



Centre for Clinical Effectiveness

Evidence Review

Coordination of Care for Children with Chronic Conditions and Complex Health Needs

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Abstract

Background: Children with chronic conditions and complex health needs may benefit from programs that provide coordinated care in accessing health and other relevant services. In this report we describe the models of care used in these programs and review the current state of evidence in relation to their effectiveness.

Clinical Question: What models of care have been used in coordinated care programs for children with chronic conditions and complex health needs and are these programs effective in improving outcomes for these children and their families?

Methods: Searches were undertaken in electronic databases, on the internet using Google and through snowballing techniques using the bibliographies of key references.

Articles were selected and appraised by one reviewer in consultation with colleagues, using inclusion, exclusion and appraisal criteria established *a priori*.

Results: A total of 46 articles describing models of care were identified. Most of these articles referred to coordinated care programs operating in the USA. The programs described in these articles share many common features including key objectives, underlying principles and operational components.

There are two main objectives of these programs: to optimise the health and well-being of the child by improving access to appropriate and coordinated health care and to reduce the burden of chronic illness on health expenditures by avoiding unnecessary hospitalisation and inappropriate services.

The underlying principles ensure that the programs are accessible, individualised, family centred, comprehensive, based on continuity of care, and promote solution of systemic problems through changes that make the health service more effective and efficient.

The operational components include: assessment, development of the care plan, implementation of the care plan (incorporating service coordination, information sharing and communication, advocacy and service improvement and family support activities) and monitoring and evaluation.

One person, usually a health professional, takes primary responsibility for the development and implementation of the care plan and input is sought from the family in the decision making processes.

No relevant research publications were identified in relation to the effectiveness of coordinated care for children with chronic conditions and complex health issues.

Conclusions: The models of coordinated care identified in this review share many similarities including the principles and goals and similar processes of planning, implementation and review. The main differences in the programs relate to the person who takes on the role of the care coordinator (health professional or family member) and the scope of the program (focussed on health needs or more broadly addressing health, social, educational and emotional needs).

No conclusions can be drawn at this time regarding the effectiveness of coordinated care programs for these patients.

Background

Advances in health care have resulted in increased survival of children with chronic conditions and complex health needs. In many cases these children require long term medical care and the provision of care often involves multiple agencies and services. This situation can be difficult for families to manage both in terms of accessing the necessary health care services and organising referrals, communication and appointments with the various agencies [1-3]. There are a number of difficulties that chronically ill patients and their families face when navigating systems of health care including the lack of coordination between agencies and service providers, the dependence on patient-initiated follow-up and the focus on acute health needs [4, 5]. As a consequence, many children with chronic and complex health issues receive care from many different health and non-health professionals who work independently of each other in various locations without adequate communication and coordination of all the care provided [1, 2, 6-8]. This situation may result in an inadequate level of care for the child and inappropriate servicing including duplication of tests and services and unnecessary hospitalisations. In the USA it has been estimated that children with special health care needs represent 13% of all children in the population but account for approximately 70% of health care expenditures on children [1]

In recent years a number of initiatives have been developed for the purpose of providing high quality health care for these children through the coordination of relevant health services. These are typically referred to as care coordination or coordinated care programs. One of the objectives of the Southern Health HARP CDM Paediatric Model of Care Project is to develop a generic model of coordinated care for children with long-term chronic and ongoing conditions, including:

- Diagnostic groups: renal, respiratory, cardiology, neurology, rheumatology, gastroenterology conditions
- Disability groups: children with neuromuscular syndromes, developmental delay, epilepsy, autism
- Complications arising from prematurity

In order to inform the development of the model of coordinated care an evidence review has been conducted. The aim of this evidence review was twofold:

- (1) To describe the main characteristics of the various models of care coordination that have been implemented for children with chronic conditions and complex health problems, and
- (2) To review the available evidence regarding the effectiveness of these initiatives.

Clinical Question

What models of care have been used in coordinated care programs for children with chronic conditions or complex health needs and are these programs effective in improving outcomes for these children and their families.

Methods

The Centre for Clinical Effectiveness undertook a systematic approach to identify and appraise the evidence related to this question.

