4-year surveillance (2016)

Autism in Adults (2012) NICE guideline CG142

Appendix A: Summary of new evidence from surveillance

General principles of care

142 – 01 For adults with autism, what are their experiences of having autism, of access to services, and of treatment?

Recommendations derived from this question

1.1.1 All staff working with adults with autism should:

- work in partnership with adults with autism and, where appropriate, with their families, partners and carers
- offer support and care respectfully
- take time to build a trusting, supportive, empathic and non-judgemental relationship as an essential part of care.

1.1.2 All staff working with adults with autism should have an understanding of the:

- nature, development and course of autism
- impact on personal, social, educational and occupational functioning
- impact of the social and physical environment.

1.1.3 All health and social care professionals providing care and support for adults with autism should have a broad understanding of the:

- nature, development and course of autism
- impact on personal, social, educational and occupational functioning
- impact of and interaction with the social and physical environment
- impact on and interaction with other coexisting mental and physical disorders and their management
- potential discrepancy between intellectual functioning as measured by IQ and adaptive functioning as reflected, for example, by difficulties in planning and performing activities of daily living including education or employment.

1.1.4 All health and social care professionals providing care and support for adults with autism should:

- aim to foster the person's autonomy, promote active participation in decisions about care and support self-management
- maintain continuity of individual relationships wherever possible
- ensure that comprehensive information about the nature of, and interventions and services for, their difficulties is available in an appropriate language or format (including various visual, verbal and aural, easy-read, and different colour and font formats)
- consider whether the person may benefit from access to a trained advocate.

1.1.5 All health and social care professionals providing care and support for adults with autism and their families, partners and carers should:

- ensure that they are easily identifiable (for example, by producing or wearing appropriate identification) and approachable
- clearly communicate their role and function
- address the person using the name and title they prefer
- clearly explain any clinical language and check that the person with autism understands what is being said
- take into account communication needs, including those arising from a learning disability, sight or hearing problems or language difficulties, and provide communication aids or independent interpreters (someone who does not have a personal relationship with the person with autism) if required.

1.1.6 All health and social care professionals providing care and support for adults with autism and their families, partners and carers should ensure that they are:

- familiar with recognised local and national sources (organisations and websites) of information and/or support for people with autism
- able to discuss and advise on how to access and engage with these resources.

1.1.7 Encourage adults with autism to participate in self-help or support groups or access one-to-one support, and provide support so that they can attend meetings and engage in the activities.

1.1.8 In all settings, take into account the physical environment in which adults with autism are assessed, supported and cared for, including any factors that may trigger challenging behaviour. If necessary make adjustments or adaptations to the:

- amount of personal space given (at least an arm's length)
- setting using visual supports (for example, use labels with words or symbols to provide visual cues about expected behaviour)
- colour of walls and furnishings (avoid patterns and use low-arousal colours such as cream)
- lighting (reduce fluorescent lighting, use blackout curtains or advise use of dark glasses or increase natural light)
- noise levels (reduce external sounds or advise use of earplugs or ear defenders).

  Where it is not possible to adjust or adapt the environment, consider varying the duration or nature of any assessment or intervention (including taking regular breaks) to limit the negative impact of the environment.

1.1.9 All health and social care professionals providing care and support for adults with autism should:

- be aware of under-reporting and under-recognition of physical disorders in people with autism
- be vigilant for unusual likes and dislikes about food and/or lack of physical activity
- offer advice about the beneficial effects of a healthy diet and exercise, taking into account any hyper- and/or hypo-sensory sensitivities; if necessary, support referral to a GP or dietician.

1.1.10 All staff working with adults with autism should be sensitive to issues of sexuality, including asexuality and the need to develop personal and sexual relationships. In particular, be aware that problems in social interaction and communication may lead to the person with autism misunderstanding another person's behaviour or to their possible exploitation by others.

1.1.11 Ensure that adults with autism who have caring responsibilities receive support to access the full range of mental and physical health and social care services, including:

- specific information, advice and support to parents about their parenting role, including parent training if needed, by professionals experienced in the care of adults and children with autism
- social support, such as childcare, to enable them to attend appointments, groups and therapy sessions, and to access education and employment.

1.1.12 In order to effectively provide care and support for adults with autism, the local autism multi-agency strategy group* should include representation from managers, commissioners and clinicians from adult services, including mental health, learning disability, primary healthcare, social care, housing, educational and employment services, the criminal justice system and the third sector. There should be meaningful representation from people with autism and their families, partners and carers.

1.1.13 In each area a specialist community-based multidisciplinary team for adults with autism (the specialist autism team) should be established. The membership should include:

- clinical psychologists
- nurses
- occupational therapists
- psychiatrists
- social workers
- speech and language therapists
- support staff (for example, staff supporting access to housing, educational and employment services, financial advice, and personal and community safety skills).

1.1.14 The specialist autism team should have a key role in the delivery and coordination of:

- specialist diagnostic and assessment services
- specialist care and interventions
- advice and training to other health and social care professionals on the diagnosis, assessment, care and interventions for adults with autism (as not all may be in the care of a specialist team)
- support in accessing, and maintaining contact with, housing, educational and employment services
- support to families, partners and carers where appropriate
- care and interventions for adults with autism living in specialist residential accommodation
- training, support and consultation for staff who care for adults with autism in residential and community settings.

* See Autism: recognition, referral and diagnosis of children and young people on the autism spectrum (NICE clinical guideline 128).

1.2.1 Staff who have responsibility for the identification or assessment of adults with autism should adapt these procedures, if necessary, to ensure their effective delivery, including modifications to the setting in which assessment is delivered (see recommendation 1.1.8) and the duration and pacing of the assessment.

Surveillance decision

This review question should not be updated.

2-year evidence update summary

Autism and intellectual disability in an ageing population

A US study[1] compared data for adults (30–59 years) with intellectual disability and a diagnosis of autism with those for people with intellectual disability alone. The evidence suggested that adults with autism and intellectual disability may need higher levels of support for behavioural problems than adults with intellectual disability alone. This study was considered to add to the evidence base on adults aged 30–59 years with autism. Data for people with autism aged 60 years and older was recommended to help assess the potential challenges that this population may present for services caring for older people.

Epilepsy and mortality in adults with autism

A systematic review[2] (16 studies, n=15,418) of observational studies estimated the epilepsy and mortality rates in people with autism compared with the general population.

For studies with participants aged at least 12 years and with the majority having autism but not intellectual disability, the pooled estimate for the prevalence of epilepsy was 8.9%. For studies with participants aged at least 12 years and with the majority having autism and intellectual disability, the pooled estimate for the prevalence of epilepsy was 23.7%.

Across all studies, epilepsy was associated with 7–30% of deaths.

A follow up epidemiological study[3] (n=305) estimated mortality and identified mortality risk factors of people with autism. Living participants (n=276) were aged 27–54 years. The mortality rate was significantly higher, and by a similar extent, compared with all 3 control groups. A history of seizures was noted in 13 of the people with autism who died, and 2 more patients had epileptiform or spike wave discharges (total of 52% of people who died).

Taken together, these studies demonstrated the increased mortality risk for adults with autism, which may be related to the presence of intellectual disability and comorbid medical conditions (particularly epilepsy). These studies were considered to support CG142 recommendations and emphasise the need for appropriate monitoring and management of coexisting conditions in adults with autism, particularly in those with epilepsy.

4-year surveillance summary

Early predictors of Adult outcomes

A systematic review[4] (25 studies, n=unreported) found conflicting evidence on the stability of social functioning, cognitive ability and language skills in adults with autistic spectrum disorder (ASD). Adaptive functioning was found to improve in most studies. Results suggested that childhood intelligence quotient (IQ) and early language ability may be the strongest predictors of later outcome, but the abstract did not report further details of these or other variables, and recommended further research.

Topic expert feedback

No relevant evidence was identified.

Impact statement

The new evidence on autism and intellectual disability is consistent with CG142 recommendation 1.1.3 for staff to understand the course of autism and its impact on, and interaction with, other conditions.

The new evidence on adult social functioning, cognitive ability and language skills is inconclusive.

New evidence is unlikely to change guideline recommendations.

142 – 02 For families, partners and carers of adults with autism, what are their experiences of caring for people with autism, and what support is available for families, partners and carers?

Recommendations derived from this question

1.1.15 Discuss with adults with autism if and how they want their families, partners or carers to be involved in their care. During discussions, take into account any implications of the Mental Capacity Act (2005) and any communication needs the person may have (see recommendation 1.1.5).

