Factors that determine the level of care children and adolescents experiencing mental disorders receive

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Summary

Provision of timely, effective, evidence based mental health services to children and adolescents can prevent long term impairment, but they are critically underfunded across the globe. There is an imperative to ensure this precious resource is not wasted. Governments and other relevant mental health stakeholders need to know the mental health status of the population, what resources are available and how best to use the resources available to guide effective policy and decisions about service levels.

Aim:

The aim of this paper is to explore the role of acuity, severity and complexity in determining the specialist mental health care that children and adolescents experiencing mental disorders receive.

Methods:

This study is exploratory involving a systematic scan of the literature. A key word search was conducted using databases PSYCHINFO, EMBASE, PUBMED and MEDLINE. Grey literature was also searched to focus on systemic, organisational and policy approaches to the organisation and commissioning of CAMHS. Only documents written in English were selected.

Three countries Belgium, UK and the US all with very different models of service organisation for CAMHS were reviewed to investigate how well the concepts of acuity, severity and complexity were used to determine the level of care delivered in their service design.

Findings:

Neither the Belgium nor the US model of CAMHS service organisation appear to align with the key concepts driving intensity of level of service provision. The UK CAMHS service system most closely aligns with the concepts. It has a more balanced resource allocation between hospital and community. Its downfall is in its lack of flexibility between service levels and its lack of support for the primary care sector.

Conclusions:

The variability in resource allocation to different service levels (inpatient, outpatient, community) within specialist CAMHS and the differing model of service structure across countries indicates an inconsistency in how children and adolescents presenting to CAMHS are allocated to the care they receive. This puts into question whether children and adolescent with mental disorders are receiving a level and type of care commensurate with their needs.

In commissioning and designing CAMHS systems a number of key principles that should be considered are discussed. The perfect system however, is yet to be found.

Key Words: CAMHS, Severity, Complexity, Service Organisation, Models of Care

Resumo

Uma prestação de serviços de saúde mental para crianças e adolescentes (CAMHS) oportuna, eficaz e baseada na evidência pode evitar incapacidade a longo prazo. No entanto, estes serviços são criticamente sub-financiados em todo o mundo. É um imperativo garantir que este precioso recurso não seja desperdiçado. Os governos e outras partes interessadas relevantes na área da saúde mental precisam de conhecer o estado de saúde mental da população, quais os recursos disponíveis e como melhor utilizar os recursos disponíveis para orientar uma política e decisões efectivas sobre os níveis de serviços.

Objetivo:

O objetivo deste artigo é explorar o papel da acuidade, gravidade e complexidade na determinação dos cuidados em saúde mental especializados recebidos por crianças e adolescentes que sofrem perturbações mentais.

Métodos:

Este estudo é exploratório envolvendo uma revisão sistemática da literatura. Foi realizada uma pesquisa com palavras-chave utilizando bases de dados PsychINFO, EMBASE, PubMed e MEDLINE. A literatura cinzenta também foi investigada com um enfoque nas abordagens sistémicas, organizacionais e políticas para a organização e comissionamento de CAMHS. Foram selecionados apenas documentos escritos em Inglês.

Três países, Bélgica, Reino Unido e Estados Unidos, todos eles com modelos muito diferentes de organização de CAMHS, foram revistos para investigar de que forma os conceitos de acuidade, gravidade e complexidade foram utilizados na sua concepção de serviços para determinar o nível da assistência prestada.

Resultados:

Nem a Bélgica, nem o modelo norte-americano de CAMHS organização de serviço parecem estar alinhados com os principais conceitos na determinação do nível de prestação de serviços. O sistema de serviços do Reino Unido de CAMHS está mais estreitamente alinhado com esses conceitos e tem uma alocação de recursos mais equilibrada entre o hospital e a comunidade. O seu ponto fraco está na falta de flexibilidade entre os níveis de serviço e na falta de apoio para com o sector dos cuidados de saúde primários.

Conclusões:

A variabilidade na alocação de recursos a diferentes níveis especializados de CAMHS (em regime de internamento, ambulatório, e na comunidade) e o modelo diferente de estrutura de serviços entre os países estudados indica uma inconsistência na forma como as crianças e adolescentes que apresentam aos CAMHS são referenciados para os cuidados que recebem. Isto põe em questão se as crianças e adolescentes com perturbações mentais estão a receber o nível e tipo de cuidados concordantes com as suas necessidades.

A concepção e o comissionamento de sistemas de CAMHS levam-nos à discussão de uma série de princípios fundamentais que devem ser considerados. O sistema perfeito no entanto, ainda está para ser encontrado.

