

eResearch: the open access repository of the research output of Queen Margaret University, Edinburgh.

This is the Publisher's version/PDF of a review published as:

Forsyth, Kirsty and Maciver, Donald and Howden, Stella and Owen, Christine and Shepherd, C (2008) *Developmental Co-ordination Disorder: a review of evidence and models of practice employed by allied health professionals in Scotland*. Discussion Paper. NHS Scotland, Edinburgh.

Accessed from:

<http://eresearch.qmu.ac.uk/1080/>

Official URL:

http://www.nhshealthquality.org/nhsqis/files/DCD_response_reportlowres.pdf

Repository Use Policy

The full-text may be used and/or reproduced, and given to third parties for personal research or study, educational or not-for-profit purposes providing that:

- The full-text is not changed in any way
- A full bibliographic reference is made
- A hyperlink is given to the original metadata page in eResearch

eResearch policies on access and re-use can be viewed on our Policies page:
<http://eresearch.qmu.ac.uk/policies.html>

<http://eresearch.qmu.ac.uk>



I still can't tie my shoelaces.....

**NHS Quality Improvement Scotland response to:
Developmental Co-ordination Disorder: A Review of Evidence and
Models of Practice Employed by Allied Health Professionals in
Scotland**

August 2008

NHS Quality Improvement Scotland is committed to equality and diversity. We have assessed this report for likely impact on the six equality groups defined by age, disability, gender, race, religion/belief and sexual orientation. For a summary of the equality and diversity impact assessment, please see our website (www.nhshealthquality.org).

© NHS Quality Improvement Scotland 2008

First published August 2008

You can copy or reproduce the information in this document for use within NHSScotland and for educational purposes. You must not make a profit using information in this document.

Commercial organisations must get our written permission before reproducing this document.

www.nhshealthquality.org

Contents

Acknowledgements	1
Foreword	2
1 Introduction	5
2 Background	6
3 Research objectives and methods	7
4 Research findings	8
5 Principles and key messages	11
6 Actions and advice	20
Appendix 1 - Quick Reference Guide to Identification and Diagnosis of DCD	21
Appendix 2 - Rapid Assessment Tool	25
Appendix 3 - Examples of Best and Innovative Practice in DCD	27
Appendix 4 - Action Group Membership	29
Attached CD - A Reflective Workbook	

Acknowledgements

We commend Dr Kirsty Forsyth and her team for their dedication in carrying out: 'Developmental Co-ordination Disorder: A Review of Evidence and Models of Practice Employed by Allied Health Professionals in Scotland' (November 2007). The research team's ability to obtain information from every NHS board in Scotland and gain ethical approval to involve children with developmental co-ordination disorder (DCD) and their parents have been critical to the project's success. We thank the children and their parents/guardians for their involvement in this research. Their perspectives on living with DCD have been extremely valuable and insightful.

The NHS Quality Improvement Scotland response to the research findings has benefited from the support of healthcare professionals, voluntary organisations and experts. We thank them for their commitment, expertise and on-going support in taking forward a programme of practice development support for healthcare professionals in the area of DCD.

The drawings included within this report have been taken from the focus groups with children with DCD. Quotes from parents and children who participated in focus groups are also presented.

Figure 1: Child (aged 12) drawing of a picture they would like to improve.



Foreword

Chief Health Professions Officer

Supporting children to get the best possible start in life is a key driver for Better Health, Better Care: An Action Plan. It is also important to parents and families as well as professionals working across health, social care and educational settings, particularly for those children with additional support needs. Enabling children to achieve their full potential at school, socially and at home is central to the work of allied health professions (AHPs) working with children who have developmental co-ordination disorder (DCD). The spectrum of motor and co-ordination challenges experienced by children with this condition has resulted in an increasing number of children being referred to AHPs for assessment and therapeutic intervention, particularly as awareness of DCD has developed.

The research commissioned by NHS QIS and this response document with accompanying actions by the Practice Development Unit are timely as they identify baseline procedures as well as setting out a framework for future practice. Improving the quality of underpinning evidence for our interventions is an important driver for AHPs and this work advances an understanding of what can best be delivered for children and their families. The support and advice outlined in this report provide a unique opportunity for AHPs in Scotland to come together and work with colleagues to bring about improvements in practice, where required, based on the best available evidence.

Jacqui Lunday

Chief Health Professions Officer
Scottish Government



Foreword

Director of Nursing and Practice Development

Working with children involves working with the child as a patient as well as their family in the context of home and school. This means that practitioners must work across health and education services which can be challenging. The number of children with developmental co-ordination disorder (DCD) being referred to different allied health professionals (AHPs) is increasing. Children with DCD often present with difficulties when they begin school. DCD can affect a child's ability to fully access the curriculum, as well as having a physical, emotional and psychological impact.