1. Inclusion and exclusion criteria

Patients	Inclusion: Children aged ≤ 18 years with a chronic condition and/or complex health needs from the following diagnostic and disability groups: Diabetes Mellitus; Complications of prematurity; Renal Diseases; Urologic Diseases; Cystic Fibrosis; Congenital Heart Disease; Neurology; Epilepsy; Rheumatology; Scoliosis; Haematology; Gastroenterology; Neuromuscular syndromes; Cerebral Palsy; Developmental Delays; and Autism. Exclusion: Children with acute health issues only, adults with chronic and complex health conditions
Intervention	Inclusion: Programs providing coordinated care services to this patient group. Exclusion: Case management or home care services that do not include the coordination of services
Comparison	Inclusion: No coordinated care Exclusion: Other intervention
Outcomes	Inclusion: Health outcomes, patient or client satisfaction, social, economic or financial outcomes. Exclusion: Other outcomes.
Setting	Inclusion: Any health care setting. Exclusion: Other settings

Study design	<p>Inclusion: Models of coordinated care – Evidence-based guidelines, reviews, policy documents, technical reports, commentaries and editorials. Effectiveness of Coordinated Care - Evidence-based guidelines, HTAs, systematic reviews, RCTs, CBAS.</p> <p>Exclusion: Other study designs.</p>
Publication details	<p>Inclusion: Studies in English and published from 1996.</p> <p>Exclusion: Studies in languages other than English, published prior to 1996.</p>

2. Search strategy

The following searches were initially carried out in November – December 2006, with additional searches undertaken in April and May 2007 to identify any recent publications. Searches were undertaken in the following electronic databases for any article matching the inclusion criteria:

Database	Date of Searches
All EBM Reviews (Ovid)*	Nov to Dec, 2006; April 11 th 2007
Medline (Ovid) from 1966	Nov to Dec, 2006; April 13 th 2007
CINAHL (Ovid) from 1982	Nov to Dec, 2006; April 13 th 2007
The Cochrane Library	Nov to Dec, 2006; May 2 nd 2007

*(including The Cochrane Database of Systematic Reviews, The Cochrane Central Register of Controlled Trials, The Database of Abstracts of Reviews of Effects (DARE), ACP Journal Club)

A combination of search terms for the patient group, the intervention and the diagnostic groups was used to identify the relevant articles in each of the electronic databases. The search terms used in the electronic databases are summarised in Appendix 1. Limits for English language, humans and publications from 1996 were applied.

Additional searches were undertaken to identify reports and other grey literature relating to existing models of coordinated care by searching on the internet using the Google search engine using combinations of the following key terms: care coordination, coordinated care, care planning, models of care, continuity of care, service coordination, children and chronic and complex, children and youth with special health needs, and case management. As almost all the publications identified in this initial search described programs in the USA some additional searches were undertaken using alternative search terms in order to identify literature from other countries. The additional terms used included disabilities, community teams, care packages and child development teams. This yielded some additional publications relating to programs in the UK but none relating to programs in Europe which suggests that the range of search terms used in this search were not sufficient to identify all relevant publications. Bibliographies of relevant papers were also searched in order to identify additional studies and models related to coordinated care in children.

3. Data Collection & Analysis

Studies were selected and appraised by one reviewer in consultation with colleagues in the project team, using inclusion, exclusion and appraisal criteria established *a priori*. The information relating to models of coordinated care was collated using a thematic content analysis. For each of the models identified in the relevant publications information was gathered in relation to: Main objectives/ Purpose; Key Principles and Operational Components. This information was then collated in order to delineate the similarities and differences in the identified models in each of these areas. Descriptions of the financial and funding structures were not included in this review.

Results

The search of the electronic databases returned 429 articles which were reviewed by title and abstract. When the assessment of the relevance of an article could not be made using the abstract alone, the full text was retrieved.

The literature search identified a total of 46 relevant articles, policy reports and publications that described the model of care used in care coordination programs for this patient group. Most of the programs described in these articles were operating in the USA, with a smaller number relating to programs in the UK. The results suggest that the search strategy used in this review may have resulted in an under-representation of literature relating to programs outside of the USA due to the wide range of terms used to describe these programs in other countries.

No relevant articles relating to the effectiveness of coordinated care programs were identified. One systematic review of the effectiveness of specialist nurses in diabetes mellitus was found[9]. However, while this paper reviewed two studies of adolescents neither of these studies incorporated coordinated care in the intervention.

