PANSS scores was observed at 12 months between groups (p=0.17).

An RCT by Priebe et al. (2015) measured positive symptoms using PANSS at baseline, 3, 6 and 12 months. Data for the 'positive' PANSS sub scale were collected for 125 of 179 participants (69.8%) at 12 months. No statistically significant change in positive PANSS scores was observed at 12 months in the intervention group (p=0.06).

5.1.4.2 Negative symptoms

An RCT by Priebe et al. (2007) measured negative symptoms using PANSS at baseline and 12 months. Data for the 'negative' PANSS sub scale were collected for 448 of 507 participants (88.3%). No statistically significant reduction in PANSS negative scores were observed at 12 months between groups (p= 0.41).

An RCT by Priebe et al. (2015) measured negative symptoms using PANSS at baseline, 3, 6 and 12 months. Data for the 'negative' PANSS sub scale were collected for 125 of 179 participants at 12 months (69.8%). No statistically significant reduction in PANSS negative scores were observed at 12 months between groups (p=0.12).

An RCT by Jovanović et al. (2022) measured negative symptoms using the clinical assessment interview for negative symptoms (CAINS) which is comprised of two domains: CAINS-MAP and CAINS-EXP. CAINS scores were taken at baseline and 12 months. CAINS-MAP data were collected for 375 of 468 participants (80.1%) and CAINS-EXP data were collected for 383 of 468 participants (81.8%) at 12 months. No statistically significant difference in CAINS scores were observed between groups at 12 months (CAINS-EXP p=0.87; CAINS-MAP p=0.86).

5.1.4.3 General symptoms

An RCT by Priebe et al. (2007) measured general symptoms using PANSS at baseline and 12 months. Data were collected for 448 of 507 participants (88.3%) at 12 months. No statistically significant reduction in general PANSS scores was observed at 12 months between groups (p=0.60).

An RCT by Priebe et al. (2015) measured general symptoms using PANSS at baseline, 3, 6 and 12 months. Data for the 'general' PANSS sub scale were collected for 125 of 179 participants at 12 months (69.8%). A statistically significant reduction in general symptoms was observed in the intervention group at 12 months (p=0.001).

Table 1 – Summary of outcomes for DIALOG or DIALOG+ compared to standard care

Outcome (measure)	Evidence source	Intervention	Follow up	Absolute effect Adjusted mean difference (95% CI; p-value)
Subjective quality of life (MANSA)	RCT by Priebe et al. (2007)	DIALOG in addition to SC	12 months (n = 448)	0.12 (0.00 to 0.26; p = 0.04) **Favours intervention**
	RCT by Priebe et al. (2015)	DIALOG+ in addition to SC	12 months (n = 129)	0.31 (0.06 to 0.57; p = 0.01) **Favours intervention**
	RCT by Jovanović et al. (2022)	DIALOG+ in addition to SC	6 months (n = 424) 12 months (n = 397)*	• 6 months: 0.18 (0.01 to 0.35; p = 0.03) **Favours intervention** • 12 months: 0.14 (-0.04 to 0.32; p = 0.12) **Favours neither***
Treatment satisfaction (CSQ-8)	RCT by Priebe et al. (2007)	DIALOG in addition to SC	12 months (n = 448)	0.92 (0.22 to 1.56; p = 0.01) **Favours intervention**
	RCT by Priebe et al. (2015)	DIALOG+ in addition to SC	12 months (n = 126)	0.73 (-0.8 to 2.26; p = 0.35) **Favours neither**
	RCT by Jovanović et al. (2022)	DIALOG+ in addition to SC	6 months (n = 424) 12 months (n = 397)*	• 6 months: 0.6 (-0.2 to 1.3; p = 0.13) **Favours neither** • 12 months: 0.2 (-0.5 to 1.0; p = 0.59) **Favours neither***
Unmet needs (CANSAS)	RCT by Priebe et al. (2007)	DIALOG in addition to SC	12 months (n = 449)	-0.41 (-0.79 to -0.01; p = 0.04) **Favours intervention**
	RCT by Priebe et al. (2015)	DIALOG+ in addition to SC	12 months (n = 127)	0.73 (0.48 to 1.11; p = 0.14) **Favours neither**
Psychological symptoms (PANSS General)	RCT by Priebe et al. (2007)	DIALOG in addition to SC	12 months (n = 447)	-0.46 (-2.19 to 1.27; p = 0.60) **Favours neither**
	RCT by Priebe et al. (2015)	DIALOG+ in addition to SC	12 months (n = 125)	-4.27 (-6.71 to -1.82; p = 0.001) **Favours intervention**

Outcome (measure)	Evidence source	Intervention	Follow up	Absolute effect Adjusted mean difference (95% CI; p-value)
Psychological symptoms (PANSS Positive)	RCT by Priebe et al. (2007)	DIALOG in addition to SC	12 months (n = 447)	-0.75 (-1.80 to 0.32; p = 0.17) **Favours neither**
	RCT by Priebe et al. (2015)	DIALOG+ in addition to SC	12 months (n = 125)	-1.45 (-3.00 to 0.08; p = 0.06) **Favours neither**
Psychological symptoms (PANSS Negative)	RCT by Priebe et al. (2007)	DIALOG in addition to SC	12 months (n = 448)	-0.45 (-1.57 to 0.65; p = 0.41) **Favours neither**
	RCT by Priebe et al. (2015)	DIALOG+ in addition to SC	12 months (n = 125)	-1.47 (-3.36 to 0.42; p = 0.12) **Favours neither**
Psychological symptoms (CAINS-MAP)	RCT by Jovanović et al. (2022)	DIALOG+ in addition to SC	12 months (n = 375)*	• 12 months: -0.1 (-1.6 to 1.4; p = 0.86) **Favours neither***
Psychological symptoms (CAINS-EXP)	RCT by Jovanović et al. (2022)	DIALOG+ in addition to SC	12 months (n = 383)*	• 12 months: -0.03 (-0.34 to 0.29; p = 0.87) **Favours neither***

Abbreviations: CAINS: Clinical Assessment Interview for Negative Symptoms; CANSAS: Camberwell assessment of need short appraisal schedule; CI: confidence interval; CSQ-8: Client Satisfaction Questionnaire-8; MANSA: Manchester short assessment of quality of life; PANSS: Positive and Negative Symptoms Scale; RCT: randomised controlled trial; SD: standard deviation; SC: standard care

* Study authors cautioned against interpretation of results at 12-months follow up

5.2 Ongoing studies

HTW researchers identified a number of ongoing RCTs that may be relevant to the effectiveness of DIALOG+ for use in people with schizophrenia and psychosis in the secondary mental health setting. Two ongoing trials were identified that may be the same study (CTRI/2022/03/041005 and ISRCTN13022816) but this could not be established with a high level of certainty. As such, both are presented in the table below.

Table 2 – Summary of ongoing randomised controlled trials

Study information	Status	Research question and outcome measures
Registration: CTRI/2022/03/041005 **Country:** India, Pakistan **Target recruitment:** 448 participants **Follow-up:** 12 months	Not yet recruiting **Last updated:** March 7, 2022	**Population:** Adults aged 18-65 with a diagnosis of psychosis (ICD-10 codes F20-29) **Intervention:** DIALOG+ **Comparator:** Standard care with the DIALOG scale administered at the end of each session **Primary Outcome Measure:** Subjective quality of life (measured using MANSA) **Secondary Outcome Measure**: change in hospitalisation, symptoms, objective social situation, therapeutic alliance, health related quality of life, service use
Registration: ISRCTN13022816 **Country:** India, Pakistan **Target recruitment:** 210 participants **Follow-up:** 12 months	Recruiting **Last updated:** February 6, 2023	**Population:** Adults over 18 with a diagnosis of psychosis **Intervention:** DIALOG+ **Comparator:** Standard care with DIALOG scale administered at the end of each session **Primary Outcome Measure:** Subjective quality of life (measured using MANSA) **Secondary Outcome Measure:** Hospitalisation, symptoms, negative symptoms, objective social situation, therapeutic alliance, health-related quality of life, service use
Registration: ISRCTN11913964 **Country**: Bosnia and Herzegovina **Target recruitment:** 480 participants **Follow-up:** 12 month	No longer recruiting **Last updated:** January 30, 2023	**Population:** Adults over 18 with a diagnosis of psychosis or related disorder (ICD-10 codes F20-29, F31) **Intervention:** DIALOG+ **Comparator:** Standard care. Patients in this arm will be offered DIALOG+ after 12 months. **Primary Outcome Measure:** Subjective quality of life (measured by MANSA) **Secondary Outcome Measure:** Treatment satisfaction, clinical symptoms
Abbreviations: MANSA: Manchester short assessment of quality of life		

5.3 Certainty of the evidence

- There was considerable drop off in the implementation of the DIALOG or DIALOG+ intervention observed in both Priebe et al. (2007) and Priebe et al. (2015) after 6 months, where clinicians were given the option to discontinue use of the tool. Reasons for discontinued use were not provided in either study.
- In one RCT (Priebe et al. 2015), data were missing for 18 patients, and 30% of the intervention arm (24 patients) did not receive any DIALOG+ sessions.
- One included RCT (Jovanović et al. 2022) warns against interpretation of the 12-month results, yet has interpreted and presented them. The data have been included in this EAR, but concerns remain around their validity.
- In one RCT (Priebe et al. 2015) blinding was compromised for interviewers in three cases.