In response to practitioners' requests and in the absence of evidence or guidance for allied health professions in DCD, the AHP Practice Development Team commissioned this review of evidence and models of practice to identify a best practice framework.

The commission was to consider the AHP therapeutic intervention and practice from referral through to treatment specifically to;

- identify current evidence in relation to the AHP intervention
- identify current service delivery including emerging developments in practice, and
- identify criteria for effective practice.

Children with DCD and their parents were involved with this project from the start. They actively contributed and shared their experiences which have informed this work. Similarly, practitioners working in both education and health have been actively involved. The importance of a health and educational partnership working to support the child was highlighted as a key element in practice.

While good practice is occurring it is not always consistent or widespread. We encourage practitioners to make best use of this research and to use it as part of the evidence to support and contribute to growing best practice across the different services to support the child and family.

We wish you well in your endeavours because your success in this respect has the potential to have a significant impact on the future functioning of affected children and their families.

Eileen M Moir

Director of Nursing and Practice Development
NHS Quality Improvement Scotland



1 Introduction

NHS Quality Improvement Scotland (NHS QIS) was established in 2003 with a remit to lead improvement in the quality and safety of health care in Scotland. The Practice Development Unit is a core component of NHS QIS and influences the culture of practice by acting as a catalyst for change and providing support for practice development underpinned by a sound evidence base.

The Practice Development Unit at NHS Quality Improvement Scotland (NHS QIS) commissioned a literature review and study on 'Developmental Co-ordination Disorder: A Review of Evidence and Models of Practice Employed by Allied Health Professionals in Scotland'. The report was published in November 2007 and is available from NHS QIS website (http://www.nhshealthquality.org/nhsqis/files/ChildrensHealth_DCD_Nov07.pdf).

This report provides background information on the commissioned project, its aims and objectives and an overview of key principles and associated key messages identified from the research. It sets out NHS QIS actions and advice, as a result of this work, from a practice development perspective.

Since completing the original work the research team, in collaboration with NHS QIS, has also produced 4 new documents intended to support effective practices for children with developmental co-ordination disorder (DCD). These are:

- a Quick Reference Guide to Identification and Diagnosis of DCD (Appendix 1)
- a Rapid Assessment Tool for DCD services (Appendix 2)
- examples of best and innovative practice in DCD (Appendix 3), and
- a Reflective Workbook.

All of the above are available on the accompanying CD.

2 Background

In 2005, the Practice Development Unit at NHS QIS embarked upon a process of identifying the practice development priorities to improve patient experience as identified by allied health professionals (AHPs) in the areas of stroke, musculoskeletal, and children's services. A 'Topic Specific Group Process' involving over 250 AHP practitioners in the relevant services from across Scotland was held and AHP managers, AHP policy officers from professional bodies and researchers were also involved. Clinical priorities were identified through a web-based survey or scoping days. After further discussion with the Topic Specific Groups and taking account of criteria (evidence base; different models of practice; impact on quality of life for patients; number of patients referred or affected; fit with NHS QIS project range; and policy and political drivers) priorities were taken forward as recommendations for inclusion in the NHS QIS work programme.

One of the topics identified within the Children's Topic Specific Group was DCD. DCD is a motor skill disorder that often becomes evident in school age children. Children with DCD lack the motor co-ordination necessary to perform tasks considered appropriate for their age, given normal intellectual ability and the absence of other neurological disorders. These difficulties can impact negatively upon school, social and home life.

NHS QIS recognise that children with DCD can present with difficulties at the pre-school stage but for the purposes of this commissioned project the focus has been on the child's patient journey from referral through to treatment and discharge.

Why DCD?

DCD was identified for further work for the following reasons:

- DCD is a disorder that often becomes evident in school age children. Prevalence of movement difficulties in children has been reported as high as 19%. However, two studies undertaken in the UK reported a prevalence of 5% and 8.5% respectively¹.
- Children with DCD may have other difficulties, and there are co-morbidities associated with attention deficit hyperactivity disorder (ADHD), autism spectrum disorder (ASD) and speech and language impairments.
- A key method of managing DCD is through the assessment and interventions of AHPs. These include occupational therapists, physiotherapists, podiatrists, orthoptists, orthotists, and speech and language therapists.
- To date, no synthesised evidence in DCD (professional, service user and scientific evidence) has been available in Scotland to support and identify therapeutic intervention and practice.

Following the scoping process NHS QIS commissioned a literature review and study of the role of AHPs in DCD. This work was undertaken by a team at Queen Margaret University. The full report of these findings can be downloaded from http://www.nhshealthquality.org/nhsqis/files/ChildrensHealth_DCD_Nov07.pdf.