1.1.16 If the person with autism wants their family, partner or carer(s) to be involved, encourage this involvement and:

- negotiate between the person with autism and their family, partner or carer(s) about confidentiality and sharing of information on an ongoing basis
- explain how families, partners and carers can help support the person with autism and help with care plans
- make sure that no services are withdrawn because of involvement of the family, partner or carer(s), unless this has been clearly agreed with both the person with autism and their family, partner or carer(s).

1.1.17 Give all families, partners and carer(s) (whether or not the person wants them to be involved in their care) verbal and written information about:

- autism and its management
- local support groups and services specifically for families, partners and carers
- their right to a formal carer's assessment of their own physical and mental health needs, and how to access this.

1.1.18 If a person with autism does not want their family, partners or carer(s) to be involved in their care:

- give the family, partner or carer(s) verbal and written information about who they can contact if they are concerned about the person's care
- bear in mind that people with autism may be ambivalent or negative towards their family or partner. This may be for many different reasons, including a coexisting mental disorder or prior experience of violence or abuse.

Surveillance decision

No new information was identified at any surveillance review.

Identification and assessment

Identification and initial assessment of possible autism

142 – 03 What signs or symptoms should prompt any professional who comes into contact with an adult with possible autism to consider assessment?

Recommendations derived from this question

1.2.2 Consider assessment for possible autism when a person has:

- one or more of the following:
  - persistent difficulties in social interaction
  - persistent difficulties in social communication
  - stereotypic (rigid and repetitive) behaviours, resistance to change or restricted interests, **and**
- one or more of the following:
  - problems in obtaining or sustaining employment or education
  - difficulties in initiating or sustaining social relationships
  - previous or current contact with mental health or learning disability services
  - a history of a neurodevelopmental condition (including learning disabilities and attention deficit hyperactivity disorder) or mental disorder.

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1.2.3 For adults with possible autism who do not have a moderate or severe learning disability, consider using the Autism-Spectrum Quotient – 10 items (AQ-10)[*]. (If a person has reading difficulties, read out the AQ-10.) If a person scores above six on the AQ-10, or autism is suspected based on clinical judgement (taking into account any past history provided by an informant), offer a comprehensive assessment for autism.

1.2.4 For adults with possible autism who have a moderate or severe learning disability, consider a brief assessment to ascertain whether the following behaviours are present (if necessary using information from a family member, partner or carer):

- difficulties in reciprocal social interaction including:
- limited interaction with others (for example, being aloof, indifferent or unusual)
- interaction to fulfil needs only
- interaction that is naive or one-sided
- lack of responsiveness to others
- little or no change in behaviour in response to different social situations
- limited social demonstration of empathy
- rigid routines and resistance to change
- marked repetitive activities (for example, rocking and hand or finger flapping), especially when under stress or expressing emotion.

If two or more of the above categories of behaviour are present, offer a comprehensive assessment for autism.

[*] Allison C, Auyeung B, Baron-Cohen S (2012) Towards brief 'red flags' for autism screening: the short Autism Spectrum Quotient and the short Quantitative Checklist for Autism in toddlers in 1000 cases and 3000 controls. Journal of the American Academy of Child and Adolescent Psychiatry 51: 202–12.

Surveillance decision

No new information was identified at any surveillance review.

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142 – 04 What are the most effective methods/tools for case identification in autism in adults?

Recommendations derived from this question

The same recommendations were derived from this question as in question 142-03

Surveillance decision

No new information was identified at any surveillance review.

Identification and assessment

Comprehensive (diagnostic, needs and risks) assessment of suspected autism

142 – 05 In adults with possible autism, what are the key components of, and the most effective structure for, a diagnostic assessment?

To answer this question, consideration should be given to:

- the nature and content of the clinical interview and observation (including an early developmental history where possible)
- formal diagnostic methods/ psychological instruments(including risk assessment) · biological measures
- the setting(s) in which the assessment takes place
- who the informant needs to be (to provide a developmental history).
- What are the most effective methods for assessing an individual's needs (for example, their personal, social, occupational, educational and housing needs) for adults with autism?

Recommendations derived from this question

1.2.5 A comprehensive assessment should:

- be undertaken by professionals who are trained and competent
- be team-based and draw on a range of professions and skills
- where possible involve a family member, partner, carer or other informant or use documentary evidence (such as school reports) of current and past behaviour and early development.

1.2.6 At the beginning of a comprehensive assessment, discuss with the person the purpose of the assessment and how the outcome of the assessment will be fed back to them. Feedback

should be individualised, and consider involving a family member, partner, carer or advocate, where appropriate, to support the person and help explain the feedback.

1.2.7 During a comprehensive assessment, enquire about and assess the following:

- core autism signs and symptoms (difficulties in social interaction and communication and the presence of stereotypic behaviour, resistance to change or restricted interests) that have been present in childhood and continuing into adulthood
- early developmental history, where possible
- behavioural problems
- functioning at home, in education or in employment
- past and current physical and mental disorders
- other neurodevelopmental conditions
- hyper- and/or hypo-sensory sensitivities and attention to detail.

Carry out direct observation of core autism signs and symptoms especially in social situations.

1.2.8 To aid more complex diagnosis and assessment for adults, consider using a formal assessment tool, such as:

- the following tools for people who do not have a learning disability:
- the Adult Asperger Assessment (AAA; includes the Autism-Spectrum Quotient [AQ] and the Empathy Quotient [EQ])*
- the Autism Diagnostic Interview – Revised (ADI-R)†
- the Autism Diagnostic Observation Schedule – Generic (ADOS-G)‡
- the Asperger Syndrome (and high-functioning autism) Diagnostic Interview (ASDI)§
- the Ritvo Autism Asperger Diagnostic Scale – Revised (RAADS-R)**
- the following tools in particular for people with a learning disability:
- the ADOS-G
- the ADI-R.

1.2.9 To organise and structure the process of a more complex assessment, consider using a formal assessment tool, such as the Diagnostic Interview for Social and Communication Disorders (DISCO)††, the ADOS-G or the ADI-R.

1.2.10 During a comprehensive assessment, take into account and assess for possible differential diagnoses and coexisting disorders or conditions, such as:

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* Baron-Cohen S, Wheelwright S, Robinson J, et al. (2005) The Adult Asperger Assessment (AAA): a diagnostic method. Journal of Autism and Developmental Disorders 35: 807–19.

† Lord C, Pickles A, McLennan J, et al. (1997) Diagnosing autism: analyses of data from the Autism Diagnostic Interview. Journal of Autism and Developmental Disorders 27: 501–17.

‡ Lord C, Risi S, Lambrecht L, et al. (2000) The Autism Diagnostic Observation Schedule – Generic: a standard measure of social and communication deficits associated with the spectrum of autism. Journal of Autism and Developmental Disorders 30: 205–23.

§ Gillberg C, Gillberg C, Rastam M, et al. (2001) The Asperger Syndrome (and high-functioning autism) Diagnostic Interview (ASDI): a preliminary study of a new structured clinical interview. Autism 5: 57–66.

** Ritvo RA, Ritvo ER, Guthrie D, et al. (2011) The Ritvo Autism Asperger Diagnostic Scale – Revised (RAADS-R): a scale used to assist the diagnosis of autism spectrum disorders in adults: an international validation study. Journal of Autism and Developmental Disorders 41: 1076–89.

†† Wing L, Leekam L, Libby S, et al. (2002) The Diagnostic Interview for Social and Communication Disorders: background, inter-rater reliability and clinical use. Journal of Child Psychology and Psychiatry 43: 307–25.

- other neurodevelopmental conditions (use formal assessment tools for learning disabilities)
- mental disorders (for example, schizophrenia, depression or other mood disorders, and anxiety disorders, in particular, social anxiety disorder and obsessive–compulsive disorder)
- neurological disorders (for example, epilepsy)
- physical disorders
- communication difficulties (for example, speech and language problems, and selective mutism)
- hyper- and/or hypo-sensory sensitivities.

1.2.11 Do not use biological tests, genetic tests or neuroimaging for diagnostic purposes routinely as part of a comprehensive assessment.

1.2.12 During a comprehensive assessment, assess the following risks:

- self-harm (in particular in people with depression or a moderate or severe learning disability)
- rapid escalation of problems
- harm to others
- self-neglect
- breakdown of family or residential support
- exploitation or abuse by others.