6. Cost effectiveness

6.1 Health economic literature review

Appendix 3 (the PRISMA diagram) summarises the selection of articles for inclusion in the evidence review. The titles and abstracts of 4,279 records identified in the search for this research question were screened and four records were deemed potentially relevant. The full texts of these studies were reviewed against the inclusion/exclusion criteria and one study was excluded because it did not describe an economic evaluation (Kingdon 2019). Three studies were included in the health economic review and are summarised in Table 3.

Priebe et al. (2015) and Priebe et al. (2017)

Two articles described the same within-trial cost-effectiveness evaluation of DIALOG+ versus standard care, based on 179 adults with a clinical diagnosis of schizophrenia or related disorders and a MANSA score of less than five. The study was deemed directly applicable having been conducted from a health and social care perspective across community mental health teams in London. However, the exclusion of people with high subjective quality of life at baseline (MANSA score of five or more) may limit its generalisability to the full population considered in this appraisal.

The estimated cost of the intervention was £109 per person (2013/14 prices), including the costs of a tablet computer and clinician training. In the first three-month period there were more contacts with dentists and non-psychiatric care in the intervention group. However, over the course of the study there were more contacts with primary care nurses, community mental health nurses and 'other' professionals in the control group. Overall, the intervention group was associated with lower average costs of health and social care, as well as informal care.

After controlling for baseline costs, DIALOG+ was estimated to save an average of £1,288 per person over 12 months. However, this difference was not statistically significant. The authors reported that DIALOG+ was dominant compared to standard care because it was both cost saving and more effective in terms of subjective quality of life measured by MANSA. In bootstrapped analysis, DIALOG+ was dominant in 72.4% of estimates. For the 26.5% of estimates where DIALOG+ improved outcomes at an increased cost and a very small percentage where DIALOG+ had worse outcomes at a lower cost, it was not possible to determine whether DIALOG+ was cost effective because no cost-effectiveness threshold exists for MANSA.

The collection of only disease-specific patient-reported outcome measures, such as MANSA, is a key limitation of the study because it does not support cost-utility analysis. However, as DIALOG+ was shown to have similar, or potentially lower, health and social care costs and to improve outcomes, cost-effectiveness conclusions could still be drawn. The authors noted substantial uncertainty around the results. In particular, the observed cost savings associated with inpatient care were uncertain because of the relatively small sample size and infrequent use of this service. Inpatient care has the potential to be influential because it is associated with high costs but, without deterministic sensitivity analysis, it is difficult to determine the impact of this uncertainty on results. However, the breakdown of costs by service area suggests that if inpatient costs had been excluded from the analysis, DIALOG+ might still have had a lower average cost compared with standard care.

Feng et al. (2022)

A within-trial cost-utility evaluation compared DIALOG+ against standard care over a six-month time horizon, based on the IMPULSE RCT (Jovanović et al. 2022). The study population (n=206) was broader than the population considered in this appraisal because adults with a primary diagnosis of bipolar disorder were eligible for inclusion (14%). The study was deemed only partially applicable to the UK health and care system because it considered five low- or middle-income countries in Southeast Europe. Analyses conducted outside of the OECD would normally be excluded from our review, but this study was included because no other cost-utility analyses were identified.

The primary cost-effectiveness analysis reported incremental cost-effectiveness ratios (ICER) in terms of additional costs per quality-adjusted life year (QALY) gained. QALYs were derived from EQ-5D-5L data collected during the IMPULSE RCT and valued using the Poland value set. Sensitivity analyses considered cost per Recovering Quality of Life (ReQoL-10) score and cost per MANSA, which was the only quality of life outcome to show a statistically significant improvement at six months in IMPULSE.

The estimated cost of intervention was €91 per person (£94 in 2019 prices), including the costs of clinician time, a tablet computer, manual translations and clinician training (compared with €21 for standard care). Mean healthcare resource use and associated costs were much lower than those reported over the first six-month period by Priebe et al. (2017). This may reflect differences between country settings, the populations studied or other factors.

After controlling for baseline values and characteristics, estimated differences in total costs and QALYs between DIALOG+ and standard care were not statistically significant at six-months follow up. The authors concluded that DIALOG+ was more costly and more effective than standard care, but unlikely to be cost effective with a mean ICER of €26,348 per QALY (£27,134 in 2019 prices).

Table 3 – Summary of included health economic studies: Feng et al. (2022), Priebe et al. (2017), Priebe et al. (2015)

Study details	Study population and design	Data sources	Results	Quality assessment
Author and year: Priebe et al. (2017), Priebe et al. (2015) **Country**: UK **Type of economic analysis:** Cost effectiveness **Perspective:** UK health and social care perspective **Currency:** UK pounds **Price year:** 2013/14 **Time horizon:** 12 months **Discounting**: Not applicable due to short time horizon **Potential conflict of interest:** None declared	**Population** Adults aged 18-65 years with a clinical diagnosis of schizophrenia or related disorders and MANSA score < five. **Intervention** DIALOG+, monthly for six months with optional continuation thereafter. **Comparator** Standard care, with independent ratings after meetings. **Study design** Within-trial cost-effectiveness analysis. Standard unit costs were applied to resource use data collected over the 12-month study period. A bootstrapped regression model was fitted to total costs, controlling for baseline costs (assessed in the three months prior to intervention).	**Source of baseline and effectiveness data** Clustered RCT conducted in community mental health teams in London, UK. **Source of resource use and cost data** Health and social care use (e.g. medication, and hospital, community and outpatient services) was recorded for the prior three months at baseline, three-, six- and 12-month follow-ups using the Client Service Receipt Inventory (CSRI). Resource use at nine months was assumed to be the average of months six and 12. The cost of the tablet computer and a half-day one-to-one clinician training session was calculated as £109 per person. Other unit costs were obtained from the British National Formulary (BNF) and Personal Social Services Research Unit (PSSRU). Unpaid care from family and friends was costed at £15.11 per hour, based on national average wages.	**Base case results** Costs: • DIALOG+: £3,279 • Standard care: £4,624 • Incremental (adjusted): saves £1,288 MANSA (primary outcome): • DIALOG+: 4.4 • Standard care: 4.1 • Incremental: +0.319 DIALOG+ was the dominant strategy (more effective and less costly). **Sensitivity analysis** Bootstrapped 95% confidence intervals: • Cost savings: -£1,318 to £5,633 • MANSA improvement: 0.063 to 0.575 DIALOG+ was estimated to improve outcomes and save costs in 72.4% of bootstrapped estimates; improve outcomes at higher costs in 26.5%; and have worse outcomes than standard care in the remainder (around 1%).	**Applicability** Directly applicable. **Limitations** This study has minor limitations: • The study population excluded people with high subjective quality of life at baseline (MANSA ≥5). • Resource use was self-reported. • Generalisability of inpatient care costs is uncertain because of the small sample size and variability in this outcome. • Unpaid care was costed, despite the stated healthcare perspective. Though unclear in Priebe et al. (2015), Priebe et al. (2017) states these costs were excluded from the reported totals. • Unit costs were not reported but references were provided. • Potential long-term (beyond trial) outcomes were not considered. • No deterministic sensitivity analyses were reported. • Cost-effectiveness could not be interpreted for all bootstrapped estimates because there is no cost-effectiveness threshold for the MANSA outcome.

Study details	Study population and design	Data sources	Results	Quality assessment
Author and year: Feng et al. (2022) **Country:** Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia and Serbia **Type of economic analysis:** Cost effectiveness **Perspective:** Healthcare perspective **Currency:** Euro **Price year:** 2019 **Time horizon:** six months **Discounting:** Not applicable due to short time horizon **Potential conflict of interest:** None declared	**Population** Adults with a primary diagnosis of psychosis or related disorders in remission and with history of hospital admission. **Intervention** DIALOG+, monthly for three months then three-monthly. **Comparator** Standard care, delivered over same schedule. **Study design** Within-trial cost-effectiveness analysis. Local unit costs were applied to resource use data collected over the six-month study period. Bootstrapped regression models were fitted to total costs and quality of life outcomes, adjusted for baseline values, participant age, diagnosis and clinician profession.	**Source of baseline and effectiveness data** Clustered RCT conducted in five Southeast European countries (IMPULSE). **Source of resource use and cost data** Medication and health service resource use was recorded for the prior six months at baseline and six-month follow-up using the Client Service Receipt Inventory (CSRI). Unit costs were obtained from local teams in each participating country and converted to Euros via purchasing price parity indices. **Source of quality of life data** The Poland value set was applied to EQ-5D-5L data collected during IMPULSE. MANSA and ReQoL-10 data were also collected.	**Base case results** Costs: • DIALOG+: €565.95 • Standard care: €497.78 • Incremental: €68.17 • Incremental (adjusted): €98.42 QALYs: • DIALOG+: 0.458 • Standard care: 0.465 • Incremental: -0.0074 • Incremental (adjusted): +0.0032 ICER: €26,348 per QALY **Sensitivity analysis** Bootstrapped 95% confidence intervals: • Incremental costs: -€29.49 to €208.30 • Incremental QALYs: -0.0021 to 0.0089 DIALOG+ was estimated to be cost effective in 18.9% of bootstrapped estimates at a threshold of €13,761 per QALY. The cost-effectiveness acceptability curve suggests DIALOG+ would be cost effective in 30–40% at a threshold equivalent to £20,000. ICERs ranged from €18,650 (minimum drug prices) to €28,062 (complete case) in the main sensitivity analysis and from dominant to €61,294 in country-specific analyses.	**Applicability** Partially applicable because non-OECD settings considered. **Limitations** This study has potentially serious limitations: • Analysis was limited to a six-month time horizon, because of disruptions to the original 12-month trial design caused by COVID-19. • The cost-utility analysis was based on EQ-5D outcomes that were not statistically significant. • The eligible population included people with bipolar disorder. • Social care costs were not included. • There was a discrepancy between the total incremental costs reported in the detailed cost table (€98.42) and the value applied in the ICER calculation (€84.17). Though small, this difference corresponds to a difference of around €4,400 in the ICER.