Models of Coordinated Care

Terminology and Definitions

Coordinated care programs have been developed for children with chronic conditions and complex health needs who require ongoing access to a mix of health care services. A variety of different terms are used for describing the target population and the care coordination programs[10]. In the USA the population is referred to as children and youth with special health care needs (CYSHN)[2, 11]. Services in other jurisdictions do not appear to have adopted a general term to describe this group of patients but instead refer to specific patient sub-groups in terms of the conditions involved. Similarly there is no general agreement about the terminology used to describe the programs providing coordinating care. Various terms including care coordination, coordinated care, service coordination, continuity of care, key worker services, child development teams, complex care teams, and multidisciplinary teams have been used. For the purpose of this review the term coordinated care will be used.

Coordinated care initiatives are typically defined as a process for linking these children and their families to services and resources [1, 8, 10-12]. According to the HARP Chronic Disease Management Guideline[13], the elements of coordinated care involve the following:

- Provision of ongoing continuity of care;
- Allocation of a care coordinator;
- Development of a care plan and possibly case conferencing;
- Initiation of supports and services for clients and carers;
- Liaison and communication with service providers including; GPs, specialists and other care providers;
- Provision of information, education, self-management interventions and facilitation of client empowerment;
- Provision of an emergency care plan/contacts to clients and carers;
- Access to specialist or multidisciplinary assessment and early intervention when risk of exacerbation or decline;
- Planned reviews and proactive monitoring;
- Management of medication issues, in collaboration with GPs and pharmacists.

The concept of coordinated care can be regarded in part as an extension of the cost containment strategies common in many western countries including the USA, Australia and the UK. In these countries programs have been developed to manage service provision for individuals with high levels of health service utilisation. In some countries these are referred to as case management programs. Coordinated care programs have been differentiated from case management initiatives in terms of the scope and breadth of services involved. Case management initiatives are usually focused solely on health care needs while care coordination programs have a broader scope that encompasses the psychosocial context[1, 14, 15]. It has been recognised that the needs of children with chronic or complex health issues cross multiple disciplines and involve many subsystems of health, educational, community and social services[1, 2].

Main objectives/ purpose

There are two main objectives that are commonly specified in coordinated care programs:

(1) to optimise the health and well-being of the child by improving access to appropriate and coordinated health care and

(2) to reduce the pressure of the burden of chronic illness on health expenditures by avoiding unnecessary hospitalisation and inappropriate services such as duplication of diagnostic tests and services.

In general the objectives of care coordination programs targeting children differ from adult programs in that there is often an additional objective specified - to maximise the potential of children. These programs include a focus on development and issues including health, educational, psychological and social issues [1, 2, 16, 17].

Key principles

The coordinated care programs in the USA and UK consistently report the same key underlying principles [2, 11, 12, 15, 18, 19] According to these principles, the program should be:

- Accessible. The program is integrated with community resources to ensure access to all linguistic and cultural groups[18].
- Individualised. The program is tailored to the needs of the individual patient and family[18, 19]. There should be respect for family culture and custom and an assessment of the specific needs and strengths of the child and family [2, 20].
- Family-centred. The program is aligned with the family and provides broad support for the family[10, 12, 21]. Family members are involved in decision making and act as advisors[1, 2, 8]. Activities include advocating on behalf of the family, promoting inclusion of child or youth in all settings, and promoting autonomy of the child [10, 18].
- Providing continuity of care. Access to the same health care professionals is available from infancy through adolescence[18, 19]. Assistance is provided through important transitions such as attendance at school and entry into adult services.
- Comprehensive. Addresses a broad range of health needs of the child. Many of the programs adopt a holistic approach with a focus on development and maximizing the potential of the child[2]. These programs address both the health needs of the child and the broader educational, social and emotional needs.
- Promoting the solution of systemic problems. The program should work to change the system in order to better meet the needs of the family as well as improving the effectiveness and efficiency of health services[18].

In the USA the coordinated care programs are conducted within a broader context of the “Medical Home”. This refers to a program in which the child and their family receive the care that they need in a primary care clinic from a particular paediatrician or paediatric health care professional or team[1]. The paediatric health care professionals and parents act as partners to identify and access all the required services [18].