Palavras-chave: CAMHS, gravidade, complexidade, organização de serviços, modelos de cuidados

Sumario

Prestación de oportuna, eficaz y basado en la evidencia de servicios de salud mental para los niños y adolescentes pueden prevenir el deterioro a largo plazo, pero están insuficientemente financiado críticamente todo el mundo. Es imperativo garantizar que este precioso recurso no se desperdicia. Los gobiernos y otras partes interesadas pertinentes de salud mental necesitan conocer el estado de salud mental de la población, lo que están disponibles y la mejor manera de utilizar los recursos disponibles para orientar la política y las decisiones acerca de los niveles de servicio eficaz de los recursos.

Objetivo:

El objetivo de este trabajo es explorar el papel de la agudeza, la gravedad y la complejidad en la determinación de la atención de salud mental especialista que los niños y adolescentes que sufren trastornos mentales reciben.

Métodos:

Este estudio es exploratorio e implica una exploración sistemática de la literatura. Una búsqueda de la palabra clave se realizó utilizando las bases de datos PSYCHINFO, EMBASE, PubMed y MEDLINE. Literatura gris también fue registrada para centrarse en los enfoques de los sistémica, institucional y política de la organización y la comisión de CAMHS. Sólo se seleccionaron los documentos escritos en Inglés.

Los tres países de Bélgica, Reino Unido y los Estados Unidos, todas con diferentes modelos de organización de servicio para CAMHS fueron revisados para investigar qué tan bien los conceptos de la agudeza, la gravedad y la complejidad se utilizan para determinar el nivel de la atención entregada en su diseño de servicios.

Resultados:

Ni organización de servicios modelos CAMHS en Bélgica o los EE.UU. parecen alinearse con los conceptos clave de la conducción nivel intensivo de la prestación de servicios. El sistema de servicios de CAMHS de Reino Unido alinea más estrechamente con los conceptos. Cuenta con una asignación de recursos más equilibrada entre el hospital y la comunidad. Su caída se encuentra en su falta de flexibilidad entre los niveles de servicio y su falta de apoyo al sector de la atención primaria.

Conclusiones:

La variabilidad en la asignación de recursos de diferentes niveles de servicio (paciente hospitalizado, ambulatorio, comunitarios) dentro CAMHS especialista y el modelo difiere de la estructura de servicio de los distintos países indica una inconsistencia en cómo los niños y adolescentes que acuden a CAMHS se asignan a la atención que reciben. Esto pone en tela de juicio si los niños y adolescentes con trastornos mentales están recibiendo un nivel y tipo de atención acorde con sus necesidades.

En la comisión y el diseño de sistemas CAMHS, se discuten una serie de principios fundamentales que deben ser considerados. El sistema perfecto, sin embargo, aún no se ha encontrado.

Palabras clave: CAMHS, la gravedad, la complejidad, la Organización de servicio, modelos de atención

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Introduction

Internationally, public mental health services do not have sufficient funds to meet demand for services[1]. Commissioners and service providers must make decisions not only about what levels of mental health care they can provide with the limited resources available but also who they can service and who they cannot. Specialised mental health services in many countries are bound by legislation to deliver care, in some case however, other sectors such as primary health care, education, social services, community services, justice and even police are left to service a large portion of the population with mental disorders in the young.

The bulk of mental health funding around the globe is spent on adult services[1]. Many countries have found it difficult to establish child and adolescent mental health services (CAMHS) as they generally receive a small portion of the mental health budget, if any at all. There is sometimes a mistaken notion that children do not develop serious mental disorders. With adult mental health services already underfunded compared to the rest of health services, this means the resources available for CAMHS is very low. Decisions regarding the type of service delivery, the model of care, and who gets access to that service become even more critical in the child and adolescent space with its very limited pool of resources to ensure scare resources are not wasted.

It is now widely accepted that mental health disturbances at a young age can lead to continuing impairment in adult life[2]. If there is inadequate funding of treatment services for children and adolescents with mental health problems then we will continue to see high levels of need for adult mental health services for chronic conditions. Children and adolescents with mental disorders, if treated early, could potentially have a different life trajectory, avoiding chronic disability and impairment, preventing them from entering the adult mental health system altogether.

The provision of mental health services for children and adolescents has an added level of complexity to delivering mental health services to adults. While family members are encouraged to play a role in the care of the adults with mental illness, they play a crucial role in the delivery of mental health services to children and young people. There may also be a number of other agencies which play a role in the young person's life, delivering services which impact on the mental health of the young person such as schools, social services and juvenile justice. While these agencies can impact on the mental health of the young person, they are also involved in caring for the young person. Coordinating care between all these players adds a layer of complexity to delivering mental health care to the young person.

Governments need to make decisions regarding the distribution of CAMHS resources, such as how they are structured, where they are located and how they will be staffed. All these can have important implications for children, adolescents and their families, for service providers, for service systems in health, other agencies and for society in general.