1 Reported prevalence is dependent on the criteria and measures used to identify the disorder.

3 Research objectives and methods

The main objectives of 'Developmental Co-ordination Disorder: A Review of Evidence and Models of Practice Employed by Allied Health Professionals In Scotland' (November 2007) were:

1. to identify current evidence in relation to AHP intervention in the assessment and management of DCD
2. to identify current service delivery by AHPs including areas of innovation, emerging practice and where possible information on impact and outcome, and
3. to identify a criteria or framework that would indicate clinically effective practice for AHPs.

A diverse range of methodologies was used and evidence was gathered from every NHS board area in Scotland. Details on methodology can be obtained from the full research findings.

4 Research findings

There were two outcomes of synthesis of data; five key themes associated with clinically effective practice, and a series of principles organised along the 'journey' of the child's referral, assessment, treatment and eventual discharge from AHP services.

4.1 The five key themes of clinically effective practice

Five key themes of clinically effective practice were identified as health promotion; communication; child and parent involvement; working together; and skills and knowledge. Full details can be found within the full research findings. (http://www.nhshealthquality.org/nhsqis/files/ChildrensHealth_DCD_Nov07.pdf).

4.2 Principles at each stage of child's patient journey

These principles provide guidance for practitioners on service delivery for children with DCD and their families. Individual principles were developed and organised around the child's patient journey i.e. from referral through to assessment, treatment and discharge. Each stage is identified here:

Helping children and families in the early stages

Developing a supportive community where initial issues are resolvable with rapid access to AHP support when required.

- Raising awareness within the community
- Supporting self management within homes, schools and communities
- Increasing referring agents' knowledge and understanding, and
- Optimising pre-assessment contact.

Assessment

Contextual child and family centred assessment jointly with others, creating clear expectations and agreement on optimal courses of action.

- Integrating views and expertise of parents/guardians and children

- Harnessing benefits of collaborative assessment
- Making assessment practices appropriate
- Structuring the diagnostic process, and
- Adopting an open approach to outcomes and expectations.

Intervention

Collaborative goal setting that embraces child, family and community contexts and supporting the child's participation through shared expectations and responsibility within the change process.

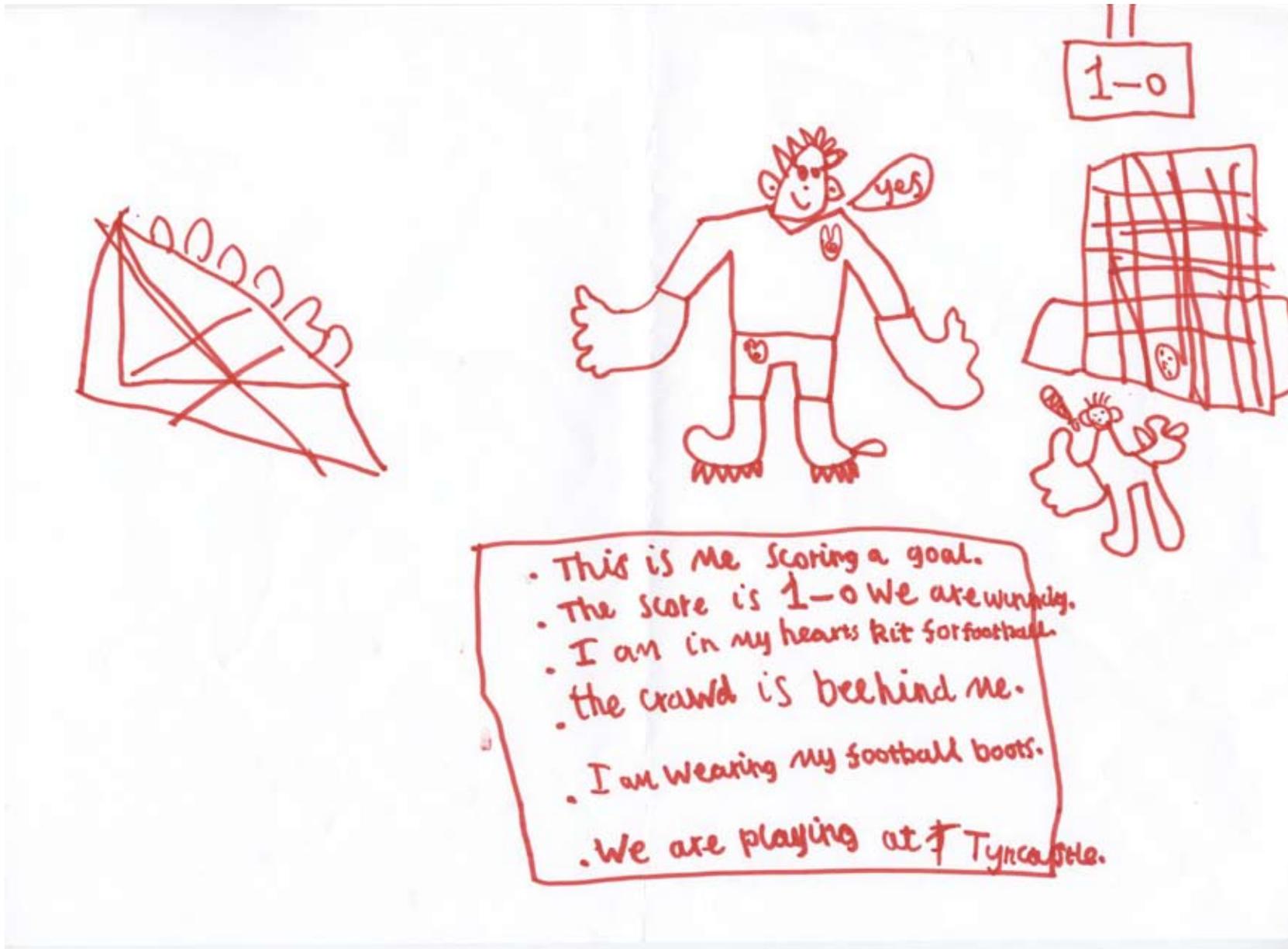
- Putting the child and family at the centre of care when goal setting
- Involving other AHPs and education staff in goal setting
- Enhancing participation of children with DCD
- Being mindful that the child is not the only focus for intervention
- Sharing expectation and responsibilities in supporting change
- Valuing formalised collaboration with others, and
- Using evidenced interventions to support change.