Abbreviations: EQ-5D: EuroQOL five dimensions; ICER: incremental cost-effectiveness ratio; IMPULSE: Implementation of an effective and cost-effective intervention for patients with psychotic disorders in low and middle-income countries in South Eastern Europe; MANSA: Manchester Short Assessment of Quality of Life; OECD: Organisation for Economic Co-operation and Development; QALY: quality-adjusted life year; RCT: randomised controlled trial; ReQoL-10; Recovering Quality of Life; < less than; ≥ more than or equal to

6.2 HTW analysis

The existing health economic evidence suggests that DIALOG+ is unlikely to increase overall health and social care costs compared with standard care. Though it has not been proven to improve health-related quality of life (e.g., EQ-5D), DIALOG+ does improve other patient outcomes (e.g., MANSA and PANSS general).

The key limitations of the available UK cost-effectiveness analysis are the consideration of a population subgroup and the lack of QALYs as an outcome. It is unknown whether the effectiveness of DIALOG+ is different for people with low or high MANSA scores at baseline. If the benefits shown for people with low starting MANSA scores cannot also be achieved for people with high scores, then these benefits may be diluted if DIALOG+ were rolled out to a broader population in clinical practice. However, the reported cost of the DIALOG+ intervention in addition to standard care relates to equipment and training. Experts contacted by HTW indicated that the use of DIALOG+ was unlikely to lengthen session times. As such, intervention costs are incurred per healthcare professional delivering the service, rather than a fixed cost per service user or per session. If healthcare professionals use DIALOG+ with three to four people with MANSA scores less than five, then we may expect to see similar outcomes to those reported by Priebe et al. (2017). Any further uses of DIALOG+ by these healthcare professionals would come at no extra cost, irrespective of MANSA scores. Any additional benefits for other service users may therefore be expected to improve cost effectiveness. Experts contacted by HTW indicated that a staff member's typical caseload includes 15 people with psychosis or schizophrenia, or 30 to 35 people with any diagnosis. One expert commented that all those seen by a care coordinator are likely to have MANSA scores below five during their treatment.

There is uncertainty around the ongoing cost of the DIALOG+ intervention and whether there may be additional costs specific to its use in Wales. The cost of intervention may be expected to fall over time for healthcare professionals who continue to use DIALOG+, unless replacement of equipment and retraining were needed annually. The DIALOG+ app is already available in several languages. We do not know whether it can be translated into Welsh or how much this would cost. An expert contacted by HTW indicated that paper case notes are commonly used in secondary mental health services in Wales, so the development of new data systems may be needed to collate DIALOG+ outcomes. We do not know how much this would cost. Without UK evidence on comparative resource use in higher MANSA subgroups, intervention costs in subsequent years or costs specific to Wales, further health economic analysis cannot address these uncertainties.

The only available QALY estimates come from the non-UK cost-utility study by Feng et al. (2022). This analysis was based on observed differences in EQ-5D that were not statistically significant at six months (Jovanović et al. 2022). It is unknown whether the IMPULSE RCT was sufficiently powered to detect differences in EQ-5D (a secondary outcome), particularly over the shortened follow-up period. Whether generic measures like EQ-5D are appropriate for people with mental health conditions like schizophrenia has also been questioned in the literature (Brazier et al. 2014, Papaioannou et al. 2011).

To provide additional context to the UK cost-effectiveness analysis, we estimated EQ-5D and QALY gains from other outcomes collected in the 12-month UK RCT. However, we acknowledge there is considerable uncertainty associated with such estimation.

6.2.1 Mapping trial endpoints to EQ-5D

The primary outcome of the RCTs described in Section 5 was subjective quality of life, measured by MANSA. MANSA is a much broader measure of quality of life than EQ-5D because it assesses satisfaction across several life domains, including relationships, housing, crime and finances, in addition to health and mental health. MANSA and EQ-5D are moderately correlated but have been described as "complementary rather than substitutes" (Halling Hastrup et al. 2011). We are not aware of any validated algorithms that enable mapping between these two measures.

A mapping study has been published to allow the prediction of unobserved health-related utility values for people with schizophrenia from clinical variables. Siani et al. (2016) mapped PANSS to EQ-5D, measured using the UK value set, for 1,208 people in the European Schizophrenia Cohort (EuroSC). UK patients made up 27% of the study population. Baseline age (41.8 years) and percentage male (63%) were similar to the population described by Priebe et al. (2017). The mean PANSS general score was 27.87 (standard deviation 9.65), compared with means of 26.4 to 34.6 at various time points in each arm of Priebe et al. (2017).

Siani et al. (2016) found that while EQ-5D decreased with higher PANSS general scores, there were no significant associations with PANSS positive or PANSS negative. There was little variation in the findings between countries and consequently, two models were developed linking PANSS general to EQ-5D, adjusting for age, sex and depression (model 2 only). The published models suggested that EQ-5D improves by around 0.005 to 0.008 for every unit decrease in PANSS general.

We estimated that the relative improvements in PANSS general for DIALOG+ versus standard care in Priebe et al. (2017) would translate to improvements of 0.02 to 0.03 in EQ-5D at each time point. It is unknown whether these differences are large enough to be considered important by people with psychosis and schizophrenia (Barton et al. 2009, McClure et al. 2018). Over the 12-month trial period, this was estimated to result in a gain of around 0.02 QALYs per person, worth between £325 and £528 at a cost-effectiveness threshold of £20,000 per QALY gained (Table 4).

Table 4 – Estimation of quality-adjusted life year gains associated with differences in PANSS general reported in Priebe et al. (2017)

Estimate	PANSS general adjusted mean difference (Priebe et al. 2017)	Estimates based on Siani et al. (2016)	
		Model 1	Model 2
Difference in PANSS general or EQ-5D index: DIALOG+ versus standard care			
3 months	-3.415	+0.026	+0.016
6 months	-4.041	+0.031	+0.019
12 months	-4.271	+0.033	+0.020
Estimated 12-month gains*			
QALYs	NA	0.026	0.016
Net monetary benefit	NA	£528	£325

Model 1: EQ-5D = 1.026055 - 0.0076876 x PANSS general + 0.0457537 x Sex - 0.0020646 x Age
Model 2: EQ-5D = 1.011187 - 0.0047262 x PANSS general + 0.0322763 x Sex - 0.0023449 x Age - 0.0192384 x CADSS

*QALY gains were estimated assuming differences in PANSS general occurred mid-way through each follow-up period. Corresponding net monetary benefit was estimated using a cost-effectiveness threshold of £20,000 per QALY gained and does not account for non-significant cost-savings estimated in Priebe et al. (2017).

Abbreviations: CADSS: Calgary Depression Scale for Schizophrenia; EQ-5D: EuroQOL five dimensions; PANSS: Positive and Negative Syndrome Scale; QALY: quality-adjusted life year

The estimated EQ-5D difference at six months of 0.019 to 0.031 is higher than the (non-significant) difference of 0.014 reported from the IMPULSE RCT (Jovanović et al. 2022). A higher EQ-5D difference for Priebe et al. (2017) makes intuitive sense because it aligns with the six-month adjusted mean difference in MANSA scores, which were also higher in Priebe et al. (2017) than IMPULSE (0.257 versus 0.181). PANSS was not collected in the IMPULSE RCT so we cannot assess how estimating EQ-5D in this way compares to observed EQ-5D values within the same study.

Siani et al. (2016) performed cross-validation to demonstrate the predictive ability of their models within the EuroSC dataset. However, they did not report how performance varied across the range of observed EQ-5D or PANSS values or perform external validation to other datasets.

Other published mapping studies have also reported associations between PANSS and EQ-5D. However, these come from smaller, primarily Asian populations. A more recent study by Abdin et al. (2019) mapped PANSS to EQ-5D-5L using the UK value set for 239 people with schizophrenia in Singapore. In this study, EQ-5D was estimated to improve by around 0.015 for every unit decrease in PANSS general. This is consistent with Chang et al. (2013) who found EQ-5D improved by 0.015 for every unit decrease in PANSS general for 60 people with schizophrenia in Taiwan.

7. Organisational considerations

As part of our appraisal process, experts were contacted by HTW to give comment on organisational considerations. Their comments are summarised below.

Training and cost

Experts agreed that meaningful implementation of the tool would require appropriate training and organisational backing. One expert commented that the training currently available for the DIALOG+ tool is not onerous and can be achieved in a one day session. They also indicated that there is now a fidelity manual for training and implementation purposes.

One expert indicated that the setup costs associated with DIALOG+ (for e.g., tablet computers) is likely to be absorbed in routine costs. Two experts commented that the tool may require further development of IT infrastructure to upload the data generated by the DIALOG+ tool and this may incur costs.