Develop a risk management plan if needed.

1.2.13 Develop a care plan based on the comprehensive assessment, incorporating the risk management plan and including any particular needs (such as adaptations to the social or physical environment), and also taking into account the needs of the family, partner or carer(s).

1.2.14 Provide a 'health passport' (for example, a laminated card) for adults with autism, which includes information for all staff about the person's care and support needs. Advise the person to carry the health passport at all times.

1.2.15 As part of a comprehensive assessment consider developing a 24-hour crisis management plan, where necessary in conjunction with specialist mental health services, which should detail:

- the likely trigger(s) for a crisis
- the nature and speed of the reaction to any trigger(s), including details about the way in which autism may impact on a person's behaviour leading up to and during a crisis
- the role of the specialist team and other services (including outreach and out-of-hours services) in responding to a crisis
- advice to primary care professionals and other services on their responsibilities and appropriate management in a crisis
- advice for families, partners and carers about their role in a crisis
- the nature of any changes or adaptations to the social or physical environment (see recommendation 1.1.8) needed to manage a crisis.

1.2.16 Consider obtaining a second opinion (including referral to another specialist autism team if necessary), if there is uncertainty about the diagnosis or if any of the following apply after diagnostic assessment:

- disagreement about the diagnosis within the autism team
- disagreement with the person, their family, partner, carer(s) or advocate about the diagnosis
- a lack of local expertise in the skills and competencies needed to reach diagnosis in adults with autism
- the person has a complex coexisting condition, such as a severe learning disability, a severe behavioural, visual, hearing or motor problem, or a severe mental disorder*.

1.2.17 On an individual basis, and using information from the comprehensive assessment and physical examination, and clinical judgement, consider further investigations, including:

- genetic tests, as recommended by the regional genetics centre, if there are specific dysmorphic features, congenital anomalies and/or evidence of a learning disability
- electroencephalography if there is suspicion of epilepsy
- hearing or sight tests, if there is suspicion of hearing or visual impairment
- other medical tests depending on individual signs and symptoms (for example, sudden onset of challenging behaviour, change in usual patterns of behaviour, sudden change in weight, or suspicion that the person might be in pain and is unable to communicate this).

1.2.18 Offer all adults who have received a diagnosis of autism (irrespective of whether they need or have refused further care and support) a follow-up appointment to discuss the implications of the diagnosis, any concerns they have about the diagnosis, and any future care and support they may require.

1.2.19 Assessment of challenging behaviour should be integrated into a comprehensive assessment for adults with autism.

1.2.20 When assessing challenging behaviour carry out a functional analysis (see recommendation 1.5.3) including identifying and evaluating any factors that may trigger or maintain the behaviour, such as:

- physical disorders
- the social environment (including relationships with family members, partners, carers and friends)
- the physical environment, including sensory factors
- coexisting mental disorders (including depression, anxiety disorders and psychosis)
- communication problems
- changes to routines or personal circumstances.

Surveillance decision

This review question should not be updated.

* Adapted from Autism: recognition, referral and diagnosis of children and young people on the autism spectrum (NICE clinical guideline 128).

Assessment tools for suspected autism in adults with intellectual disabilities

2-year evidence update summary

A study[5] (N=79) evaluated the psychometric properties of the ADOS and ADI-R in adults (over 18 years) with intellectual disabilities and suspected autism. The ADOS and ADI-R results were compared between patients diagnosed with autism and patients diagnosed with other conditions.

The total ADOS score was significantly higher in the group diagnosed with autism than in those without this diagnosis. All patients who were negative for autism on the ADOS were also negative for autism on clinical consensus. The ADI-R score did not differ significantly between patients diagnosed with autism and other patients.

This study was considered to strengthen the evidence base on assessment of suspected autism in patients with learning disabilities. The findings that ADOS and ADI-R may be valid diagnostic tools for suspected autism in such patients were considered to be consistent with the recommendations of NICE CG142. However, the high sensitivity and low specificity of ADOS suggest that if used alone, it may result in over-diagnosis of autism. The more balanced psychometric properties of ADI-R suggest that developmental history is key to a diagnosis of autism in adults, although this information may not always be available. As with the diagnosis of autism in children (see NICE clinical guideline 128), it may be advisable not to rely on any autism-specific diagnostic tool alone to diagnose autism in adults.

4-year surveillance summary

A systematic review[6] (14 studies) found that changes to Diagnostic and Statistical Manual (DSM-5) decreased the number of individuals diagnosed with ASD, particularly the subgroup of patients with pervasive developmental disorder-not otherwise specified.

Assessment of Asperger's syndrome

A study[7] (n=32) used the new version of the Wechsler scale (WAIS-IV) to examine cognitive functioning in adults with Asperger's syndrome and found significant impairments on the Processing Speed Index. At the subscale level, a weakness was highlighted in symbol search. A process score analysis revealed working memory impairment on the Sequencing condition of Digit Span subtest.

Topic expert feedback

No topic expert feedback was relevant to this evidence.

Impact statement

CG142 recommends (1.2.9) that to aid more complex diagnosis and assessment for adults, professionals should consider using a formal assessment tool.

The new evidence is consistent with CG142 recommendation 1.2.9 to consider using a formal assessment tool. There is some evidence to suggest that it may not be advisable to rely on any autism-specific diagnostic tool alone to diagnose autism in adults, but further research may be needed to confirm any impact on the guideline recommendations.

The new evidence for assessing Asperger's syndrome using WAIS-IV was based on a small sample and further research may be needed to verify the findings and to establish any impact on the guideline recommendations.

CG142 referred to the changes in DSM-5 but it is unlikely that these will impact on the recommendations for diagnosis, which do not directly refer to the DSM version to be used.

New evidence is unlikely to change guideline recommendations.

Psychiatric comorbidity in adults with autism

2-year evidence update summary

A study[8] (n=63) evaluated psychiatric comorbidity and functioning in adults with behavioural and emotional difficulties referred to a specialist autism clinic compared with age- and sex-matched adults referred to a general psychopharmacology programme. Participants received a neuropsychological assessment and structured clinical interview for autism using the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), with interviewers blind to information regarding the specific complaints,

clinical diagnosis and referral status. Psychiatric diagnoses and functional ability (assessed using the global assessment of functioning scale) were compared in patients with and without a diagnosis of autism.

Compared with people without autism, the group of patients with a diagnosis of autism had significantly more lifetime comorbidities and current comorbidities.

This study was considered to be consistent with NICE CG142.

4-year surveillance summary
No relevant evidence was identified

Topic expert feedback
No topic expert feedback was relevant to this evidence.

Impact statement
The new evidence is consistent with CG142 recommendation 1.2.10 and strengthens the evidence supporting the need for psychiatric evaluation in this population as part of a comprehensive diagnostic assessment.

New evidence is unlikely to change guideline recommendations.

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142 – 06 Identifying the correct interventions and monitoring their use

Recommendations derived from this question

1.3.1 When discussing and deciding on interventions with adults with autism, consider:

- their experience of, and response to, previous interventions
- the nature and severity of their autism
- the extent of any associated functional impairment arising from the autism, a learning disability or a mental or physical disorder
- the presence of any social or personal factors that may have a role in the development or maintenance of any identified problem(s)
- the presence, nature, severity and duration of any coexisting disorders
- the identification of predisposing and possible precipitating factors that could lead to crises if not addressed*.

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1.3.2 When discussing and deciding on care and interventions with adults with autism, take into account the:

- increased propensity for elevated anxiety about decision-making in people with autism
- greater risk of altered sensitivity and unpredictable responses to medication
- environment, for example whether it is suitably adapted for people with autism, in particular those with hyper- and/or hypo-sensory sensitivities (see recommendation 1.1.8)
- presence and nature of hyper- and/or hypo-sensory sensitivities and how these might impact on the delivery of the intervention
- importance of predictability, clarity, structure and routine for people with autism
- nature of support needed to access interventions.

1.3.3 When discussing and deciding on interventions with adults with autism, provide information about:

- the nature, content and duration of any proposed intervention

* Adapted from Common mental health disorders: identification and pathways to care (NICE clinical guideline 123).

- the acceptability and tolerability of any proposed intervention
- possible interactions with any current interventions and possible side effects
- the implications for the continuing provision of any current interventions[*].

1.3.4 When deciding on options for pharmacological interventions for challenging behaviour or coexisting mental disorders in adults with autism:

- be aware of the potential for greater sensitivity to side effects and idiosyncratic responses in people with autism **and**
- consider starting with a low dose.