Discharge

Supportive transitional pathways from specialist services to self management within homes, schools and communities following evaluated outcomes.

- Evaluating interventions and outcomes
- Providing strategies for self management and making use of community resources, and
- Providing clear pathways for exiting services.

Figure 2: Drawing and text by a child with DCD (aged 8), depicting him playing football and scoring the winning goal.



5 Principles and key messages

5.1 Helping children and families in the early stages

Developing a supportive community where initial issues are resolvable with rapid access to AHP support when required.

Raising awareness within the community

The long term emotional consequences associated with DCD, such as low self-esteem, may be shaped by the varied contacts children experience with others within society. With a greater awareness of DCD within our communities, there may be greater tolerance and positive action to support the child, which could alleviate some of the difficulties faced. If others have greater understanding of DCD, they may be able to make a positive impact through their interactions. Information on prevention of difficulties could limit the impact of the condition for the child and their family and reduce the need for future professional input.

Supporting self management within homes, schools and communities

At the stage before any contact is made with AHPs, support for the child from parents/guardians, those in education and/or those working in health care could reduce the impact of the condition, and may lessen the need for input in the future. Providing parents/guardians with the knowledge and understanding to do this could reduce the feelings of uncertainty, guilt and helplessness that they report, as well as reducing the strain that the whole family may experience during these early stages.

Increasing referring agents' knowledge and understanding

Early identification of difficulties and referral to appropriate services would help to ensure problems are addressed as and when they arise, reducing the potential social, emotional and physical consequences of the condition. An increased awareness of professional roles would enable appropriate and timely referrals to be made. Professionals should also recognise that parents/guardians are often knowledgeable about their child's difficulties. Parents and guardians, however, cannot currently self refer to the majority of services.

**“ I know there's something not
quite right ” [parent]**



Optimising pre-assessment contact

Gathering information and making contact with parents/guardians during the phase prior to face-to-face contact may be beneficial for a number of reasons: (1) parents/guardians have an early opportunity to engage with the therapist regarding the child's care, (2) it may avoid the need to discuss sensitive information while the child is present, (3) face-to-face assessments may be more appropriately structured to meet the child's and the family's needs and (4) it may facilitate early access to services and care/support that are delivered by others.

Figure 3: Child (aged 9) draws an activity they would like to improve.

5.2 Assessment

Contextual child and family centred assessment jointly with others, creating clear expectations and agreement on optimal courses of action.

Integrating views and expertise of parents/guardians and children

The evidence presented here highlights the need to listen to parents/guardians and children, helping AHPs to understand the kind of experiences, concerns and valuable knowledge brought to initial assessment sessions by young people and families. Parents/guardians and children are knowledgeable about DCD and how it affects their lives. AHPs are critically positioned to engage with them, to gather the important information they can offer and to make them feel heard and understood, opening necessary channels of communication. Lastly, viewing children and their families as active contributors and providers of key information is important when developing intervention strategies.

Harnessing benefits of collaborative assessment

Professionals should be mindful of negative parental perceptions of duplicated uni-professional assessments. Considering this, supporting parents/guardians and children to access professionals across health and education in an integrated manner is of key importance; it can also provide structure for integrated working throughout the patient journey. In addition to parents/guardians benefiting from collaborative working, there are clear benefits for all professionals, including increased knowledge of others' roles and opportunities for peer support and evaluation.