It is common to adopt a proactive approach in which there is an emphasis on promoting early interventions to avoid later complications and adverse health outcomes. This may also include initiatives relating to health promotion and to empowerment and encouraging self-education and self-management [1].

Operational Components

The various models identified in the literature share a common process of coordinated care. This involves assessment, development and execution of a care plan, monitoring and evaluating the process and outcomes of the plan, and making changes to improve the process. Implementation of the care plan involves service coordination, information sharing and communication, family support, advocacy and service improvement[2].

A common feature of all programs is the role of the person who takes primary responsibility for the development and implementation of the program. In most programs this person is referred to as the care coordinator. Other titles for this role include the key worker or named person (these terms are often used in programs in the UK) [6-8, 17, 22].

There are some areas in which programs differ, in particular the nature and scope of services and the degree of involvement of the family. Some programs focus primarily on coordinating health services with some linkages to other types of services. Others establish a program of coordination across a broad range of services including health, social, community, educational and financial services and address issues such as respite care, equipment and transportation [1, 11, 12, 23]. In some programs the family may take a leading role including taking on the responsibilities of the care coordinator. In others the families act primarily as advisors. The differences in the models of care appear to be partly due to differences in financial and administrative arrangements and the existing service systems in which they operate.

Care Coordinator

The care coordinator has a number of responsibilities. These include developing the care plan, acting as the primary contact with the family, conducting the coordination and referral, ensuring effective communication and information sharing, leading the care coordination team and documenting the progress of the plan [1, 11]. The care coordinator is often expected to fulfil a gatekeeper role in terms of managing access to specialists and other services [2]. In a policy document on coordinated care the Colorado Department of Public Health and Environment (2006) have suggested that care coordinators have clinical expertise in child and family health assessment and health care as well as skills in development and implementation of a health plan, evaluation and revision, collaboration and networking, organisation and communication [14].

This role is most commonly undertaken by a health professional, often a nurse, but may involve other professionals including social workers, primary care paediatricians, physical and occupational therapists, dieticians and speech pathologists [1, 12]. In a survey of programs in the USA paediatricians reported that they often delegate the role of care coordinator to someone else in their office due to the complexities of coordination [11].

In some programs in the USA family members may take on the role of the care coordinator and lead the coordinated care team. It has been argued that family members are best placed to advocate on behalf of the child and often have the most thorough understanding of the child's needs [2]. There is limited information provided in the available literature about the qualifications, training or competencies required for undertaking the role of care coordinator. It is also unclear whether the family member is expected to take on a gatekeeper role consistent with the goal of reducing unnecessary treatment and associated costs. It is clear that in many of the programs there is an expectation that health professionals will take on the responsibility of monitoring health care utilisation and working to reduce costs [1, 2].

Care coordination team

Central to all of the models is the concept of the relevant stakeholders working together as an effective team with the care coordinator acting as the team leader. The team is selected and then collectively participates in the development, implementation and monitoring of the care plan. Typically the family members are encouraged to be active participants within the team contributing to planning and decision making. The emphasis on the partnership with patients and their families is also considered to be important to promote the principles of empowerment and self-management [8, 19, 23]. In some models there is a multidisciplinary team of professionals from a variety of sectors including community health nurses, hearing specialists and audiologists, social workers, vision specialists and family advocates [1, 22].

Assessment

In order to develop a care plan an assessment is conducted to identify the needs of the patient. In some programs this may be narrowly focused on the health needs of the child such as health services, medications and tests. In most programs the assessment is broader taking into consideration the social, education and emotional needs of the child and is often conducted with an understanding of the needs, strengths and concerns of the family [12, 19, 20]. The assessment process often incorporates a component of self-assessment by the family. Others that are consulted during the assessment include relevant physicians and nurses and sometimes also education and community services. The assessment is then documented usually by the care coordinator and the identified needs, strengths and concerns are used to inform the development of the care plan.

Development of the Care Plan

A care plan is developed to meet the individual needs of the child and family based on the information gathered in the assessment. The care coordinator takes the lead role, usually in partnership with the family and other service providers. The process varies depending on the scope of the program but generally all models incorporate procedures to ensure that all stakeholders have some involvement and reach agreement about the plan [2, 12].