1.3.5 For any intervention used in adults with autism, there should be a regular review of:

- the benefits of the intervention, where feasible using a formal rating of the target behaviour(s)
- any adverse events
- specific monitoring requirements of pharmacological interventions as highlighted by the summary of product characteristics
- adherence to the intervention.

Surveillance decision

This review question should not be updated.

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[*] Adapted from Common mental health disorders: identification and pathways to care (NICE clinical guideline 123).

Use of psychotropic medication in adults with autism

2-year evidence update summary

A retrospective study[9] examined the medication profiles and predictors of polypharmacy in 142 adults with autism. All participants had experienced a psychiatric crisis during a 2-year period.

At the time of the psychiatric crisis, 64% of the participants were taking at least 1 psychotropic medication, with 29% prescribed 3 or more such treatments. Of the patients prescribed at least 1 psychotropic medication, 62% had no psychiatric diagnosis other than autism and 22% were not being followed up by a psychiatrist. More than half the patients receiving the most commonly prescribed treatments did not have an associated psychiatric diagnosis.

Patients taking multiple psychotropic medications were significantly more likely to live in a group home, have a history of aggression and have a history of psychiatric support compared with those with no polypharmacy.

The study indicates that adults with autism may be receiving psychotropic medication, despite not having a relevant psychiatric diagnosis, underlining the importance of the NICE CG142 recommendation to review medication regularly.

4-year surveillance summary

No relevant evidence was identified.

Topic expert feedback

Topic expert feedback indicated that there is a lack of appropriate assessment instruments to monitor the effects of interventions on core autism symptoms in adults with ASD. The lack of standardised outcome measures was considered to compromise studies of interventions for adults. No eligible studies were cited.

Impact statement

The new evidence from the Evidence Update is consistent with CG142 recommendation 1.3.5 in recommending regular review of medication. No new evidence was identified at the 4-year surveillance to change this conclusion.

New evidence is unlikely to change guideline recommendations.

Interventions for autism

Psychosocial interventions

142 – 07 For adults with autism, what are the benefits and/or potential harms associated with different psychosocial interventions (for example, applied behavioural analysis, cognitive behavioural therapy [CBT], mentoring, social groups, and befriending schemes)?

Recommendations derived from this question

1.4.1 For adults with autism without a learning disability or with a mild to moderate learning disability, who have identified problems with social interaction, consider:

- a group-based social learning programme focused on improving social interaction
- an individually delivered social learning programme for people who find group-based activities difficult.

1.4.2 Social learning programmes to improve social interaction should typically include:

- modelling

- peer feedback (for group-based programmes) or individual feedback (for individually delivered programmes)
- discussion and decision-making
- explicit rules
- suggested strategies for dealing with socially difficult situations.

1.4.3 Do not provide facilitated communication for adults with autism.

1.4.4 For adults with autism of all ranges of intellectual ability, who need help with activities of daily living, consider a structured and predictable training programme based on behavioural principles.

1.4.5 For adults with autism without a learning disability or with a mild to moderate learning disability, who are socially isolated or have restricted social contact, consider:

- a group-based structured leisure activity programme
- an individually delivered structured leisure activity programme for people who find group-based activities difficult.

1.4.6 A structured leisure activity programme should typically include:

- a focus on the interests and abilities of the participant(s)
- regular meetings for a valued leisure activity
- for group-based programmes, a facilitator with a broad understanding of autism to help integrate the participants
- the provision of structure and support.

1.4.7 For adults with autism without a learning disability or with a mild to moderate learning disability, who have problems with anger and aggression, offer an anger management intervention, adjusted to the needs of adults with autism.

1.4.8 Anger management interventions should typically include:

- functional analysis of anger and anger-provoking situations
- coping-skills training and behaviour rehearsal
- relaxation training
- development of problem-solving skills.

1.4.9 For adults with autism without a learning disability or with a mild learning disability, who are at risk of victimisation, consider anti-victimisation interventions based on teaching decision-making and problem-solving skills.

1.4.10 Anti-victimisation interventions should typically include:

- identifying and, where possible, modifying and developing decision-making skills in situations associated with abuse
- developing personal safety skills.

Surveillance decision

This review question should not be updated.

Biofeedback

2-year evidence update summary

No relevant evidence was identified.

4-year surveillance summary

A systematic review[10] (63 studies, 4 relating to ASD) found that multi-modal biofeedback appeared most effective in significantly ameliorating symptoms of psychiatric disorders, suggesting that targeting more than one physiological modality for bio-regulation could increase therapeutic efficacy. It should be noted that only a small number of included studies related to ASD which may limit the applicability of the results.

An RCT[11] (n=38) found that EEG (electroencephalography) biofeedback regulated EEG activity and had specific effects on cognitive flexibility, but it did not result in significant reductions in symptoms of ASD. No nonspecific effects of EEG-biofeedback were demonstrated. It should be noted that the age range of participants was not reported in the abstract.

Topic expert feedback

No topic expert feedback was relevant to this evidence.

Impact statement

The new systematic review and RCT evidence is insufficient to support the use of biofeedback in adults with ASD. Further research with larger samples of adults with ASD may be needed to provide definitive evidence for new recommendations.

New evidence is unlikely to change guideline recommendations.

Psychosocial Interventions

2-year evidence update summary

No relevant evidence was identified.

4-year surveillance summary

A systematic review[12] (5 studies) found that group social skills interventions may be effective for enhancing social knowledge and understanding, improving social functioning, reducing loneliness and potentially alleviating co-morbid psychiatric symptoms in adults with ASD.

An RCT[13] (n=22) found that a caregiver-assisted social skills programme for high-functioning young adults with ASD improved overall social skills, frequency of social engagement, and social skills knowledge, and significantly reduced ASD symptoms related to social responsiveness.

A meta-analysis[14] (n=60 adults) of published single-case research studies found that behavioural interventions in the areas of academic skills, adaptive skills, problem behaviour, phobic avoidance, social skills, and vocational skills had medium-to-strong effect sizes for adolescents and adults with ASD. However, the majority of studies were limited by the lack of treatment integrity and the number of adult patients was not reported in the abstract.

A systematic review[15] (number of studies not reported) assessed the use of social robotics in autism therapy. The results showed that ASD subjects often performed better in social functioning with a robot partner rather than a human partner. Additionally, ASD patients had, toward robots, behaviours that typical development patients had toward humans. People with ASD had a lot of social behaviours toward robots; during robotic sessions, ASDs showed reduced repetitive and stereotyped behaviours, and social robots improved spontaneous language during therapy sessions. However the authors stated that studies in this area are still insufficient and recommended further research. It should also be noted that only 4 (14%) of the included studies covered adults and adult-specific outcomes were not discussed.

An RCT[16] (n=42) found that a modified protocol of mindfulness based therapy resulted in a significant reduction in depression, anxiety and rumination among adults with ASD. A further non-randomised study[17] (n=50) found that symptoms of anxiety, depression, agoraphobia, somatisation, inadequacy in thinking and acting, distrust and interpersonal sensitivity, sleeping problems, and general psychological and physical well-being declined significantly during mindfulness based therapy and were sustained over a 9 week period.

An RCT[18] (n=46) found that psychological interventions, both anxiety management and CBT, were effective in treating comorbid

obsessive compulsive disorder (OCD) in young people and adults with ASD.

A parallel group design RCT[19] (n=68) investigated separate CBT and recreational activity for adults with ASD and intelligence within the normal range. Participants in both treatment conditions reported a significantly increased quality of life at post-treatment, with no difference between interventions. No amelioration of psychiatric symptoms was observed.

Topic expert feedback
No topic expert feedback was relevant to this evidence.

Impact statement
Further research to inform an update of the guideline may be needed on CBT and the following interventions, for which the new evidence included only small samples or did not report on adults with ASD in the abstract:

- mindfulness based therapy and modifications
- behavioural interventions for academic skills, adaptive skills, problem behavior, phobic avoidance, social skills, and vocational skills
- social robotics
- group social skills
- recreational activity.

New evidence is unlikely to change guideline recommendations.

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142 – 08 For adults with autism, what is the effectiveness of vocational and supported employment programmes?

Recommendations derived from this question

1.4.11 For adults with autism without a learning disability or with a mild learning disability, who are having difficulty obtaining or maintaining employment, consider an individual supported employment programme.