Making assessment practices appropriate

AHPs currently use tools to evaluate body functions, and tend not to use tools assessing participation at home, school or within the community. Conversely, parents/guardians and children place value on participation in these environments. Accordingly, assessments addressing these facets of child performance may be beneficial. AHPs should also give consideration to conducting assessments within or with reference to 'natural' environments (eg school or home). Whilst not all components of assessment lend themselves to this orientation, it would offer the AHP an insight into important aspects of participation as well as the opportunity to access the views of teachers and parents.

Structuring the diagnostic process

There are multiple components to the diagnosis of DCD (as listed in the DSM-IV criteria). Appraisal of these suggests that a multidisciplinary approach would ensure all criteria have been considered fully. In some cases, AHPs work alongside paediatric medical colleagues, helping to support the diagnostic process. However, in some sites this process lacks consistency and order, which may result in delays, which can be harrowing for parents/guardians. Having clear protocols

for contributing to diagnosis may enable focused and effective involvement/ collaboration of all the professionals in the child's life, and could reduce the time taken for a resolution to be reached.

Adopting an open approach to outcomes and expectations

During assessment, acquiring an understanding of parents'/guardians' and children's knowledge, understanding and expectations may assist the AHP to openly discuss planned therapy interventions and projected outcomes. Professional consensus indicates that DCD can be a lifelong condition. All involved parties require an awareness of this to ensure there is a shared expectation of outcome. Open communication from the earliest stages will help to ensure parents/guardians, children, education and others have realistic expectations, and are suitably prepared for and capable of employing strategies to support the child not only at the time of discharge, but throughout their involvement with AHP services.

**“ ... The first time [I came
to therapy], I felt a wee bit
embarrassed... ! ” [child]**

Figure 4: Child with DCD (aged 12) at occupational therapy session.



5.3 Intervention

Collaborative goal setting that embraces child, family and community contexts and supporting the child's participation through shared expectations and responsibility within the change process.

Putting the child and family at the centre of care when goal setting

Helping children to achieve valued goals is important. Making these goals functional in nature (with consideration to the specific nature of different AHP practice) is also beneficial. Actively involving children ensures that the focus/outcome of intervention is based on their view and may result in the child and family being more committed to therapy as it has relevance to their lives. Standardised tools are available which can support this. Active involvement of parents/guardians in this process may help to make them feel heard, and allow them to provide valuable guidance on skills and abilities as well as areas of difficulty.

Involving other AHPs and education staff in goal setting

Setting goals with other AHPs and education staff ensures that there is a consistency of approach, which parents/guardians have frequently identified as important in the care of their child. If child-centred goals are shared across multiple health disciplines and education, they are likely to be more robustly addressed by all working with the child. In addition, the communication of goals within health, and across to education, is likely to support more effective interaction between these groups.

Enhancing participation of children with DCD

Consideration of children's engagement with day-to-day tasks, school, leisure and social interaction keeps child and family needs at the centre of care. This focus on participation is of key importance. However, working on body functions (eg strength) or discrete activities (eg dressing) may also support participation. Children also value improved performance in gross motor activities involving their peers (eg football, rugby). A focus on skills in these areas could improve children's sense of their competence within physical activities, encourage a life long interest in exercise and facilitate greater engagement with peers in their community.

Being mindful that the child is not the only focus for intervention

The child should not always be the sole focus for intervention. It is recognised that modification of the physical, social or attitudinal environment of the child, through engaging with parents/guardians and teachers, and through health promotion, can provide a foundation on which to build enhanced participation. In addition, explicit support of parents/guardians is an important element of AHP practice, as they often require emotional, informational and/

or practical support which AHPs are well placed to deliver.

Sharing expectation and responsibilities in supporting change

There is a recognised need to involve the child, parents/guardians and education in therapy interventions. The development of strategies for self management, which can continue to be used on completion of therapy, should be a key focus of AHP practice. Shared goals and expectations across professions, involving parents/guardians and children, with an emphasis on self management, may ensure that all involved feel prepared and supported to continue to implement strategies used when therapy ends. Effective communication is fundamental, using structure and language accessible to all. Parents/guardians, in particular, have made clear statements as to the confusion professional jargon can cause.

Valuing formalised collaboration with others

Engaging partner agencies, such as education, local authority and community groups, in the delivery of community based interventions can provide the structure required to ensure a consistent approach to service delivery for children with DCD. Approaching service delivery strategically can allow such initiatives to become embedded and integral within a school day, being implemented by school based staff. Allied health professionals may need to become increasingly aware of the need to adopt this approach to service delivery, in conjunction with partners in education, using activities that focus on engaging children in valued and meaningful activities.

Using evidenced interventions to support change

Although further research is required in all areas, therapists should be aware of the current evidence base for their interventions. In terms of different therapies, the 'active ingredients' of most interventions have yet to be identified. However this does not mean they are ineffective, rather, this indicates that further work is required to identify the children most likely to benefit from intervention, and what those interventions should include. Reflection on current evidence, and integrating this into care, may contribute to the achievement of successful outcomes as well as helping to identify areas for future input.