The levels of mental health care provided to children and adolescents with mental health problems are typically defined in terms of inpatient, day program, outpatient or community. Each of these levels of care has a differing level of intensity and therefore differing implications for both the service provider but also the service user. There is however, very little information on what determines what level of intensity of mental health care children and adolescents receive. Policy documents and criteria for specialised service entry commonly describe the determinants of intensity of care as either acuity, severity, complexity and/or a combination of all three; however there is very little information on how these concepts are defined and applied in selecting appropriate care. Without clarity it is difficult for decision makers, service commissioners or service

providers to plan for and ensure that children and adolescents receive the right level of mental health care to address their needs. How each of these services levels are formed to make a comprehensive CAMHS service structure can be affected by these definitions. It is not surprising then that models of service structure in child and adolescent mental health look very different not only from country to country but can also be different from jurisdiction to jurisdiction within a country.

Aims and Objectives

Aim

The aim of this paper is to explore the role of acuity, severity and complexity in determining the specialist mental health care that children and adolescents experiencing mental disorders receive.

Objectives

1. To investigate the definitions of acuity severity and complexity in children and adolescents experiencing mental disorders and what role these factors play in determining the level of intensity of mental health care these children, adolescents and their families receive from the specialised mental health services.

2. To investigate how selected countries apply the factors of acuity, severity and complexity in their models of CAMHS service structure and whether it makes a difference to the specialised mental health care that children, adolescents and their families receive.

Magnitude of the Problem

Governments and other relevant mental health stakeholders need to know the mental health status of the population and what resources are available to guide effective policy and decisions about service levels. It is difficult to tailor service provision to the demands of the population without understanding not only the size of the problem, but also the social and economic impact of the morbidity associated with psychiatric conditions in children and adolescents and what the population feels about the problem and wants to do about the problem.

Prevalence of Mental Disorders in Children and Adolescents

A number of epidemiological studies have been carried out investigating the prevalence of mental disorders in children and adolescents however, global data is patchy. The World Health Organization Atlas study of 2005 reported that of their 192 member states, less than half had CAMHS data[2]. The authors suggest that this reflects the broader problem of appropriate systems for gathering data, but also an absence of focus on CAMHS at a national level. The epidemiological data from available studies indicates that the average prevalence rate of mental disorders in children and adolescents is approximately 20 percent[3].

Results from nine population studies indicated a prevalence rate somewhere between 14 and 26 percent of children under the age of 18 suffer from some type of behavioural, emotional or developmental problem[4]. One review pointed out the disparity in prevalence rates between countries by comparing the Ontario Child Health Study (1987) that found the prevalence to be 18.1 percent of mental disorder among 4-16 year olds to the UK studies which estimated the prevalence to be between 12 and 25.4 percent[5]. The authors concluded that the prevalence rate lies somewhere between 20 and 30 percent of mental disorder of school age children, with 12 to 15 percent considered moderate to severe or clinically significant. Methodological differences in how the data were collected could account for some of the difference.

Four epidemiological studies looked at the prevalence rates among pre-schoolers reporting a range between 14 and 26 percent, with 9-12 percent of these presenting with severe symptoms and functioning impairment[6]. This is consistent with, although slightly lower, than older age children's prevalence rates and is still considered high.

British researchers[5] found across the epidemiological studies they reviewed:

- that overall prevalence rates are similar across cultures around the world;
- that there were substantial differences in types of disorders found across studies;
- methodology for determining prevalence varied across studies; and
- the prevalence rate was dependent on the type of disorder, the age of presentation and the methodology employed.

The CAMHEE project (Child and Adolescent Mental Health in Europe) looked specifically at CAMHS across Europe and noted that large differences in prevalence estimates between countries existed[7,8]. This appears to be in contradiction to the British review's conclusion that prevalence is reasonably consistent.

A number of countries have attempted to collect their own child and adolescent mental health prevalence data. The following countries had published information on their prevalence rates:

- The BELLA study in Germany looked at prevalence rates among 7 to 17 year olds[9]. They found that 7.2 percent of their population had an abnormal SDQ (Strengths and Difficulties Questionnaire), measuring functioning, and a further 13.3 percent had a borderline abnormal score.

- The Psychiatric Epidemiology Research across the Lifespan (PERL) group in Ireland found that by age 13, one in three young people were likely to have experienced some type of mental disorder and by the age of 24 this increased to one in two or half the population[10]. This appears to be much higher than in other countries with 11-13 year olds in Ireland having a mental disorder prevalence rate of 15.4 percent while the UK for the same age range reports 9.6 percent and the US reports 11.2 percent.