1.4.12 An individual supported employment programme should typically include:

- help with writing CVs and job applications and preparing for interviews
- training for the identified work role and work-related behaviours
- carefully matching the person with autism with the job
- advice to employers about making reasonable adjustments to the workplace
- continuing support for the person after they start work
- support for the employer before and after the person starts work, including autism awareness training.

Surveillance decision

This review question should not be updated.

Psychosocial interventions focused on life skills

2-year evidence update summary
An RCT[20] (n=24) evaluated the impact on employment of a psychosocial intervention carried out before job searches were started by students in two public special education programmes.

The results suggested that an individualised supported employment programme of workplace-based education and training for people with autism during their final year of

education may result in higher rates of employment compared with similar students who continued with usual education. These findings were considered to be consistent with NICE CG142.

4-year surveillance summary

A systematic review[21] aimed to identify successful elements of transition programmes to help students with ASD obtain competitive employment after graduation. The authors did not establish definitive evidence but did identify qualitative research that addressed elements of potential successful employment placements for individuals with ASD. Further more rigorous research was recommended.

An RCT[22] (n=26) found that virtual reality job interview training improved preparation for interviews and self-reported self-confidence. Simulation performance scores increased over time.

An RCT[23] (n=50) investigated whether the use of an Apple iPod Touch personal digital assistant (PDA) as a vocational support improves work performance and reduces personal support needs on the job. The findings showed that workers who received PDA training at the beginning of their job placement required significantly less hours of job coaching support during their first 12 weeks on the job than those who had not yet received the intervention. Functional performance between the two groups was not significantly different. The significant difference in hours of job coaching support persisted during the subsequent 12 weeks, in which both groups used a PDA.

A systematic review[24] (11 studies, n= 67,251) examined the costs, benefits and the cost-benefit ratio of employing adults with ASD, from a societal perspective and from the perspective of employers. The results indicated that enhancing the opportunities for adults with ASD to join the workforce is beneficial from a societal perspective, not only from an inclusiveness viewpoint, but also from a strict economic standpoint. However, very few studies examined the benefits, the costs and the cost-benefit ratio of employing an adult with ASD from the perspective of employers, leading to the recommendation for further research.

A pilot RCT[25] (n=28) found that a brief, low-intensity manualised 12-week group-delivered interview skills intervention improved the job-interview performance of young adults with ASD.

A systematic review[26] (14 studies, 10 career planning tools) of career planning tools for individuals with ASD found that none of the identified tools had strong reliability or validity. Further research on their clinical utility was recommended.

Topic expert feedback

No topic expert feedback was relevant to this evidence.

Impact statement

NICE CG142 recommends (1.4.11-1.4.12) that adults with autism without a learning disability or with a mild learning disability who are having difficulty obtaining or maintaining employment should consider an individual supported employment programme.

The new evidence is consistent with CG142 and strengthens the evidence base demonstrating the value of an individualised supported employment programme of workplace-based education and training for young people with autism, before they start seeking a job.

Further research may be needed on the following areas to underpin new recommendations:

- Virtual reality job interview training.
- Apple iPod Touch PDA as a vocational support.
- Costs and the cost-benefit ratio of employing an adult with ASD from the perspective of employers.
- Low-intensity manualised group-delivered interview skills intervention.
- Career planning tools.

New evidence is unlikely to change guideline recommendations.

142 – 09 For adults with autism, what is the effectiveness of educational interventions (including specialist programmes, or support within mainstream education, or educational software, and so on)?

Recommendations derived from this question

See 142-07 recommendations

Surveillance decision

No new information was identified at any surveillance review.

Biomedical (pharmacological, physical and dietary) interventions and the core symptoms of autism adaptations)?

142 – 10 For adults with autism, what is the effectiveness of biomedical interventions (for example, dietary interventions, pharmacotherapy and physical-environmental)

Recommendations derived from this question

1.4.13 Do not use anticonvulsants for the management of core symptoms of autism in adults.

1.4.14 Do not use chelation for the management of core symptoms of autism in adults.

1.4.15 Do not use the following interventions for the management of core symptoms of autism in adults:

- exclusion diets (such as gluten- or casein-free and ketogenic diets)
- vitamins, minerals and dietary supplements (such as vitamin B6 or iron supplementation).

1.4.16 Do not use drugs specifically designed to improve cognitive functioning (for example, cholinesterase inhibitors) for the management of core symptoms of autism or routinely for associated cognitive or behavioural problems in adults.

1.4.17 Do not use oxytocin for the management of core symptoms of autism in adults.

1.4.18 Do not use secretin for the management of core symptoms of autism in adults.

1.4.19 Do not use testosterone regulation for the management of core symptoms of autism in adults.

1.4.20 Do not use hyperbaric oxygen therapy for the management of core symptoms of autism in adults.

1.4.21 Do not use antipsychotic medication for the management of core symptoms of autism in adults.

1.4.22 Do not use antidepressant medication for the routine management of core symptoms of autism in adults.

Surveillance decision

This review question should not be updated.

2-year evidence update summary
Antidepressant medication for management of repetitive behaviour

A 12-week RCT[27] (n=37) compared the effects of fluoxetine versus placebo on repetitive behaviours and global symptoms in adults with autism.

In a mixed-effects regression analysis, the treatment-by-time interaction indicated a significantly greater reduction in compulsion score with fluoxetine than placebo. CGI score showed significantly greater improvement with fluoxetine than placebo for clinician assessments but not for those carried out by independent assessors. Fluoxetine was associated with higher levels of adverse events.

The study did not evaluate core symptoms of autism other than repetitive behaviour, and was considered unlikely to affect the recommendation in NICE CG142 not to use antidepressant medication for routine management of core symptoms of autism. However this study indicates that fluoxetine may reduce repetitive behaviour in people with autism who also have symptoms of obsessive-compulsive disorder.

4-year surveillance summary
Drug treatment
Selective serotonin reuptake inhibitors

An updated systematic review[28] (9 studies, n=320) found limited evidence of the effectiveness of selective serotonin reuptake inhibitors (SSRIs) in adults with ASD from small studies in which the risk of bias was unclear. It should be noted that only 4 of the 9 included studies covered adults only. The main outcomes measured were:

- core features of autism
- non-core aspects of behaviour or function
- quality of life of adults or children and their carers
- short and long term effects
- adverse events

A systematic review[29] (11 studies) found limited evidence through meta-analytic results that second generation antipsychotics provide improvement in behavioural symptoms in the management of Asperger's disorder and high functioning autism. However, the authors reported a lack of robustly conducted trials and recommended further research. It should also be noted that the review included people aged 0 to 24 years.

D-Cycloserine

An RCT[30] (n=20) found D-Cycloserine to be effective in improving stereotypic symptoms in older adolescents and young adults with ASDs measured by the Aberrant Behavior Checklist subscale 3. D-Cycloserine was reported to be safe and well tolerated.

Opioid antagonists

A systematic review[31] (10 studies) found evidence to suggest that opioid antagonists are effective in reducing self-injury in adults with intellectual disability. However, the effect size for adults with autism (n=49) was not reported.

Acetylcholinesterase inhibitors

A systematic review[32] (21 studies) examined the use of medications approved for Alzheimer's disease in autism spectrum disorder. Although collective evidence suggested improvements in several outcomes, only weak evidence was found for memantine and tacrine in adults with ASD and no RCTs were identified for the adult age group.

Oxytocin

Three small RCTs[33,34,35] (n=40, n=40, n=20) found that single dose[33,34] and 6 week administration[35] of oxytocin (24 IU) both reduced sociocommunicational deficits in male adults with ASD without any significant difference between regimens. The intervention

was considered to cause N-acetylaspartate differences in the ventromedial prefrontal cortex (vmPFC) that triggered increases in the task-dependent functional magnetic resonance imaging signals in the vmPFC. Further research was recommended on the optimal regimen of oxytocin.

A systematic review[36] (7 studies, n=101) found that oxytocin improved symptoms of repetitive behaviours, eye gaze, and emotion recognition in autism. Overall, oxytocin was found to be well tolerated and side effects were generally rated as mild; however, restlessness, increased irritability, and increased energy occurred more often under oxytocin. The authors recommended larger, more methodologically rigorous RCTs before firm recommendations can be made. It should be noted that the age groups covered by the included studies were not reported in the abstract.

A systematic review[37] (16 studies, n=330) found that intranasal administration of oxytocin is a potentially useful intervention for reducing psychiatric symptoms in several psychiatric conditions, including autism. However the number of studies covering autism was not reported, thereby weakening the findings.