“ ... Therapy is fun! ” [child]

Figure 5: A drawing of a hobby a child (aged 9) wants to improve.



5.4 Discharge

Supportive transitional pathways from specialist services to self management within homes, schools and communities following evaluated outcomes.

Evaluating interventions and outcomes

Attaining personal goals and success are critical to the child and their carers. Many allied health professionals are already engaged in goal setting and evaluation, a practice which places the child at the centre of care, and enables the therapist to critically review the effectiveness of interventions and outcomes observed. This process of review supports the development of clinical practice that is critically reflective and responsive to the improvements or lack of improvements observed.

Providing strategies for self management and making use of community resources

Discharge from therapy can be a difficult and worrying time for parents/guardians of children with DCD. To support the move towards discharge, AHPs and other involved professionals must share their expectations of therapy with the child and carers, and aim to provide (as best they can) strategies which can continue to be used by the family to support them through and beyond this stage. Allied health professionals should endeavour to find and promote purposeful strategies which will support the child and family in self management. Such strategies may be implemented within the home and school or within the community.

Providing clear pathways for exiting services

Early discussions around discharge provide the opportunity to consider issues and concerns, and helps to align interventions and goals to the continuing needs of children and families. These early discussions, prior to exiting services, help to establish channels of communication between the child, parent/guardian and other professionals which are critical at and around discharge. Where intervention has been successful in empowering others to support the child's discharge, this may aid the success of this transition. Clearer re-referral pathways could also alleviate anxieties. Discharge protocols could be used as a tool to support early discussion around expected outcomes and discharge processes.

“ ... and it was like “Right, we’ll see you at Primary 7!” [parent]

6 Actions and advice

Based on the findings of the Developmental Co-ordination Disorder: A Review of Evidence and Models of Practice Employed by Allied Health Professionals in Scotland,

NHS Quality Improvement Scotland will:

- Support practice development masterclass events on DCD with a view to raising awareness of the research findings and sharing clinical expertise and emerging practice between AHPs and other relevant professionals to support them in becoming evidence based practitioners.
- Explore with the Health Services Research Unit at NHS Quality Improvement Scotland, Queen Margaret University and one health board area in Scotland opportunities for implementation support for DCD within one demonstration site in Scotland.
- In collaboration with Queen Margaret University, explore options for educational material to assist practitioners in the utilisation of the DCD research findings, with support from NHS Education for Scotland.

NHS QIS advise:

- Queen Margaret University to pursue opportunities for profiling the outcome of the DCD research within relevant health and educational publications.
- That the 'working in partnership' project includes DCD within its work programme. The 'working in partnership' project between Education and Allied Health Professionals, funded by the Scottish Government, which will begin in spring 2008, can support and raise awareness of DCD and improve partnership working, including with parents. Through the project, jointly led by a secondee from an education background and a secondee from an AHP background, national guidance on working in partnership for Health Boards and Education Authorities will be produced and examples of good practice will be collected and shared. Continuous Professional Development will also be offered, bringing education staff and AHPs together.
- Children and Young People's Support Group to review the research findings and provide further guidance on opportunities to maximize the impact of these findings to improve services for children and families.
- AHP Childrens Services Action Group to review the findings in collaboration with education colleagues and discuss opportunities for ensuring services for children with DCD are utilising available evidence.

Appendix 1 Quick Reference Guide to Identification and Diagnosis of DCD



Quick Reference Guide to Identification and Diagnosis of DCD

What is Developmental Co-ordination Disorder (DCD)?²

Children with DCD lack the motor co-ordination necessary to perform tasks considered appropriate for their age, given normal intellectual ability and the absence of other neurological disorders.

Does the child have any of the below challenges in school?.....

Taking care of themselves.....

- Dressing before/after gym (clothing on backwards, difficulty with or slow to complete fasteners/buttons/socks/shoelaces)
- Eating (spills food, poor use of utensils, difficulty pouring, preference for finger feeding at break time or lunch)
- Toileting (accidents, difficulty wiping after bowel movements, difficulty physically managing clothing)

Doing school work.....

- Dislike/avoidance of motor based activities
- Gap between what the child can say and writing ability
- Difficulties with fine motor activities (printing/handwriting, colouring, cutting, written language)
- Homework resistance or excessive amount of time spent doing homework
- Failure to complete work at home, disorganised approach
- Social isolation, being teased and bullied

Playing with friends.....