Implementation and resources

Experts agreed that there is often a high administrative burden, with many staff working at capacity in community mental health teams, and the DIALOG+ tool may present an additional task if it is not properly implemented. One expert also identified the potential impact of high staff turnover on delivery of the DIALOG+ tool.

Barriers to use of DIALOG+

All experts who commented were able to give more insight to potential barriers in the use of DIALOG+ in the secondary mental health setting. Barriers identified included staff and patient engagement with the tool, competing demands on clinic time, and lack of awareness of the tool.

Experts identified potential barriers that are specific to the Welsh context. The DIALOG+ scale and resulting documentation assess similar domains to the Care and Treatment Plan that was introduced to the secondary mental health setting as part of the Mental Health (Wales) Measure 2010. They commented that for care co-ordinators, completing DIALOG+ may be perceived as replicating effort where this documentation has already been completed, adding to administrative burden. Experts also identified that the use of paper-based case notes in the secondary mental health setting may be a barrier to effective use of DIALOG+ as it is primarily a digital tool.

8. Patient, carer and family considerations

HTW's Patient and Public Standing Group (PPISG) met to discuss appropriate methods for including patient views and experiences into this appraisal. PPISG's recommendation was to approach mental health charities to discuss the need for online tools, such as DIALOG+, and to gather the experiences of people with schizophrenia and psychosis. Several mental health charities were approached but no organisations were able to contribute patient submissions at this time.

HTW also conducted a specialised literature search for papers reporting on the views and experiences of patients and their families. Eight relevant papers were found. Papers in this review included:

- Three qualitative reports on the experiences of patients with schizophrenia or psychosis using DIALOG+
- Three qualitative reports on the experiences of patients within mental health using DIALOG+
- Two qualitative reports on the lived experience of people with schizophrenia

The results of the literature search are as follows.

8.1 Understanding schizophrenia

MIND describe how schizophrenia is a complex mental health problem with many misconceptions. While each person's experience is unique, MIND note that many people with schizophrenia, in addition to hallucinations and delusions, can experience difficulty concentrating, a desire to avoid people, and disorganised speech and thinking, all of which can make accessing community services and communicating with practitioners more challenging. (Mind 2020)

Like other mental health conditions, people with schizophrenia or psychosis experience a fluctuating mental health state, where there are periods during which their condition is more stable and periods where it is less stable. Many people with schizophrenia or psychosis report how episodes where they experience hearing voices, intrusive thoughts or delusions, can interfere with their ability to function well, particularly in the following three areas:

- The ability to work, which can result in the loss of jobs. This directly influences a person's ability to earn a wage and have financial independence, which in turn can limit their means to independent housing.
- Finance management. People with schizophrenia or psychosis are also particularly vulnerable to debt, as described by patient experiences related in Living With Schizophrenia – a UK online patient resource – as it becomes very difficult to manage finances when experiencing an episode of psychosis, with 36% of people with mental

health issues having severe or crisis debts compared to around 6% of the general population (LWS UK 2015).

- Independent living. People with psychosis or schizophrenia can be housed in various settings, from inpatient facilities to supported accommodation, therapeutic communities or living with parents.

Difficulties in any of these areas can increase the amount of stress a person is experiencing, which in turn can have a negative impact on the presentation of their mental health.

Healthtalk.org – an online database of UK patient experiences and stories supported through the Dipex Charity – travelled across the UK to talk to people with psychosis to record their experiences with diagnosis, stigma and treatment, among others. People shared how having a stable place to live, support with finances and benefits, and support to work and access education, were particularly important to them (healthtalk.org 2019).

Lysaker et al. (2005) note how "many with schizophrenia find social interactions a profound and terrifying threat to their sense of self" across all types of relationships and in multiple settings, including in the community with a healthcare practitioner. It can be difficult to understand the intentions of others and can make encounters with other people appear threatening.

Another common symptom associated with schizophrenia or psychosis is disordered thinking and speech, where people have trouble concentrating and maintaining a train of thought, which can affect the way they answer questions. Types of disordered speech include loose associations, where a person will shift rapidly between unconnected thoughts, repetition of words and phrases, made up words or phrases that only having meaning to the speaker and meaningless use of rhyming words (Smith et al. 2023). This means that people with schizophrenia or psychosis may have difficulty expressing themselves, making their thoughts or wishes known or communicating important information.

8.2 Patient experiences in mental health outpatient services

For people with schizophrenia or psychosis, attending outpatient appointments can present them with unique challenges.

In a recent survey of patient experiences, national health think tank The Nuffield Trust found that, when compared to other services such as emergency services and adult inpatient care, community mental health service users rated their overall experiences the least favourably. Participants were asked "in the last 12 months, have NHS mental health services given them any help or advice with finding support for different aspects of their lives". The responses received showed that physical health needs were best supported, whereas help with finances and benefits and finding and/or keeping work were less well supported. Not all patients report being offered help, or signposted to organisations that can help, as a routine part of their outpatient appointments. Additionally, the survey reports that the number of respondents who felt they were given enough time to discuss their needs and treatment has decreased over time, falling from 90% in 2014 to 84% in 2022 (Nuffield Trust 2022).

In their research, Schneider et al. (2004) note how "Good communication on the part of health care professionals is an essential element in developing the strong practitioner-patient relationship necessary in the treatment of schizophrenia". This is particularly relevant in the outpatient setting, where practitioners rely on the patient's ability to inform them of their progress, their satisfaction with their lives and of any problems or issues with which they need help, often without first being asked. This supports the need for a unified, structured approach to asking people with schizophrenia to specifically report on their satisfaction with their quality of life and treatment outcomes in the outpatient setting.

Currently, the interaction in these meetings is based more on common sense than on evidence-based methods, according to The Nuffield Trust.

8.3 Patient experiences of using DIALOG+

8.3.1 People with schizophrenia

8.3.1.1 Improving DIALOG to DIALOG+ (UK based study)

In their trial to improve the DIALOG model to the DIALOG+ model, Priebe et al. (2017) conducted focus groups with a sample of 19 patients who experienced DIALOG+, in order to gain their experiences of the intervention. All the participants had passed the 6 month follow-up period from the RCT. Patients were allocated to groups based on their availability and were diverse with respect to age, gender and ethnicity across groups. Thematic analysis yielded three main themes:

- self-reflection through DIALOG+
- therapeutic self-expression through DIALOG+
- the role of the clinician in DIALOG+.

8.3.1.1.1 Self-reflection through DIALOG+

Participants noted that DIALOG+ helped them to identify how they were feeling in the present moment and evaluate their current situation objectively. They advised that DIALOG+ helped them to monitor how they were doing from month to month, which helped them to reflect more widely on how they were doing overall and motivated them to make the changes required to improve their situation. Noticing and reflecting on improvements from month to month had the potential to give patients hope and the solution-focused approach to problems had an empowering effect.

> *"sometimes you get so caught up dealing with things on a daily basis that you don't really check yourself, and when you're asked these questions on a scale of 1–10 or whatever it kind of gives you more of an insight into how you are actually feeling."*
>
> *"The questions . . . made me look and reflect on my life . . . as the situation that I'm in right now. You know, it asks you about, are you happy with your life, um, how's your progress, how's your safety, how's your property and what not . . . I'd never addressed some of the issues that I came across in the questionnaire, like, they'd never actually crossed my mind before."*
>
> *"You start improving yourself because you're aware of it now . . . It made me realise what I needed to do. And then if I needed that assistance, I would approach my care coordinator and let him know that, 'you know what, I'm lacking in this department', or 'I'm doing well in this department, so, what can we do to improve myself."*
>
> (Patient quotes from Priebe et al. (2017)).

However, some patients reported that it did not improve their self-reflection, that they considered it 'just another way of putting down thoughts' before 'my day went on'.

8.3.1.1.2 Therapeutic self-expression

Participants linked their ability to express themselves through the use of DIALOG+ with improved affect. Patient-centred questioning and exploration of a range of relevant topics helped patients

to be expressive and enabling them to talk about topics that were important to them, made them feel better overall.

> *"Every month, once a month. Taking about my, my medication . . . Talking about my accommodation . . . Talking about my family . . . They were talking about so many things in my life. I've been enjoying it . . . My family. My future. How my future will be. Talking about so many things."*
>
> *"I just felt better after the end of the session, than I did without the iPad."*
>
> (Patient quotes from Priebe et al. (2017)).

Importantly, patients did not report feeling influenced by their practitioner to give themselves certain scores while rating themselves, but rather enabled patients to be more honest with their practitioners.

> *"My care co-ordinator, he would say to me, 'Oh [patient name], don't you think you should score yourself a bit higher or a bit lower on that?' I goes 'No, that's what I think the scale is' [laughs], you know what I mean?"*
>
> (Patient quote from Priebe et al. (2017)).

However, some patients felt 'bombarded' by the number of questions, drained by the length of the process, and unable to engage effectively. Some found the questions difficult to understand and relied on input from the practitioner, while others struggled to find meaning in the answers provided and struggled to give themselves a rating score, noting particularly that fluctuations in their mental health presentation could impact on their ability to engage with the tool.

> *"It's just questions and you can't concentrate, it's like you're in your own world and even looking at things take on a different meaning, so when you're actually in psychosis it's very hard to concentrate and sometimes it can even be annoying."*
>
> *"I felt good after the first one but the second, this was draining me, I'm bored . . . To me it was like a bit confrontational . . . Like, why you asking me why why why, 1 to 7, why I'm happy with 5…"*
>
> *"I just answer the question to the best of my ability, just answer it to the best of my ability, that's all I can do, but sometimes some of the questions can be tricky, very tricky, so you don't know what score to rate it at."*
>
> (Patient quotes from Priebe et al. (2017)).