An RCT[38] (n=29) found that intranasal oxytocin enhanced orientation behaviours toward human sounds in the presence of other environmental sounds in both ASD and neurotypical adults. Oxytocin was reported to be well tolerated.

An RCT[39] (n=62) found no significant differences or treatment effects from intranasal oxytocin in normally intelligent male adults with and without ASD, relating to neurophysiological orienting to empathy-evoking pictures.

An RCT[40] (n=66) found that intranasal administration of 24IU of oxytocin improved eye contact problems in adult males with autism, as measured in a real time interaction with a researcher. Oxytocin had the most effect on fixation duration in individuals with impaired levels of eye contact at baseline.

An RCT[41] (n=41) examined the impact on the health and psychological well-being of 10-day oxytocin administration (40IU) in an older adult population. No changes in mood or cardiovascular states, or physical functioning were observed across the 10-day period. Fatigue levels were found to improve significantly compared to placebo and no significant adverse effects were observed. It should be noted that the participants did not have a diagnosis of autism.

Mavoglurant

An RCT[42] (n=175) found that mavoglurant did not improve behavioral symptoms in fragile X syndrome in adults, measured by the Aberrant Behavior Checklist-Community Edition using the FXS-specific algorithm (ABC-CFX) after 12 weeks of treatment.

Complementary and alternative medicine (CAM)

A systematic review[43] (80 studies) found no conclusive evidence supporting the efficacy of CAM therapies in ASD. Some potential benefits were reported for music therapy, sensory integration therapy, acupuncture, and massage.

Physiotherapy

An RCT[44] (n=28) found that deep repetitive transcranial magnetic stimulation to bilateral dorsomedial prefrontal cortex yielded a reduction in social relating impairment and socially-related anxiety in adults with ASD or Asperger syndrome.

A systematic review[45] (studies not reported in the abstract) did not find conclusive evidence to support the use of hyperbaric oxygen in ASD, with only one, likely flawed, RCT showing treatment benefit.

Topic expert feedback

Topic expert feedback indicated that there have been many autism-related studies since the guideline was developed, but nothing conclusive enough to warrant changing the guidance at this point in time. Eligible cited studies were included in the evidence summary.

Further expert feedback highlighted that there is a lot of new research, mostly targeting additional conditions, rather than autism itself.

One topic expert felt that there should be cross reference with NICE guidance on challenging behaviour.

Impact statement

Drug treatments

There is insufficient new evidence on drug treatments to impact on CG142. The collective new evidence on the following drug treatments for ASD in adults is inconclusive, due to the small samples with mixed adult and child age

groups, and may require further research to establish any impact on the guideline recommendations:

- SSRIs
- D-Cycloserine
- Opioid antagonists
- Acetylcholinesterase inhibitors
- Oxytocin
- Mavoglurant

Complementary and alternative medicine (CAM)

There is no conclusive evidence supporting the efficacy of CAM therapies in adults with ASD.

Physiotherapy

There is insufficient evidence to update the guideline in the area of deep repetitive transcranial magnetic stimulation and hyperbaric oxygen in adults with ASD.

New evidence is unlikely to change guideline recommendations.

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142 – 11 For adults with autism, is the effectiveness of interventions moderated by:

• the nature and severity of the condition

• the presence of coexisting conditions

• age

• the presence of sensory sensitivities (including pain thresholds)

• IQ

• language level?

Recommendations derived from this question

1.4.13 Do not use anticonvulsants for the management of core symptoms of autism in adults.

1.4.14 Do not use chelation for the management of core symptoms of autism in adults.

1.4.15 Do not use the following interventions for the management of core symptoms of autism in adults:

- exclusion diets (such as gluten- or casein-free and ketogenic diets)
- vitamins, minerals and dietary supplements (such as vitamin B6 or iron supplementation).

1.4.16 Do not use drugs specifically designed to improve cognitive functioning (for example, cholinesterase inhibitors) for the management of core symptoms of autism or routinely for associated cognitive or behavioural problems in adults.

1.4.17 Do not use oxytocin for the management of core symptoms of autism in adults.

1.4.18 Do not use secretin for the management of core symptoms of autism in adults.

1.4.19 Do not use testosterone regulation for the management of core symptoms of autism in adults.

1.4.20 Do not use hyperbaric oxygen therapy for the management of core symptoms of autism in adults.

1.4.21 Do not use antipsychotic medication for the management of core symptoms of autism in adults.

1.4.22 Do not use antidepressant medication for the routine management of core symptoms of autism in adults.

Surveillance decision

No new information was identified at any surveillance review.

Interventions for challenging behaviour

142 – 12 Interventions for challenging behaviour

Recommendations derived from this question

1.5.1 Before initiating other interventions for challenging behaviour, address any identified factors that may trigger or maintain the behaviour (see recommendation 1.2.20) by offering:

- the appropriate care for physical disorders (for example, gastrointestinal problems or chronic pain)
- treatment for any coexisting mental disorders, including psychological and pharmacological interventions (for example, anxiolytic, antidepressant or antipsychotic medication), informed by existing NICE guidance
- interventions aimed at changing the physical or social environment (for example, who the person lives with) when problems are identified, such as:
- advice to the family, partner or carer(s)
- changes or accommodations to the physical environment (see recommendation 1.1.8).

1.5.2 Offer a psychosocial intervention for the challenging behaviour first if no coexisting mental or physical disorder, or problem related to the physical or social environment, has been identified as triggering or maintaining challenging behaviour.

1.5.3 When deciding on the nature and content of a psychosocial intervention to address challenging behaviour, use a functional analysis. The functional analysis should facilitate the targeting of interventions that address the function(s) of problem behaviour(s) by:

- providing information, from a range of environments, on:

- factors that appear to trigger the behaviour
- the consequences of the behaviour (that is, the reinforcement received as a result of their behaviour*)
- identifying trends in behaviour occurrence, factors that may be evoking that behaviour, and the needs that the person is attempting to meet by performing the behaviour.

1.5.4 In addition to the functional analysis, base the choice of intervention(s) on:

- the nature and severity of the behaviour
- the person's physical needs and capabilities
- the physical and social environment
- the capacity of staff and families, partners or carers to provide support
- the preferences of the person with autism and, where appropriate, their family, partner or carer(s)
- past history of care and support.

1.5.5 Psychosocial interventions for challenging behaviour should be based on behavioural principles and informed by a functional analysis of behaviour (see recommendation 1.5.3).

1.5.6 Psychosocial interventions for challenging behaviour should include:

- clearly identified target behaviour(s)
- a focus on outcomes that are linked to quality of life
- assessment and modification of environmental factors that may contribute to initiating or maintaining the behaviour
- a clearly defined intervention strategy
- a clear schedule of reinforcement, and capacity to offer reinforcement promptly and contingently on demonstration of the desired behaviour
- a specified timescale to meet intervention goals (to promote modification of intervention strategies that do not lead to change within a specified time)
- a systematic measure of the target behaviour(s) taken before and after the intervention to ascertain whether the agreed outcomes are being met.

1.5.7 Consider antipsychotic medication† in conjunction with a psychosocial intervention for challenging behaviour when there has been no or limited response to psychosocial or other interventions (such as environmental adaptations). Antipsychotic medication should be prescribed by a specialist and quality of life outcomes monitored carefully. Review the effects of the medication after 3–4 weeks and discontinue it if there is no indication of a clinically important response at 6 weeks.

1.5.8 Consider antipsychotic medication for challenging behaviour on its own when psychosocial or other interventions could not be delivered because of the severity of the challenging behaviour. Antipsychotic medication should be prescribed by a specialist and quality of life

* Reinforcement may be by the person with autism or those working with or caring for them.

† At the time of publication (June 2012), no antipsychotic medication had a UK marketing authorisation for this indication in adults with autism. Informed consent should be obtained and documented.

outcomes monitored carefully. Review the effects of the medication after 3–4 weeks and discontinue it if there is no indication of a clinically important response at 6 weeks.

1.5.9 Do not routinely use anticonvulsants for the management of challenging behaviour in adults with autism.

Surveillance decision

This review question should not be updated.

2-year evidence update summary
No relevant evidence was identified.