- Avoidance of sports, particularly ball games and team sports, trying then quitting, fear of getting injured
- Trouble learning to ride a bike
- Preference for sedentary activities (TV, video games, computer)
- Frustration, social isolation, lack of friends
- Difficulty initiating and maintaining play
- Try to control play situations to ensure they can manage to play with others

(adapted from Missiuna 2008³)

² This document is a product of the ACHIEVE Alliance Team (Queen Margaret University, Edinburgh) and was developed with support from Dr Carolyn Dunford, York St. John University. This information should be used only as general guidance. Where pupils have particular disabilities or complex special educational needs, an expert assessment should be sought.

³ Missiuna C., Pollock N., Egan M., DeLaat D., Gaines R., Soucie H. (2008) Enabling occupation through the diagnosis of developmental co-ordination disorder. *Canadian Journal of Occupational Therapy* 1 (75) pp. 26-34.

How is DCD diagnosed?

Confirmation of being more likely to have DCD is to be based on the four criteria⁴ below. ALL 4 criteria have to be met before the child is identified as being more likely to have DCD.

NB: Children with known, or presumed, IQs below 70 are not generally given the diagnosis of DCD.

- **Criterion A**
Performance in daily activities that require motor co-ordination motor co-ordination is substantially below that expected..."
- **Criterion B**
"...disturbance in Criterion A significantly interferes with academic achievement or activities of daily living."
- **Criterion C**
"...disturbance is not due to a general medical condition"
- **Criterion D**
"If mental retardation is present, the motor difficulties are in excess of those usually associated with it."

It is also important to rule out a general medical condition⁵ or pervasive developmental disorder (see below).

The doctor should systematically establish the presence or absence of other disorders that can be associated with motor in-co-ordination, including:

- Genetic disorder (e.g. Down syndrome)
- Neurologic disorder (e.g. cerebral palsy)
- Degenerative condition (e.g. Duchene's muscular dystrophy, brain tumor)
- Musculoskeletal disorder (e.g. Legg-Perthes disease)
- Physical impairment (e.g. impaired visual acuity)
- Cognitive impairment (e.g. developmental delay)
- Pervasive developmental disorder (e.g. autism)
- Injury (e.g. traumatic brain injury)
- Environmental contaminant (e.g. lead, pesticides)
- Mental health – emotional/behavioural problems

If any of the following are present then the co-ordination difficulties are probably *not* DCD:

- History of recent head injury or trauma
- History of deterioration (child has "lost" motor skills that he or she used to have)
- History of headache, eye pain, blurred vision
- History of global developmental delays
- Increased muscle tone, fluctuating tone or significant hypotonia
- Asymmetry of tone or strength
- Musculoskeletal abnormality
- Neurocutaneous lesion
- Avoidance of eye contact, unwilling to engage socially
- Gower's sign (difficulty rising to a standing position)
- Ataxia, dysarthria
- Absence of deep tendon reflexes
- Dysmorphic features
- Visual impairment (untreated)

⁴ American Psychiatric Association. (2000). DSM-IV-TR Diagnostic and Statistical Manual of Mental Disorders. Washington, DC: APA.

⁵ Adapted from: Missiuna C., Gaines R., & Soucie H. (2006). Why every office needs a tennis ball: a new approach to assessing the clumsy child. *Canadian Medical Association Journal* 175 (5) available from <http://www.cmaj.ca/cgi/content/full/175/5/5471> [accessed 21/02/2008 14:59:04].

Available on the accompanying CD

Appendix 2 Rapid Assessment Tool



Rapid Assessment

This form has been designed to rapidly assess service provision. Each principle has a colour coded key attached, which can be quickly filled in to indicate areas of strength and areas which require improvement. A reflective workbook has also been developed, based on these principles of good practice, and can be found on the CD which accompanies this report.

Helping Children and Families in the early stages		Tick the relevant box		
1.	Providing awareness raising about DCD	Green	Orange	Red
2.	Supporting self management of DCD within homes, schools and communities	Green	Orange	Red
3.	Actively increasing referring agents' knowledge and understanding of DCD	Green	Orange	Red
4.	Optimising pre-assessment contact	Green	Orange	Red
Assessment		Tick the relevant box		
5.	Integrating views and expertise of parents/guardians and children in assessment	Green	Orange	Red
6.	Harnessing benefits of collaborative assessment	Green	Orange	Red
7.	Making assessment practices appropriate	Green	Orange	Red
8.	Structuring the diagnostic process	Green	Orange	Red
9.	Adopting an open approach to outcomes and expectation in consultation with children and parents	Green	Orange	Red
Intervention		Tick the relevant box		
10.	Putting the child and family at the centre of care when goal setting	Green	Orange	Red
11.	Involving other AHPs and education staff in goal setting	Green	Orange	Red
12.	Enhancing participation of children with DCD	Green	Orange	Red
13.	Modifying the child's environment for therapeutic benefit	Green	Orange	Red
14.	Sharing expectations and responsibilities for supporting change	Green	Orange	Red
15.	Collaborating with partner agencies (education, health, local authority and community groups) in the delivery of community based interventions	Green	Orange	Red
16.	Implementing evidenced interventions into practice	Green	Orange	Red
Discharge		Tick the relevant box		
17.	Evaluating interventions and outcomes	Green	Orange	Red
18.	Providing strategies for self-management and making use of community resources	Green	Orange	Red
19.	Providing a clear pathway for exiting services	Green	Orange	Red