8.3.1.1.3 The role of the clinician

Patients advised that they found DIALOG+ helped clinicians to do a better job and that it felt 'more professional' to them when their clinician used the tablet. They reported that their relationships with clinicians were improved overall by the use of DIALOG+.

> *"[DIALOG+ was] more structured, more professional . . . more focused . . . She would make actions where she would say, 'What could be done about it?'. So, she would make notes in, like, say 'Contact so and so for this' . . . And I think that was better, because things got done, in that way . . . Issues got addressed . . . Constructive things were being done about certain issues. So I think more and more was being done, with [DIALOG+] in place."*
>
> *"It's filed up, filed, it's in the system, it won't easily get lost, you can easily get it back or whatever and have a look."*

"What I found with my care co-ordinator that he's like in, he gives me injection, like 'Hi, how you know are you', and he's out and he gives you the impression that he just doesn't give a shit and he's there to do his job, whereas when you get asked questions about how you're feeling, what your well-being is, what are your hopes and aspirations, it makes you feel more like somebody [cares] . . . Sometimes it's like when you've got mental illness it's like you can feel isolated, so just having someone asking you questions, it's interaction isn't it, and at the very basic of it is company at the end of the day."

(Patient quotes from (Priebe et al. 2017)).

However, some patients took the view of DIALOG+ as a 'checklist' for the clinicians' use, and not something for them to be concerned with. This may be due to the way in which individual clinicians approached the use of DIALOG+ which did not always seem to be patient-centred, according to patients' opinions.

"I just know that the guy was writing down and ticking off, ticking off things . . . I didn't have too much [sic] dealings with it . . . My care co-ordinator asked me, did the iPad thing with me, I believe maybe once or twice."

"When I asked my care co-ordinator, I think the way he explained to me I didn't really get it, even until now I didn't really know the real meaning of the iPad work, I don't know the meaning, what we are using it for."

"I don't remember being given options of what I wanted to talk about, he just asked me questions and I answered them."

(Patient quotes from (Priebe et al. 2017)).

8.3.1.2 Studies outside of the UK

Pemovska et al. (2021) conducted 32 focus groups with 174 participants from mixed backgrounds, including patients with psychosis, clinicians, policymakers and carers. Six major themes were identified:

- intervention characteristics
- carers' involvement
- patient and organisational benefits
- attitudes towards implementation
- frequency of intervention delivery
- suggested changes to the intervention.

The themes of carer's involvement, attitudes towards implementation and frequency of intervention will not be summarised in this report as they are more concerned with outcomes relevant to clinicians and policymakers not to outcomes of importance to patients.

8.3.1.2.1 Intervention characteristics

Patients advised that DIALOG+ was easy to use, although some patients expressed uncertainty in their understanding of the rating scale and items. Familiarity with other quality of life scales was shown to influence their ability to understand the scales in DIALOG+

"Yes, [DIALOG+ rating scale] is a classic Likert scale."

(Patient quote from Pemovska et al. (2021)).

Patients advised that DIALOG+ added structure to routine appointments while involving their psychological needs, noting that its ability to enable them to track their treatment progress was particularly attractive to them.

8.3.1.2.2 Patient benefits

Patients reported feeling empowered and having a better relationship with their clinician following the use of DIALOG+.

> *"I like that we have freedom, that we can follow this app and that we have information from previous sessions. We see if we have made progress or not, we can see if the doctor's therapy, advice, or drug were adequate."*
>
> *"It would motivate me to work harder on myself and spend less time doing nothing but wandering around."*
>
> (Patient quotes from Pemovska et al. (2021)).

However, some patients report difficulty understanding or coping with questions, although this was not explored in detail.

8.3.1.2.3 Suggested changes

Patients suggested included a 'miscellaneous' field to allow them to discuss any concerns or issues not captured in the DIALOG+ domains.

Additionally, Omer et al. (2016) conducted focus groups and interviews with patients as part of their RCT. Four qualitative themes emerged regarding the mechanisms of DIALOG+:

- a comprehensive structure
- self-reflection
- therapeutic self-expression
- empowerment.

A comprehensive structure

Patients reported that the benefits of DIALOG+ cover a wide range of topics, and that the structured approach facilitated the agreement of solutions by the end of the discussion.

> *"[DIALOG+] was more focussed, and, um, there was like actions at the end where, after we had discussed, the few topics that we chose. . .she would make actions where she would say, "What could be done about it?" So, she would make notes in, like, say "Contact so and so for this". . . And I think that was better, because things got done, in that way. . . Issues got addressed. . . Constructive things were being done about certain issues. So I think more and more was being done, with [DIALOG+] in place."*
>
> (Patient quote from Omer et al. (2016)).

Self-reflection

Many patients stated that DIALOG+ encouraged self-reflection and an increased awareness of their current situation, what was going well and where changes were needed. Patients found it

useful to monitor changes over time and this helped them to identify where they needed improvement, which also instilled hope.

> *"It made me really stop and look at my life, and basically, like, the progress I need to make, or um, things that I need to stop doing . . . You make good use of the knowledge, that you need to improve yourself . . . Maybe prior to using [DIALOG+] it never actually crossed your mind."*
>
> *"Sometimes you get so caught up in life you're just praying for the good days, so it's nice to know that . . . you can reflect and say, "well, last month I was feeling shitty but this month I'm all right", and it gives you a bit more hope for the future, so in that way it's good."*
>
> (Patient quotes from Omer et al. (2016)).

Therapeutic self-expression

Some patients reported that DIALOG+ encouraged them to express themselves, which helped improve their therapeutic outcomes. The process of exploring and expressing their thoughts and feelings on a wide range of topics helped improve their affect.

> *"It's like an offload, isn't it, dust yourself off, you're up to speed . . . It's like you've been rebooted with [DIALOG+], it's like a different kind of therapeutic feeling. . . This cheers me up. . . I feel happy to do it."*
>
> (Patient quote from Omer et al. (2016)).

Empowerment

Some patients reported a sense of empowerment, which included an increased involvement in deciding which domains to talk about during the meetings and increased reflection on what actions they can take to improve their situation.

> *"It can make you think about what you're going to do for your life, obviously when you're asked questions it can make you think about what you can do for yourself as well."*
>
> (Patient quote from Omer et al. (2016)).

8.3.2 People with other mental health conditions

Three papers were also found exploring patient's experiences of using DIALOG+ with other mental health conditions:

- Sikira et al. (2022) conducted in-depth semi-structured interviews with patients with severe depression and anxiety for three different types of psychosocial intervention, one of which was DIALOG+.
- Matanov et al. (2021) considered service users with chronic depression views of DIALOG+.
- Gómez-Restrepo et al. (2022) looked at stakeholder perspectives of DIALOG+ for adolescents with common mental disorder.

The following themes were reported across all three:

8.3.2.1 Structure

Patients described how DIALOG+ brought more structure into their appointments and helped them to reflect on the areas that needed the most attention, leading to a better understanding of how mental health interacts with and impacts on other areas of life. Although for some, this approach was too rigid and not all the domains were relevant to them.

8.3.2.2 Improved therapeutic communication

Some patients felt the use of DIALOG+ helped them communicate with their practitioners more efficiently. It also reminded them what was agreed in previous meetings, and this was seen as particularly useful for those service users who struggle with memory. Rating the life areas with the DIALOG scale was also seen as a less intrusive way to initiate conversations on sensitive topics or with those who were not confident enough to directly express their thoughts and feelings.

> *"The doctor and I, our communication became simpler, and our appointments became more comfortable. It became easier for me to express my opinion in front of him. I wasn't afraid I would say something wrong. This intervention taught me that there are no right or wrong answers. What is important is how I feel, and that I give my opinions to help myself."*
>
> (Patient quote from Sikira et al. (2022)).

> *"I found the four stepped approach, when you break it down, I found that really helpful because I think some of the questions that, normally, I might not have asked of a client like what can you do, what can I do, what could others do (…) That helped me to have some conversations with patients I've actually known quite well for quite a long time that we haven't explored before."*
>
> (Patient quote from Matanov et al. (2021)).

However, some patients felt that it impaired the natural flow of communication, making it less likely to spontaneously move in other directions.

> *"I didn't feel I was having a real conversation with her. I felt I was just going through ticking the boxes type of thing."*
>
> (Patient quote from Matanov et al. (2021)).

The importance of building trust with a clinician in order to share sensitive information about their mental health openly and willingly was discussed in Gómez-Restrepo et al. (2022) for adolescents.

8.3.2.3 Reflecting and monitoring

Patients advised that using DIALOG+ helped them to self-reflect more on both their strengths and difficulties, the impact they have on their life, and how to make changes. However, some did not find the DIALOG scale easy to use and found having to quantifying feelings difficult.

8.3.2.4 Empowerment

Patients found that DIALOG+ increased their confidence to engage in decision making about their care and helped them regain the sense of ownership of their recovery. Some felt that they were more listened to and more motivated to engage in treatment.

> *"Participating in the intervention allowed me to think more about myself, and I started to prioritize things, putting myself first, and I started to love and appreciate myself more, I learned to say no."*
>
> (Patient quote from Sikira et al. (2022)).

> *"I thought it was very complete, very interesting, yes, well, generally they never ask you, like the problems you may have or how you are…"*
>
> (Patient quote from Gómez-Restrepo et al. (2022)).