4-year surveillance summary
No relevant evidence was identified

Topic expert feedback
Costs have changed over time and some medications have come off patent (e.g. aripiprazole) but the topic experts felt this may not be important as there is not medication for autism itself. The only possible area in which this might be relevant is if antipsychotics are considered for challenging behaviour that doesn't respond to other interventions, but this was not felt to warrant changing the guidance at this time. No studies were cited.

Impact statement
Topic expert feedback highlighted that costs have changed over time and some medications have come off patent. However specific drugs are not recommended by CG142 and this is unlikely to impact on recommendations.

New evidence is unlikely to change guideline recommendations.

Interventions for coexisting mental disorders

142 – 13 For adults with autism, what amendments, if any, need to be made to the current recommendations for psychosocial and pharmacological treatment (including the nature of drug interactions and side effects) for coexisting common mental health disorders?

Recommendations derived from this question

1.6.1 Staff delivering interventions for coexisting mental disorders to adults with autism should:

- have an understanding of the core symptoms of autism and their possible impact on the treatment of coexisting mental disorders
- consider seeking advice from a specialist autism team regarding delivering and adapting these interventions for people with autism.

1.6.2 For adults with autism and coexisting mental disorders, offer psychosocial interventions informed by existing NICE guidance for the specific disorder.

1.6.3 Adaptations to the method of delivery of cognitive and behavioural interventions for adults with autism and coexisting common mental disorders should include:

- a more concrete and structured approach with a greater use of written and visual information (which may include worksheets, thought bubbles, images and 'tool boxes')

- placing greater emphasis on changing behaviour, rather than cognitions, and using the behaviour as the starting point for intervention
- making rules explicit and explaining their context
- using plain English and avoiding excessive use of metaphor, ambiguity and hypothetical situations
- involving a family member, partner, carer or professional (if the person with autism agrees) to support the implementation of an intervention
- maintaining the person's attention by offering regular breaks and incorporating their special interests into therapy if possible (such as using computers to present information).
- For adults with autism and coexisting mental disorders, offer pharmacological interventions informed by existing NICE guidance for the specific disorder.

1.6.4 For adults with autism and coexisting mental disorders, offer pharmacological interventions informed by existing NICE guidance for the specific disorder.

Surveillance decision

This review question should not be updated.

2-year evidence update summary
No relevant evidence was identified.

4-year surveillance summary
A systematic review[46] (6 studies) found that CBT interventions - including behavioural, cognitive, and mindfulness-based techniques - were moderately effective treatments for co-morbid anxiety and depression symptoms in adults with ASD. However, sample sizes were small, participant characteristics varied widely, and psychometric properties of self-report outcome measurements were limitations indicating the need for further research.

Topic expert feedback
No topic expert feedback was relevant to this evidence.

Impact statement
The new systematic review of evidence on CBT interventions for coexisting anxiety and depression in ASD is based on weak evidence and further research may be needed on specific techniques to establish any impact on the guideline recommendations.

The new systematic review evidence on focused intervention practices provided insufficient detail on adults with ASD and coexisting mental health disorders to indicate the need for amendments to current recommendations.

New evidence is unlikely to change guideline recommendations.

Assessment and interventions for families, partners and carers

142 – 14 What information and day-to-day support do families, partners and carers need:

- **during the initial period of assessment and diagnosis**
- **when interventions and care are provided (for example, telephone helpline, information packs, advocates or respite care, interpreters and other language tools)**
- **during periods of crisis?**

Recommendations derived from this question

1.7.1 Offer families, partners and carers of adults with autism an assessment of their own needs including:

- personal, social and emotional support
- support in their caring role, including respite care and emergency plans
- advice on and support in obtaining practical support
- planning of future care for the person with autism.

1.7.2 When the needs of families, partners and carers have been identified, provide information about, and facilitate contact with, a range of support groups including those specifically designed to address the needs of families, partners and carers of people with autism.

1.7.3 Offer information, advice, training and support to families, partners and carers if they:

- need help with the personal, social or emotional care of the family member, partner or friend, **or**
- are involved in supporting the delivery of an intervention for their family member, partner or friend (in collaboration with professionals).

Surveillance decision

This review question should not be updated.

2-year evidence update summary

An observational study[47] (n=89) assessed the burden on caregivers of young people with autism (14–24 years). The clinical diagnosis of autism was confirmed for all patients using the ADI-R.

Caregiver burden was high in both groups but significantly higher in the families of young people with autism than for ADHD. In both groups, caregiver burden was mainly explained by perceptions that the young person's needs were not being met. Caregiver burden for both young people with autism and the group with ADHD was significantly correlated with unmet needs relating to depression, anxiety, inappropriate behaviour, risk of exploitation, and daytime activities. In addition, the burden on caregivers for people with autism was significantly correlated with unmet needs relating to social relationships, mental health problems, safety of self, and communication (all $p<0.01$).

4-year surveillance summary

No relevant evidence was identified

Topic expert feedback
No topic expert feedback was relevant to this evidence.

Impact statement
NICE CG142 recommends offering families, partners and carers of adults with autism an assessment of their own needs including:

• personal, social and emotional support

• support in their caring role, including respite care and emergency plans

• advice on and support in obtaining practical support

• planning of future care for the person with autism.

The new evidence demonstrates that parents caring for young people with autism as they reach adulthood may have a high level of caregiver burden, and that burden seems to be correlated with a perception that the young person's needs are not being met. This evidence reinforces the importance of NICE CG142 recommendations to assess caregiver needs.

New evidence is unlikely to change guideline recommendations.

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142 – 15 What role can families, partners and carers play in supporting the delivery of interventions for adults with autism?

Recommendations derived from this question

See 142-14

Surveillance decision

No new information was identified at any surveillance review.

Organisation and delivery of care

Developing local care pathways

142 – 16 What are the effective models for the delivery of care to people with autism including:

- **the structure and design of care pathways**
- **systems for the delivery of care (for example, case management)**
- **advocacy services?**

Recommendations derived from this question

1.8.1 Local care pathways should be developed to promote implementation of key principles of good care. Pathways should be:

- negotiable, workable and understandable for adults with autism, their families, partners and carers, and professionals

- accessible and acceptable to all people in need of the services served by the pathway
- responsive to the needs of adults with autism and their families, partners and carers
- integrated so that there are no barriers to movement between different levels of the pathway
- outcome focused (including measures of quality, service user experience and harm)[*].

1.8.2 Autism strategy groups should be responsible for developing, managing and evaluating local care pathways. The group should appoint a lead professional responsible for the local autism care pathway. The aims of the strategy group should include:

- developing clear policy and protocols for the operation of the pathway
- ensuring the provision of multi-agency training about signs and symptoms of autism, and training and support on the operation of the pathway
- making sure the relevant professionals (health, social care, housing, educational and employment services and the third sector) are aware of the local autism pathway and how to access services
- supporting the integrated delivery of services across all care settings
- supporting the smooth transition to adult services for young people going through the pathway
- auditing and reviewing the performance of the pathway.

1.8.3 The autism strategy group should develop local care pathways that promote access to services for all adults with autism, including:

- people with coexisting physical and mental disorders (including substance misuse)
- women
- people with learning disabilities
- older people
- people from black and minority ethnic groups
- transgender people
- homeless people
- people from the traveller community
- people in the criminal justice system
- parents with autism.

1.8.4 When providing information about local care pathways to adults with autism and their families, partners and carers, all professionals should:

- take into account the person's knowledge and understanding of autism and its care and management
- ensure that such information is appropriate to the communities using the pathway.

[*] Adapted from Common mental health disorders: identification and pathways to care (NICE clinical guideline 123).

1.8.5 The autism strategy group should design local care pathways that promote a range of evidence-based interventions at each step in the pathway and support adults with autism in their choice of interventions.

1.8.6 The autism strategy group should design local care pathways that respond promptly and effectively to the changing needs of all populations served by the pathways. Pathways should have in place:

- clear and agreed goals for the services offered to adults with autism
- robust and effective means for measuring and evaluating the outcomes associated with the agreed goals
- clear and agreed mechanisms for responding promptly to identified changes to people's needs*.

1.8.7 The autism strategy group should design local care pathways that provide an integrated programme of care across all care settings. Pathways should:

- minimise the need for transition between different services or providers
- allow services to be built around the pathway and not the pathway around the services
- establish clear links (including access and entry points) to other care pathways (including those for physical healthcare needs)
- have designated staff who are responsible for the coordination of people's engagement with the pathway*.

Surveillance decision

This review question should not be updated.

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* Adapted from Common mental health disorders: identification and pathways to care (NICE clinical guideline 123).