The plan is usually written up as a formal document with a list of actions and time frames for implementation, often over 1 year. Typically the problems, needs and goals are defined and then a set of interventions are chosen to address each of the specific needs and issues that have been identified. There is limited information available about the processes used to select interventions and to what extent consideration of the effectiveness of potential interventions is informed by an evidence based approach. It has been noted that the care coordinator must have a broad range of available and effective interventions to choose from [2] but it is unclear whether these choices are influenced by financial considerations or other constraints.

Usually the plan sets out the locus of implementation (ie the main location where the coordination activities will be undertaken), the treatment services required and specifies the methods, intensity and duration of treatment. It has been noted that there is often a need to plan for high intensity coordination at critical events such as discharge from hospital, entrance into day care or educational settings, and transition to young adulthood [1, 2].

Implementation of the Care Plan

The key components of the implementation of the care plan are: service coordination, information sharing and communication, family support, advocacy and service improvement.

Service Coordination

Service coordination involves various activities directed towards assisting the family to navigate the service system and obtain the necessary care for their child. It includes arranging specified tests and procedures, assisting the family to make an appointment with a specialist, arranging appropriate referrals, and meeting with the discharge planning team if a child is hospitalised [1, 8, 11, 20]. The scope and type of coordination depends partly on the extent and multiplicity of the child's needs, funding issues and arrangements and type of health care services available [1]. For programs that are broad in scope service coordination may extend across other sectors including education and social services.

Information Sharing and Communication

Usually one of the defined roles of the care coordinator is to build effective relationships with other service providers and facilitate communication [8]. This involves liaison and communication across a broad range of relevant health care professionals[20]. Some programs feature inter-agency collaboration, particularly those that aim to integrate the medical care plan with care plans by other service providers, or work directly to coordinate care across other sectors [1].

In some programs a central record or database containing the relevant medical information is maintained at the practice in which the care coordination program is operating. This may facilitate information sharing and reduce the potential for duplication of testing and assessments.

An important component of coordinated care models are activities that assist the family to communicate effectively with clinicians. The care coordinator often helps the family to understand clinical issues by explaining reports and test results in a manner they can understand. Often these information and communication activities have a broader goal of assisting the family to become self-educated and informed consumers in relation to the health care provided to their children.

Care coordinators also have an important role in educating and informing services and health professionals about the specific needs of the patient. For example, children with certain conditions have unique needs during an emergency. In many programs it is the role of the care coordinator to ensure this information is available to emergency service personnel and is provided to them routinely in anticipation of future emergency problems [2, 12].

Family Support

Most of the models of coordinated care for this client group incorporate activities and initiatives that aim to provide a broader level of support for the patient and family than simply assisting in organising health care. This may include the initiation of financial or social support based on the assessment of the non-medical needs of the family. The programs often work to link families to support groups and other family resources. Some programs incorporate measures to promote client empowerment through the provision of information, education and self-management interventions[1, 8]. This may involve teaching patients and their families self-monitoring and self-care skills, such as proper diet for their condition, avoidance of triggers of clinical worsening, management of medications, and skills to cope with the stresses of chronic illnesses [2].

Advocacy and service improvement initiatives

A common component of many coordinated care programs is advocacy or service improvement. These activities are directed towards improving the effectiveness and efficiency of health systems so that they more adequately address the needs and concerns of the patients and their families. This may involve linking information on unmet needs and barriers to initiatives that aim to improve or reform the health system. Other activities include advocating for increased resources and working with other agencies to increase communication or coordination. It may also include advocacy on behalf of particular patients or their families in relation to specific unmet needs or barriers to access.

Monitoring

With the recognition that the health needs of children change as they develop, there is an emphasis on monitoring these changes in order to ensure that the program remains relevant and effective. Most programs monitor progress by instituting regular follow-up sessions with the patients and their families [1]. These sessions may be conducted by phone or in person and involve an assessment of the changing health status of the child and any emerging problems or issues that require action. With this ongoing reassessment of the plan, the program of coordinated care becomes a dynamic process with interventions altered to meet the changing needs of the child and family [2].