In particular, Gómez-Restrepo et al. (2022) note that feelings and emotions can be difficult to identify and verbalize, particularly for adolescents, and that DIALOG+ was helpful in recognising and communicating emotions and difficult situations.

However, some patients did report feeling scrutinised about making progress in life domains and completing agreed actions they did not feel able or willing to accomplish, which led them to feel discouraged when confronted by a 'lack of progress'.

8.3.2.5 Additional categories

Patients reported that not all the domains were equally relevant to them and the idea of a more 'personalised' approach was discussed where patients can set a domain area for themselves according to an area they want to explore and discuss with their clinician.

8.3.3 Patient experience conclusions

Many patients feel that DIALOG+ added significant value to their outpatient appointments, from better self-reflection, improved understanding and exploration of various aspects of their lives, to improved engagement in treatments and healthier behaviour, empowerment to take control of their therapeutic goals and the ability to track their progress.

DIALOG+ also ensures equity of patient treatment in a service area that can be unstructured and 'left to common sense'.

However, how well DIALOG+ can influence how patients feel, how they can express themselves, define goals and set action plans is linked to how well clinicians use the tool at meetings, including explaining thoroughly the questions, discussing answers, allowing the discussions to be patient-centred and following up from previous sessions. Clinician's attitudes to using DIALOG+ have been shown to be an important part of a patient's ability to get the most out of their sessions and patients rely on their clinicians to explain the tool and, in some cases, to help them to attribute meaning to the process.

Patient's mental health presentation can also influence how well DIALOG+ can be used. Not all patients were able to attribute meaning to the questions and rating scales used and as such the exercise was without value. Similarly, not all patients felt that the domain questions were relevant to them and would prefer to have the option to pick a domain topic for themselves.

9. Conclusions

This evidence review summarised published evidence on the clinical and cost effectiveness of solution-focused assessment tools for improving the treatment of people with schizophrenia and psychosis in secondary mental health services. This review has also summarised the literature available for patient, carer and family considerations for the DIALOG+ intervention.

The literature search identified three RCTs: DIALOG, DIALOG+ and IMPULSE. In some instances trial data were available across multiple publications, and these have been included in our review where this is the case. A summary of each RCT, including study characteristics is available in Appendix 4. The evidence included in this review suggests that solution-focused assessment tools may improve subjective quality of life at 12 months and decrease the number of general symptoms. However, there are some outcomes that appear weaker in terms of statistical significance, such as outcomes relating to treatment satisfaction, unmet need, and positive and negative symptoms.

Remaining uncertainties primarily relate to the generalisability of the evidence to Wales. Two included RCTs are multi-country, and the standard care provided varies between them. The only UK data available is limited to one London NHS foundation trust. There is also uncertainty regarding the 12-month data reported in Jovanović et al. (2022). The authors warn against interpretation of this data, as the study was impacted by the COVID-19 pandemic. However, the data was interpreted and presented in the RCT and as such, is included in this EAR. The validity of this evidence is uncertain. Finally, across two RCTs considerable drop off in the implementation of the DIALOG or DIALOG+ intervention was observed when clinicians were given the option to discontinue use of the tool. The reasons for this discontinued use were not sufficiently explained, and this raises uncertainty about the acceptability of the intervention.

Two cost-effectiveness studies suggest that the cost of DIALOG+ is likely to be offset by savings in other health and social care resources. Statistically significant improvements in health-related quality of life have not been shown. However, UK analysis suggests that improvements in symptoms and subjective quality of life may be achieved with DIALOG+ at no additional cost compared with standard care.

Experts raised some potential organisational issues to consider, including the cost of implementation, barriers to effective delivery of the DIALOG+ tool in Wales, and the potential administrative impact of the digital aspect of the DIALOG+ tool.

10. Contributors

The HTW staff and contract researchers involved in writing this report were:

- A. Evans and G. Davies – patient and public involvement authors
- A. Needham-Taylor – clinical author
- D. Jarrom – quality assurance of clinical section
- E. Hasler – literature searches and information management
- H. Bennett – health economics author
- K. McDermott – project management
- M. Prettyjohns – quality assurance of health economics section

The HTW Assessment Group advised on methodology throughout the scoping and development of the report.

A range of clinical experts from the UK provided material and commented on a draft of this report. Their views were documented and have been actioned accordingly. All contributions from reviewers were considered by HTW's Assessment Group. However, reviewers had no role in authorship or editorial control, and the views expressed are those of Health Technology Wales.

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12. Evidence review methods

We searched for evidence that could be used to answer the review question: 'What is the clinical and cost-effectiveness of solution focused therapy tools for improving the management and treatment of people with psychosis and schizophrenia within secondary mental health services?'.

The criteria used to select evidence for the appraisal are outlined in Appendix 1. These criteria were developed following comments from the Health Technology Wales (HTW) Assessment Group and UK experts.

The systematic search followed HTW's standard rapid review methodology. A search was undertaken of Medline, Embase, PsycINFO, CINAHL, KSR Evidence, Cochrane Library and the International Network of Agencies for Health Technology Assessment (INAHTA) HTA database. Additionally, searches were conducted of key websites and clinical trials registries, and supplementary searching by forward citation tracking of key papers in Scopus. The searches were initially conducted 7–9 March 2023, with an update search (of the key databases and citation tracking) undertaken on 2 August 2023. Appendix 2 gives details of the search strategy used for Medline. Search strategies for other databases are available on request.

Appendix 3 summarises the selection of articles for inclusion in the review.

Appendix 1 – Inclusion and exclusion criteria for evidence included in the review

	Inclusion criteria	Exclusion criteria
Population	Service users of secondary mental health services with a diagnosis of psychosis or schizophrenia (ICD-10: F20-29)	• Service users with any other diagnosis • Service users receiving care in any setting other than secondary mental health services.
Intervention	Use of any solution-focused assessment tool	Any other assessment tool
Comparison/ Comparators	Standard care [with solution-focused assessment used either in addition to, or as a replacement for, standard care]	
Outcome measures	• SQOL (e.g., MANSA) • Treatment satisfaction (e.g., CSQ) • Unmet needs (e.g., CANSAS) • Psychological Symptoms (e.g., PANSS) • Health-related quality of life (e.g., EQ-5D) • Economic outcomes, especially where they relate to cost and use of resources	
Study design	We will prioritise the following study types, in the order listed: • Systematic reviews of randomised controlled trials. • Randomised controlled trials. • Non-randomised comparative trials. • Single-arm (no control group) trials that report any relevant outcome. We will only include evidence from "lower priority" sources where this is not reported by a "higher priority" source. This could be because higher priority evidence: • Does not cover all relevant populations • Does not compare the technology of interest to all relevant comparators • Does not cover all outcomes of interest • Reports over short-term follow up periods, and longer follow up data is required to facilitate decision making. Where relevant and well-conducted systematic reviews exist we will use these by: • Reporting or adapting their reported outcome measures where these are fully relevant to the scope of our review, and appropriate synthesis methods have been used • Using these reviews as a source of potentially relevant studies where the review cannot be used as a source of outcome data • We will prioritise systematic reviews in terms of the sources of evidence they include, using the order described above.	
Search limits	No date limits apply	

	Inclusion criteria	Exclusion criteria
Other factors	English language only	
Publication status	We will include evidence from studies that are published in full. We will only include evidence from conference abstracts if there are critical gaps in the fully published evidence. We will include details of any ongoing trials that have a planned completion or reporting date within 24 months of the date searches are carried out. We will only include trials of a design that is likely to add to the existing evidence in terms of certainty; for example, if we report evidence from randomised controlled trials in the EAR, we will only report details of ongoing trials if they also use a randomised design.	

Appendix 2 – Medline strategy

Ovid MEDLINE(R) ALL 1946 to August 01, 2023		
Schizophrenia/Psychosis		
1	*Mental Health Services/	30534
2	*Community Mental Health Services/	13443
3	Mentally Ill Persons/	6432
4	exp Psychotic Disorders/	58597
5	exp Schizophrenia/	115267
6	Paranoid Disorders/	4272
7	exp "Schizophrenia Spectrum and Other Psychotic Disorders"/	163104
8	(psychoses or psychosis or psychotic* or schizo*).tw,kf.	216649
9	((chronic* or persistent or serious* or sever*) adj2 mental* adj2 (ill* or disorder*)).tw,kf.	16679
10	((delusion* or hallucinat*) adj2 (illness* or disorder*)).tw,kf.	1627
11	((percept* or affect*) adj2 disturbance*).tw,kf.	2559
12	(thought adj2 disorder*).tw,kf.	2444
13	((postschizo* or post-schizo*) adj2 depress*).tw,kf.	14
14	(pseudoneurot* or pseudopsychopath* or pseudo-neurot* or pseudo-psychopath*).tw,kf.	156
15	(paraphreni* or hebephreni* or oneirophreni*).tw,kf.	539
16	*Forensic Psychiatry/	6393
17	(forensic* adj2 (setting* or psychiatr* or mental health)).tw,kf.	5449
18	or/1-17	314380
Consultation / relations / feedback / shared decision making/ goals		
19	Psychometrics/	88782
20	"Surveys and Questionnaires"/	563876
21	Interviews as Topic/	66831
22	Interview, Psychological/	15276
23	Motivational Interviewing/	2564
24	(survey* or interview* or questionnaire*).tw,kf.	1681526
25	"Referral and Consultation"/	76138
26	Professional-Patient Relations/	28575
27	Physician-Patient Relations/	76261
28	Nurse-Patient Relations/	36055
29	((routine or regular) adj3 (consultation* or meeting* or encounter* or appointment*)).tw,kf.	4007
30	Feedback/	33996
31	Feedback, Psychological/	3746
32	clinical feedback*.tw,kf.	190
33	Therapy, Computer-Assisted/	6973
34	((computer* or digital* or technolog*) adj3 (mediat* or support* or assist* or enabl*) adj3 (intervention* or treatment* or therap* or procedure* or service*)).tw,kf.	4205
35	*Decision Making/	46559
36	Decision Making, Shared/	1951
37	(share* adj3 decision* making).tw,kf.	15083
38	Goals/	19928
39	(goal* adj3 (attain* or achiev*)).tw,kf.	41497
40	personal goal*.tw,kf.	1180
41	or/19-40	2185342
Satisfaction / preference / communication / subjective quality of life		
42	Personal Satisfaction/	24377
43	Patient Satisfaction/	89574
44	((personal or patient or client or treatment or user*) adj satisfaction).tw,kf.	55552