2-year evidence update summary
No relevant evidence was identified.

4-year surveillance summary
A systematic review[48] did not find any studies providing medical-home models to transition adolescents living with ASDs into adult primary healthcare services. Further research was recommended in this area.

A systematic review[4] (25 studies, n=unreported) found conflicting evidence on the stability of social functioning, cognitive ability and language skills in adults with ASD. Adaptive functioning was found to improve in most studies. Results suggested that childhood intelligence quotient (IQ) and early language ability may be the strongest predictors of later outcome, but the abstract did not report further details of these or other variables, and recommended further research.

Topic expert feedback
No topic expert feedback was relevant to this evidence.

Impact statement
There is insufficient evidence on medical-home models to transition adolescents living with ASDs into adult primary healthcare services, and on early variables associated with adult outcomes, to inform effective models for the delivery of care to adults with ASD. Further research may be needed in these areas to establish any impact on the guideline recommendations.

The NICE guideline Transition from children's to adults' services for young people using health or social care services NICE guideline NG43 is relevant to this area and will be included in the NICE Autism pathway.

The recently published NICE guideline

Challenging behaviour and learning disabilities NICE guideline NG11 is also relevant to this area, with recommendations on organisation of care, including transition between services, adapted from Common mental health problems NICE guideline CG123. This will also be included in the Autism pathway.

New evidence is unlikely to change guideline recommendations.

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142 – 17 For adults with autism, what are the essential elements in the effective provision of:

· support services for the individual (including accessing and using services)

· day care

· residential care?

Recommendations derived from this question

1.8.8 There should be a single point of referral (including self-referral) to specialist services for adults with autism.

1.8.9 Support access to services and increase the uptake of interventions by:

- delivering assessment and interventions in a physical environment that is appropriate for people with hyper- and/or hypo-sensory sensitivities (see recommendation 1.1.8)
- changing the professional responsible for the person's care if a supportive and caring relationship cannot be established.

1.8.10 Support access to services and increase the uptake of interventions by:

- ensuring systems (for example, care coordination or case management) are in place to provide for the overall coordination and continuity of care for adults with autism
- designating a professional to oversee the whole period of care (usually a member of the primary healthcare team for those not in the care of a specialist autism team or mental health or learning disability service)[*].

1.8.11 If residential care is needed for adults with autism it should usually be provided in small, local community-based units (of no more than six people and with well-supported single person accommodation). The environment should be structured to support and maintain a collaborative approach between the person with autism and their family, partner or carer(s) for the development and maintenance of interpersonal and community living skills.

1.8.12 Residential care environments should include activities that are:

- structured and purposeful
- designed to promote integration with the local community and use of local amenities
- clearly timetabled with daily, weekly and sequential programmes that promote choice and autonomy.

1.8.13 Residential care environments should have:

- designated areas for different activities that provide visual cues about expected behaviour
- adaptations to the physical environment for people with hyper- and/or hypo-sensory sensitivities (see recommendation 1.1.8)
- inside and outside spaces where the person with autism can be alone (for example, if they are over-stimulated).

1.8.14 Residential care staff should:

- understand the principles and attitudes underpinning the effective delivery of residential care for adults with autism
- work in collaboration with health and community care staff from a range of specialist services to support the delivery of a comprehensive care plan
- be trained in assessing and supporting the needs of adults with autism
- be consistent and predictable, but with some flexibility to allow change and choice
- be committed to involving families, partners and carers.

Surveillance decision

No new information was identified at any surveillance review.

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[*] Adapted from Common mental health disorders: identification and pathways to care (NICE clinical guideline 123).

Research recommendations

Priority

These research recommendations were deemed priority areas for research by the Guideline Committee, therefore at this 4-year surveillance review time point a decision will be taken on whether to retain the research recommendations or stand them down.

RR – 01 What is the clinical and cost effectiveness of facilitated self-help for the treatment of mild anxiety and depressive disorders in adults with autism?

Surveillance decision

New evidence relevant to the research recommendation was found but an update of the related review question is not planned because the new evidence is insufficient to trigger an update.

This research recommendation should be retained in the NICE version of the guideline and the NICE research recommendations database.

2-year evidence update summary
No relevant evidence was identified.

4-year surveillance summary
A systematic review[10] (63 studies, 4 relating to ASD) found that multi-modal biofeedback appeared most effective in significantly ameliorating symptoms of psychiatric disorders, suggesting that targeting more than one physiological modality for bio-regulation could increase therapeutic efficacy. It should be noted that only a small number of included studies related to ASD which may limit the applicability of the results.

An RCT[11] (n=38) found that EEG-biofeedback regulated EEG activity and had specific effects on cognitive flexibility, but it did not result in significant reductions in symptoms of ASD. No nonspecific effects of EEG-biofeedback were demonstrated. It should be noted that the age range of participants was not reported in the abstract.

Topic expert feedback
No topic expert feedback was relevant to this evidence.

Impact statement
The new systematic review and RCT evidence is insufficient to support the use of biofeedback in adults with ASD. Further research with larger samples of adults with ASD may be needed to provide definitive evidence for new recommendations.

New evidence is unlikely to change guideline recommendations.

RR – 02 What is the clinical and cost effectiveness of CBT for the treatment of moderate and severe anxiety disorders in adults with autism?

Surveillance decision

No new information was identified at any surveillance review.

This research recommendation should be removed from the NICE version of the guideline and the NICE research recommendations database.

RR – 03 What is the clinical and cost effectiveness of selective serotonin reuptake inhibitors (SSRIs) for the treatment of moderate and severe depression in adults with autism?

Surveillance decision

No new information was identified at any surveillance review.

This research recommendation should be removed from the NICE version of the guideline and the NICE research recommendations database.

RR – 04 What structure and organisation for specialist autism teams are associated with improvements in care for people with autism?

Surveillance decision

No new evidence was found but it is not expected that this research recommendation would be answered by systematic reviews or RCTs. Therefore it is proposed to keep this research recommendation.

RR – 05 What is the clinical and cost effectiveness of augmented communication devices for adults with autism?

Surveillance decision

New evidence relevant to the research recommendation was found but an update of the related review question is not planned because the new evidence is insufficient to trigger an update.

This research recommendation should be retained in the NICE version of the guideline and the NICE research recommendations database.

2-year evidence update summary

A systematic review[49] (15 studies, n=47 children and adults) assessed studies that involved iPods, iPads and related devices (for example, iPhones) for teaching skills to at least 1 person with a developmental disability (including autism, intellectual disability, Down's syndrome and cerebral palsy).

A key limitation of the review was the paucity of studies to evaluate, and small sample sizes in each study. The research recommendation from NICE CG142 was considered to remain unfulfilled. The EU-funded HANDS project made some progress towards meeting these research needs for a smartphone-based cognitive support system, but further work has been hampered by technological changes. Future research into the use of new technology (including the use of social media and specific phone apps developed for use by people with autism) may need to assess the impact on core symptoms using validated measures in studies of appropriate design and sufficient size to allow meaningful statistical evaluation.

4-year surveillance summary

A systematic review[50] (number of studies unreported) found that individuals with ASD using tablet computers and portable media players acquired verbal repertoires quickly. Studies comparing these devices to picture exchange or manual sign language found that acquisition was often quicker when using a tablet computer and that the vast majority of participants preferred using the device to picture exchange or manual sign language. Further research was recommended. It should be noted that the number of included studies was not reported in the abstract.

Topic expert feedback

Topic expert feedback indicated that the area of technologies and apps were considered in the original guideline. It was felt that if the guideline is updated then a review of this area should be considered. No eligible evidence was cited.

Impact statement

This research recommendation was considered important to address core symptoms of autism including communication problems (for example, the absence of spoken language or significant deficits in interpersonal skills) that have a profound effect on the ability to lead a full and rewarding life. The guideline noted that although a number of communication devices have been developed for autism, few, if any, have been subjected to a proper evaluation in adults. The suggested programme of research would need to identify current devices for which there is:

• some evidence of benefit (for example, case series and small-scale pilot studies)

• some evidence that it meets a key communication need for people with autism (based on reviews of people's need in this area)

• indication that the device is feasible for routine use, with formal evaluation in a large-scale randomised trial.

The new systematic review evidence on tablet computers and portable media players is limited by a small number of studies with small samples. It is therefore unlikely to impact on the guideline at this time.

New evidence is unlikely to impact on the guideline.

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