Key:
 This is an area of strength
 We are developing in this area, but it still needs improvement
 Area requires this requires immediate action

Available on the accompanying CD

Appendix 3 Examples of Best and Innovative Practice in DCD



Examples of Best and Innovative Practice in DCD

The table below gives key areas of best and innovative practice which were identified from the AHP interview findings as part of the *Developmental Co-ordination Disorder: A Review of Evidence and Models of Practice employed by Allied Health Professionals in Scotland* project (November 2007). Full descriptions of exemplars of innovative practice can be found in the full report: http://www.nhshealthquality.org/nhsqis/files/ChildrensHealth_DCD_Nov07.pdf (www.nhshealthquality.org)

Table 1: AHP interview findings: an overview of best practice and innovative practice

Area	Best practice	Innovative practice	Innovative practice exemplars
Promoting child focused care	Understand child's life and what is important to them. Setting goals with the child before therapy starts.	Explore the child's perceptions before and after intervention, as an outcome of therapy. Use specialised tools to support the child to share their views.	Use of child reflective tool as therapy outcome measure Measure child's perception of their abilities before and after intervention and use the child's perception of change to judge if therapy was effective for the child. Outcome: focus and outcome of intervention is based on child's view. Use of tools to develop goals with child Support the child to identify what they want to work on in therapy. Outcome: child is committed to therapy as it has relevance to their life.
Promoting a child's participation in life	Using functional activities as a basis for motor skills interventions.	Facilitate engagement of children with a physical leisure responsibility in their community that has potential to: (1) improve the child's sense of their competence within physical activities in which they aspire to achieve; (2) encourage life	Neighbourhood cycle group Therapist working with a cycle coach to support children gain experiences of success in moving their body within valued biking activity alongside peers in their community. Outcomes: (1) entered group with no/poor bike skills and all children were able to ride bikes following group; (2) child cited examples of having more opportunities to cycle with friends; (3) emotional feedback from parents about children succeeding where they had previously failed.

Area	Best practice	Innovative practice	Innovative practice exemplars
		long interest in exercise; (3) encourage greater engagement with peers in their community.	
Skills and knowledge relative to peers	Knowledge of DCD relative to your area of paediatric practice. Therapists being aware of how to refer to specialist services.	Developing specialist knowledge related to DCD and be perceived by peers as more knowledgeable. Uncommon for some AHP professions to have specialist knowledge of DCD.	Visual stress clinic Clinic to screen DCD children to understand if their movement challenges are related to their vision and provide specialist intervention, eg eye exercises. Outcome: children have improvement in reading, writing and school work. Dietetic intervention Increasing parents' knowledge of potential role of diet in remediation of challenges. Outcome: Children have seen improvement in reading, writing and behaviour.

Available on the accompanying CD

Appendix 4

Action Group Membership

Name	Title	Organisation
Anne Brockman	Children & Young People's Support Group	NHS Grampian
Lesley Bruce	Chair of Physiotherapy Managers Group for Paediatrics	NHS Fife
Fiona Dagge-Bell	Theme Co-ordinator Women and Children	NHS Quality Improvement Scotland
Sheila Downie	Chair AHP Childrens' Action Group	NHS Greater Glasgow & Clyde
Dr Kirsty Forsyth	DCD Project Lead	Queen Margaret University
Marian Hankey	Trustee and Chair of the Medical Panel of Advisors	Dyspraxia Foundation
Michelle Miller	Practice Development Project Coordinator	NHS Quality Improvement Scotland
Professor Anne O'Hare	Consultant Paediatrician	NHS Lothian
Christine Owen	Head Occupational Therapist West Lothian Children's Occupational Therapy Service	NHS Lothian
Claire Tester	Professional Practice Development Officer – AHP	NHS Quality Improvement Scotland
June Wylie	Professional Practice Development Officer – AHP Until December 2007	NHS Quality Improvement Scotland (now Scottish Government)

You can read and download this document from our website.

We can also provide this information:

- by email
- in large print
- on audio tape or CD
- in Braille, and
- in community languages.

NHS Quality Improvement Scotland

Glasgow Office

Delta House

50 West Nile Street

Glasgow G1 2NP

Edinburgh Office

Elliott House

8-10 Hillside Crescent

Edinburgh EH7 5EA

Phone: 0141 225 6999

Textphone: 0141 241 6316

www.nhshealthquality.org/ahp

Phone: 0131 623 4300

Textphone: 0131 623 4383