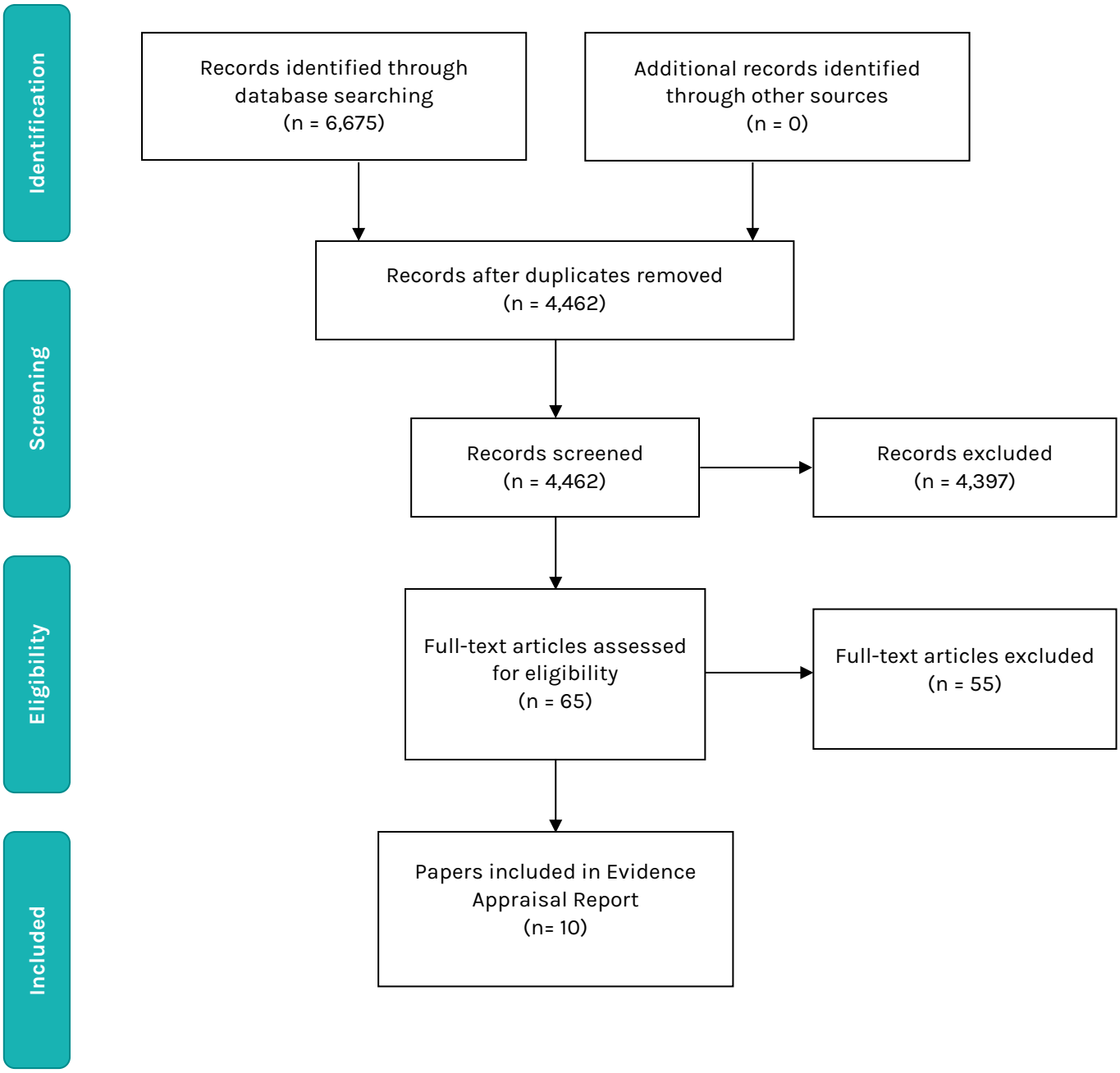
45	(satisfaction adj2 life).tw,kf.	14554
46	Patient Preference/	10702
47	((personal or patient or client or treatment or user*) adj preference).tw,kf.	8005
48	((person* or patient* or client*) adj centre*).tw,kf.	14461
49	Communication/	100598
50	(structure* adj3 communicat*).tw,kf.	1901
51	Therapeutic Alliance/	478
52	(therapeutic adj (alliance* or relationship* or communicat*)).tw,kf.	7624
53	(subjective adj3 (QoL or "Quality of life" or "life quality")).tw,kf.	2457
54	SQOL*.tw,kf.	214
55	or/42-54	284815
Set combination		
56	18 and 41 and 55	3368
Draft HTW systematic review filter		
57	systematic review.pt.	234624
58	systematic reviews as topic/	11055
59	((systematic$ or evidence$) adj (review$1 or overview$1)).tw,kf,kw.	303320
60	meta-analysis.pt.	185019
61	exp meta-analysis as topic/	27362
62	(meta-analy$ or metaanaly$ or metanaly$).tw,kf,kw.	278891
63	exp review literature as topic/	23044
64	or/57-63	484690
65	(medline or pubmed or medlars).ab.	325104
66	embase.ab.	155755
67	cochrane.ab,jw.	137432
68	(cinahl or cinhal).ab.	46591
69	(psychlit or psyclit or psychinfo or psycinfo).ab.	60076
70	science citation index.ab.	3798
71	cancerlit.ab.	638
72	british nursing index.ab.	421
73	hmic.ab.	368
74	current contents.ab.	1266
75	or/65-74	367451
76	reference list$.ab.	22286
77	bibliograph$.ab.	22694
78	(handsearch$ or hand-search$).ab.	11188
79	relevant journals.ab.	1357
80	manual search$.ab.	6091
81	(search adj (strategy or criteria)).ab.	24939
82	(search$ adj4 literature).ab.	98856
83	or/76-82	162818
84	review.pt.	3188325
85	((selection or inclusion or exclusion) adj criteria).ab.	192962
86	data extraction.ab.	32866
87	84 and (85 or 86)	77069
88	64 or 75 or 83 or 87	659292
89	comment.pt.	1015062
90	letter.pt.	1224351
91	editorial.pt.	658897
92	or/89-91	2178114
93	88 not 92	638808

Draft HTW guidelines/HTA filter		
94	exp Evidence-Based Medicine/	76575
95	practice guideline/	30563
96	guideline/	16581
97	exp guidelines as topic/	172812
98	guideline$.ti,kf.	107656
99	exp technology assessment, biomedical/	12152
100	((technology adj (apprais$ or assess$)) or HTA or HTAs).tw,kf,kw.	11408
101	rapid review*.ti,kf,kw.	1266
102	(evidence* adj2 (base* or synthes*)).ti,kf,kw.	47054
103	or/94-102	361415
SIGN RCT filter		
104	Randomized Controlled Trials as Topic/	163269
105	randomized controlled trial/	597501
106	Random Allocation/	106955
107	Double-Blind Method/	175876
108	Single-Blind Method/	32854
109	Clinical Trial/	538524
110	clinical trial, phase i.pt.	25082
111	clinical trial, phase ii.pt.	40011
112	clinical trial, phase iii.pt.	21895
113	clinical trial, phase iv.pt.	2434
114	controlled clinical trial.pt.	95397
115	randomized controlled trial.pt.	597501
116	multicenter study.pt.	336424
117	clinical trial.pt.	538524
118	exp Clinical Trials as Topic/	383650
119	or/104-118	1571595
120	(clinical adj trial$).tw.	481751
121	((singl$ or doubl$ or treb$ or tripl$) adj (blind$3 or mask$3)).tw.	198417
122	PLACEBOS/	35932
123	placebo$.tw.	248104
124	(random$ adj allocat$).tw.	39416
125	(allocat$ adj2 random$).tw.	44025
126	or/120-125	789085
127	119 or 126	1921579
128	case report.tw.	400016
129	letter/	1224351
130	historical article/	369424
131	or/128-130	1974715
132	127 not 131	1878840
SIGN economics filter		
133	Economics/	27505
134	"costs and cost analysis"/	51449
135	Cost allocation/	2018
136	Cost-benefit analysis/	92811
137	Cost control/	21667
138	Cost savings/	12726
139	Cost of illness/	31613
140	Cost sharing/	2744
141	"deductibles and coinsurance"/	1859
142	Medical savings accounts/	548