Evaluation

Most programs also incorporate quality improvement or quality assurance processes in which there is some monitoring of key indicators. This may involve some ad hoc or retrospective analyses of cases to identify untoward events such as avoidable hospitalisations or a lack of progress in addressing the health needs of the patient. Other evaluation activities focus on the process of the planning and implementation and include an assessment of patterns of access to services; barriers to delivery of coordinated care; satisfaction of the patient, family and health professionals involved; and the training needs of the team implementing the program [1, 15, 17].

There is limited information available regarding the findings of impact or outcome evaluations although there appears to be some monitoring of service utilisation, costs and changes in the health status of the children.

Effectiveness of Coordinated Care Programs

No relevant research publications were identified in relation to the effectiveness of coordinated care in children with chronic conditions and complex health needs.

Discussion

Most of the available literature on models of coordinated care for this patient group that was identified in this review described programs conducted within the USA. It is not clear whether this reflects an advanced level of development and implementation of these types of programs in the USA relative to other countries or simply the limited amount of published material relating to models in practice elsewhere. It is difficult to identify the literature relating to programs in countries other than the USA due to the wide range of terms used to describe these programs.

The models of care identified in this review share many similarities including common principles and goals and similar processes of planning, implementation and review. The importance of the role of the family in decision making is emphasised. A key person is appointed to take on the role of the leader and main coordinator of activities. This is usually undertaken by a health professional but in some programs family members are encouraged to take on this role.

The main differences in the models of coordinated care that emerge in this review relate to the scope and nature of the activities. Some programs are more narrowly focused on health needs and working to coordinate services so that these needs are met in an effective manner. Other programs take a much broader, holistic perspective taking into account social and emotional needs and work with a broad range of service providers to achieve emotional, social and educational objectives.

A major difference between coordinated care in children and adults is that the models developed for children need to take into account their overall growth and development. The programs often have a specified goal of maximising the potential of the child. Achieving this goal requires careful attention to the changing needs of the child and the family and adapting and modifying the program of coordinated care as the child develops. It also requires a proactive approach including planning for important transitional periods such as starting school and entering adolescence.

One issue that is unclear from the available literature is the extent to which tension arises as a result of potential conflict between the two main objectives ie when the objectives of addressing the health needs of patients and reducing health service utilisation are at odds. It is possible that there will be situations in which the gate keeping role of reducing costs may conflict with the responsibility of the care coordinator to ensure that all the health needs of the patient are addressed. The available literature does not provide clear evidence about the financial impact of these programs in terms of health care utilisation. This is surprising given that the establishment of the programs has been widely predicated on the assumption that they will contribute to a reduction in health care costs. It is possible that programs that effectively address barriers to services and provide effective consumer education to families may result in higher levels of service utilisation and associated costs.

At present there is insufficient research evidence from which to draw conclusions regarding the effectiveness of these types of coordinated care programs. Similarly it is not possible to draw conclusions about the most effective models or components within the programs. Research studies using appropriate trial designs are needed to determine whether coordinated care programs result in improved health outcomes for children with chronic and complex health issues.

Conclusion

The models of coordinated care identified in this review share many similarities including the principles and goals and similar processes of planning, implementation and review. Usually a team approach is used with a coordinator appointed to lead the process. The family is encouraged to participate in the processes of the development and implementation of a care plan. The main differences in the programs that have been identified in this review relate to the person who takes on the role of the care coordinator (health professional or family member) and the scope of the program (focused on health needs or more broadly addressing health, social, educational and emotional needs).

These programs typically incorporate processes of monitoring and evaluation however there is currently no evidence available from appropriately designed controlled trials to determine the effectiveness of the programs.

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Disclaimer

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Appendix 1: Search terms

All search items are free text terms unless otherwise stated; Medical Subject Headings (MeSH – MEDLINE medical index term); a dollar sign (\$) stands for truncation(s). Limits for English language, humans and publications from 1996 were applied.

General patient group

This search was used to identify models of care related to care coordination and the target age group of ≤18 years.