143	Health care costs/	44251
144	Direct service costs/	1217
145	Drug costs/	17425
146	Employer health costs/	1097
147	Hospital costs/	11957
148	Health expenditures/	24096
149	Capital expenditures/	2002
150	Value of life/	5808
151	exp economics, hospital/	25729
152	exp economics, medical/	14394
153	Economics, nursing/	4013
154	Economics, pharmaceutical/	3108
155	exp "fees and charges"/	31388
156	exp budgets/	14126
157	(low adj cost$).mp.	89825
158	(high adj cost$).mp.	26971
159	(health?care adj cost$).mp.	16704
160	(fiscal or funding or financial or finance).tw.	199473
161	(cost adj estimate$).mp.	2753
162	(cost adj variable$).mp.	197
163	(unit adj cost$).mp.	3133
164	(economic$ or pharmacoeconomic$ or price$ or pricing).tw.	410431
165	or/133-164	941420
CADTH economics filter		
166	Economics/	27505
167	exp "Costs and Cost Analysis"/	265525
168	Economics, Nursing/	4013
169	Economics, Medical/	9249
170	Economics, Pharmaceutical/	3108
171	exp Economics, Hospital/	25729
172	Economics, Dental/	1921
173	exp "Fees and Charges"/	31388
174	exp Budgets/	14126
175	budget*.ti,ab,kf.	36186
176	(economic* or cost or costs or costly or costing or price or prices or pricing or pharmacoeconomic* or pharmaco-economic* or expenditure or expenditures or expense or expenses or financial or finance or finances or financed).ti,kf.	282433
177	(economic* or cost or costs or costly or costing or price or prices or pricing or pharmacoeconomic* or pharmaco-economic* or expenditure or expenditures or expense or expenses or financial or finance or finances or financed).ab. /freq=2	382849
178	(cost* adj2 (effective* or utilit* or benefit* or minimi* or analy* or outcome or outcomes)).ab,kf.	210366
179	(value adj2 (money or monetary)).ti,ab,kf.	3053
180	exp models, economic/	16226
181	economic model*.ab,kf.	4234
182	markov chains/	15999
183	markov.ti,ab,kf.	29220
184	monte carlo method/	32297
185	monte carlo.ti,ab,kf.	60346
186	exp Decision Theory/	13329
187	(decision* adj2 (tree* or analy* or model*)).ti,ab,kf.	38161
188	or/166-187	901040

Set combinations – search and filters plus specific DIALOG/solution focused specific searching		
189	93 or 103 or 132 or 165 or 188	3799235
190	56 and 189	833
191	Patient Reported Outcome Measures/	13701
192	patient* report* outcome* measure*.tw,kf.	15239
193	patient* report* experience* measure*.tw,kf.	411
194	(PROM or PROMs or PREM or PREMs).tw,kf.	8673
195	or/191-194	27480
196	18 and 189 and 195	60
197	(interactive adj (web* or app or apps or application* or mobile* or smartphone* or software or technolog* or process*)).tw,kf.	4046
198	(DIALOG* adj5 (intervention or digital application or scale or score or scores or trial)).tw,kf.	274
199	dialog+.kw.	39
200	(solution* adj1 focus*).tw,kf.	800
201	(resource* adj1 orient* adj3 (intervention* or approach* or model*)).tw,kf.	72
202	or/197-201	5203
203	18 and 202	118
204	190 or 196 or 203	993
205	limit 204 to english language	936

Appendix 3 – Flow diagram outlining selection of relevant evidence sources



Appendix 4 – Full sources of evidence and outcome data

Table 5 – Randomised controlled trials: design and characteristics

Study reference	Setting	Participants	Interventions	Outcomes	Follow-up	Comments
Hansson et al. (2008), Priebe et al. (2007), van den Brink et al. (2011)	Community mental health services in Spain, The Netherlands, UK, Sweden, Germany and Switzerland	**n = 507** DIALOG: 271 Control: 236 **Inclusion criteria:** Living in the community and treated as outpatients by community psychiatric teams; ≥3 months of continuous care in the current service; capable of informed consent; sufficient knowledge of host country's language; primary diagnosis of schizophrenia or related psychotic disorder (ICD-10 F20-F29); aged 18-65 years; meeting routinely with key workers every two months with the expectation treatment would continue for the next 12 months. **Exclusion criteria:** Severe organic psychiatric illness; primary substance misuse. **Mean (SD) age:** DIALOG: 42.5 (11.3) Control: 41.8 (11.16) **% female:** DIALOG: 32.5% Control: 35.2% **Mean MANSA (SD) at baseline:** DIALOG: 4.7 (0.8) Control: 4.7 (0.8) **Primary diagnosis:** F20-F29 = 100% F31-33 = 0%	**Intervention**: DIALOG (the DIALOG scale) **Control**: Standard care without DIALOG (routinely at least one meeting with a key worker every two months)	**Primary**: Subjective quality of life (MANSA) **Secondary**: number of unmet needs (CANSAS), satisfaction with treatment (CSQ-8), symptoms (PANSS)	12 months	DIALOG intervention not consistently implemented, though the mean average number of sessions per patient in the trial is 5. More males than females. Possible issues with generalisability of the evidence owing to multi-country nature of the study.

Study reference	Setting	Participants	Interventions	Outcomes	Follow-up	Comments
Priebe et al. (2017), Priebe et al. (2015)	Community mental health teams in London, UK	**n = 179** DIALOG+: 94 Control: 85 **Inclusion criteria:** Aged 18-65; treatment in the community team for ≥1 month; no planned discharge for 6 months; clinical diagnosis of schizophrenia or related disorder (ICD-10 F20-29); capacity to give informed consent. **Exclusion criteria:** Mean score of ≥ 5 on MANSA, insufficient command of English for conducting meetings in English. **Mean (SD) age:** DIALOG+: 41.5 (SD 10.7) Control: 41.7 (SD 9.3) **% female:** DIALOG+: 30% Control: 33% **Mean MANSA (SD) at baseline:** DIALOG+: 4.0 (SD 0.9) Control: 3.8 (SD 0.9) **Primary diagnosis:** F20-F29 = 96% F31-F33 = 4%	**Intervention**: DIALOG+ (DIALOG scale with technology support) **Control**: Standard care without DIALOG+. (Routine meetings with designated clinician or care co-ordinator at least once per month)	**Primary**: Subjective quality of life (MANSA) **Secondary**: number of unmet needs (CANSAS), treatment satisfaction (CSQ-8), self-efficacy (GSS), mental well-being (WEMWBS), symptoms (PANSS), therapeutic relationship (STAR-P and STAR-C)	12 months	Implementation of DIALOG+ was inconsistent – data on sessions delivered is missing for 18 patients and roughly 30% of patients from the intervention arm (24) did not receive any DIALOG+ sessions owing to clinician withdrawal. Only six patients continued use of DIALOG+ past the six-month follow up. Blinding was compromised for two interviewers in three cases.
Jovanović et al. (2022)	Outpatient mental health services in Bosnia and Herzegovina, Kosovo, Montenegro, North	**n = 468** DIALOG+: 236 Control: 232 **Inclusion criteria:** Aged ≥18, primary diagnosis of psychosis in remission (ICD-10 F20-F29; F31); attending the outpatient clinic or	**Intervention**: DIALOG+ (DIALOG scale with technological support) **Control**: Standard care	**Primary**: Subjective quality of life at 12 months (MANSA) **Secondary**: mental health (BPRS, CAINS, BSI),	12 months	Generalisability concerns as study was conducted in south-east Europe. Study significantly impacted by the COVID-19 pandemic,

Study reference	Setting	Participants	Interventions	Outcomes	Follow-up	Comments
	Macedonia and Serbia	day hospital; lifetime history of at least one hospital admission; capacity to provide informed consent. **Exclusion criteria:** Diagnosis of organic brain disorders; severe cognitive deficits thus unable to provide information to study instruments. **Mean (SD) age:** DIALOG+ : 44.3 (SD 11.1) Control: 40.8 (SD 11.3) **% female:** DIALOG+: 43.6% Control: 47.8% **Mean MANSA (SD) at baseline:** Control: 4.54 (SD 0.96) DIALOG+: 4.48 (SD 0.95) **Primary diagnosis:** F20-F29 = 86% F31-33 = 14%	without DIALOG+ (Routine clinical appointments once per months for three months, then once every three months)	satisfaction with services (CSQ-8) and economic costs (Re-QoL-10 and EQ-5D-5L)		restricting interpretability of 12 month results. Intervention sessions lasted longer (average 8 minutes) than control arm, which may affect outcomes.

Abbreviations: BPRS: Brief Psychiatric Rating Scale; BSI: Brief Symptom Inventory; CAINS: Clinical Assessment Interview for Negative Symptoms; CANSAS: Camberwell Assessment of Need Short Appraisal Schedule; CSQ-8: Client Satisfaction Questionnaire-8; GSS: General Self-Efficacy Scale; ICD-10: International Statistical Classification of Diseases and Related Health Problems, 10th revision; MANSA: Manchester Short Assessment of Quality of Life; PANSS: Positive and Negative Symptoms Scale; Re-QoL-10: Recovering Quality of Life questionnaire; SD: standard deviation; STAR-C: STAR scale, clinician; STAR-P: STAR scale, patient; WEMWBS: Warwick-Edinburgh Mental Wellbeing Scale