- Exp Continuity of Patient Care
- Exp Case Management
- Exp Patient Care Planning
- Case-management or care-coordination or care-co-ordination or care-planning
- Exp adolescent or exp child or exp infant
- Exp Pediatrics
- Adolescens\$ or Child\$ or Infant\$ or Teenage\$ or Teen-age\$ or Pediatric\$ or Paediatric\$

It was combined with each of the following searches to identify the chronic conditions targeted by the Southern Health 'Coordinating Care for Kids' Project

<p>Autism</p> <ul style="list-style-type: none"> ▪ Exp Asperger syndrome ▪ Exp Autistic disorder ▪ Exp Rett syndrome ▪ autis\$ or asperger\$ <p>Cerebral Palsy</p> <ul style="list-style-type: none"> ▪ Exp Cerebral Palsy ▪ cerebral palsy <p>Complications of preterm birth</p> <ul style="list-style-type: none"> ▪ Exp Premature Birth ▪ Exp Infant Premature ▪ Exp Infant, Low Birth Weight ▪ Exp Intensive Care Neonatal ▪ Exp Intensive Care Units, Neonatal ▪ premature ▪ pre-term ▪ preterm ▪ "low birth weight" ▪ neonatal intensive care <p><i>(Search terms for child, adolescent and paediatric not applied here)</i></p> <p>Congenital Heart Disease</p> <ul style="list-style-type: none"> ▪ Exp Cardiomyopathies ▪ Exp Heart Defects, Congenital ▪ Cardiomyopath\$ or ((congenital and birth) and (heart or cardiac) and (defect\$ or disease\$ or condition\$)) 	<ul style="list-style-type: none"> ▪ defect and (atrial or ventricular or septal or valve) ▪ (cardiac or heart or arteri\$ or vessel\$) and transpose\$ ▪ ASD ▪ VSD <p>Cystic Fibrosis</p> <ul style="list-style-type: none"> ▪ Exp Cystic Fibrosis ▪ Exp Bronchopulmonary Dysplasia ▪ cystic fibro\$ ▪ bronchopulmonary dysplasia ▪ BPD <p>Developmental Delay</p> <ul style="list-style-type: none"> ▪ Exp Mental Retardation ▪ Exp Developmental Disabilities ▪ retard\$ or (development\$ and (delay\$ or disab\$)) <p>Diabetes Mellitus</p> <ul style="list-style-type: none"> ▪ Exp Diabetes Mellitus ▪ diabet\$ <p>Epilepsy</p> <ul style="list-style-type: none"> ▪ Exp Epilepsy ▪ epilep\$ <p>Gastroenterology</p> <ul style="list-style-type: none"> ▪ Exp Crohn Disease ▪ Exp Colitis, Ulcerative ▪ Exp Celiac Disease 	<ul style="list-style-type: none"> ▪ Exp Short Bowel Syndrome ▪ crohn\$ ▪ colitis ▪ celiac ▪ coeliac ▪ short bowel ▪ short gut <p>Haematology</p> <ul style="list-style-type: none"> ▪ Exp Thalassemia ▪ Exp blood coagulation disorders ▪ Exp hemophilia a/ or hemophilia b/ ▪ haemophili\$ ▪ hemophili\$ ▪ thalassemi\$ ▪ thalassaemi\$ <p>Neurology</p> <ul style="list-style-type: none"> ▪ Exp Hydrocephalus ▪ Exp Microcephaly ▪ Exp Spinal Dysraphism ▪ Exp Neural Tube Defects ▪ spina bifida ▪ hydrocephal\$ ▪ microcephal\$ ▪ neural tube defect\$ <p>Neuromuscular syndromes</p> <ul style="list-style-type: none"> ▪ Exp Muscular Dystrophies ▪ muscular dystroph\$ 	<p>Renal Diseases</p> <ul style="list-style-type: none"> ▪ Exp Kidney Diseases ▪ renal ▪ kidney ▪ nephro\$ ▪ glomerul\$ <p>Rheumatology</p> <ul style="list-style-type: none"> ▪ Exp Arthritis ▪ arthritis <p>Scoliosis</p> <ul style="list-style-type: none"> ▪ Exp Scoliosis ▪ scoliosis <p>Urologic Diseases</p> <ul style="list-style-type: none"> ▪ Exp Urologic Diseases ▪ Exp Urogenital Diseases ▪ Exp Bladder Diseases ▪ (urinary or urolo\$ or urogenital\$ or uro-genital\$ or genitourinary or genitor-urinary or bladder or ureter\$ or urethra\$) and (disease\$ or condition\$ or defect\$) ▪ hemoglobinuria ▪ haemoglobinuria ▪ hematuria ▪ haematuria ▪ proteinuria
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