- The US Surgeon General's Report in 2000 suggests that the burden of child mental health needs has reached a "crisis" in the US with 1 in 10 children and adolescents experiencing a mental illness severe enough to cause some level of impairment[11]. Prevalence rates also varied by gender and social economic status.

- Canadian studies report between 15-21 percent of children and young people are affected by mental health disorders that cause some significant symptoms or impairment[12]. The

Ontario provincial government goes on to suggest that "no other illnesses affect so many children in such a serious and widespread manner".

- A study in Brazil reported that between 7-12 percent of Brazilian children and adolescents have mental health problems that require some form of mental health care, and half are estimated to be severe[13].
- In Mexico, the MAMHS (Mexico Adolescent Mental Health Study) reported rates of mental disorder in children and adolescents at twice the level of the US and Canada, with 4 out of 10 adolescents 12-17 years of age having a psychiatric disorder in the past year[14].
- The Australian Mental Health of Young People population survey reported 14 percent of children and adolescents have a mental health problem. The high prevalence rate was consistent across younger and older adolescent age groupings and genders. The prevalence rate was found to be higher among those children and adolescents living in low-income, step/blended and sole-parent families[15]. A more recent NSW Health survey estimated 8.1 percent of children aged 4 to 15 years of age to be at risk of developing a clinically significant behaviour problem[16]. In 2008, almost one-third of young Aboriginal and Torres Strait Islander people (aged 16–24 years) had high or very high levels of psychological distress, more than twice the rate of young non-Indigenous Australians[17].
- In Italy, the reported rate of prevalence of mental disorder among children and adolescents is 8 percent. This appears to be lower than other countries but remains congruent with the adult mental disorders prevalence rates in Italy which are lower than in other European countries as well[18].
- A review of epidemiological studies from 51 Asian countries reported the general prevalence rate of child and adolescent mental health problems/disorders to be in the range of 10-20 percent[19].

The high prevalence in childhood and adolescence is important for its predictive value for morbidity later in life. Studies have shown that approximately 50 percent of lifetime mental illness, excluding dementia, begins by age 14 and 75 percent by age 25 [20-22]. The US Surgeon General Report of 2000 reports 74 percent of 21 year olds with a mental disorder had prior mental health problems[11]. There is evidence that the progression of disorders into adulthood can worsen without treatment[23]. Research indicates that child psychiatric disorders do not remit spontaneously but become more complex and resistant to treatment with time if left untreated[5]. This further reinforces the case for prioritising mental health care for children and adolescents and ensuring that resources are not wasted.

Issues in determining magnitude

A number of issues become apparent when investigating prevalence rates for mental disorders in children and adolescents:

- there are differences in how the rates are reported, varying in age groupings, how the problem is identified, what disorders are included or excluded, and whether the prevalence is further analysed;
- there are differences in how the data were collected; and

- there are differences in how treatment was identified to determine the treatment gap including what is included or excluded in treatment and where treatment is provided and by whom.

Each of these issues has implications for how the data can be used in designing mental health services for children and adolescents.

Prevalence rates based on service utilization seriously underestimates the true prevalence rate[9]. Population studies also have their limitations; they may over diagnose or under diagnose some problems as they are dependent on participants reports of subjective distress and social impairment[24]; and they may not be able to differentiate level of severity of disorder, which is related to level of care required. Both of these limitations could seriously affect service planning in that commissioners may incorrectly estimate the overall need for care and where and how that care should be delivered.

Clinical mental health needs of children and adolescents

Whichever prevalence study is used, the rate of mental disorder among children and adolescents is alarmingly high[23]. While the epidemiological data estimates the prevalence rate of mental disorders in children and adolescents to be approximately 20 percent, this does not provide enough information to plan for care without further analysis.

High prevalence does not necessarily indicate the degree of need. Prevalence data are based on diagnostic categories. Of the 20 percent with mental disorder, a smaller portion (4 - 6%) are predicted to need clinical intervention for a "significant" mental disorder[2]. Even so, anywhere between 5 to 20 percent of the child and adolescent population may need a child and adolescent mental health service. Some argue that diagnosis alone is a poor predictor of which individuals will benefit from which treatment[24].

The developmental stage of a young person can impact on a young person's vulnerability to disorders and how the disorders are expressed[25]. Some also suggest that simple diagnostic systems give a poor picture of both the nature of young people's problems and the interventions they require[26]. Disorders are dynamic and show variability in presentation, therefore context associated with diagnosis is necessary to clarify the picture[23].

Methodology

This study is exploratory and involved a systematic scan of the literature for relevant information. A key word search was conducted using databases PSYCHINFO, EMBASE, PUBMED and MEDLINE. Key terms such as 'CAMHS' and 'child and adolescent mental health', and Boolean operator 'AND' were used to ensure inclusion of similar concepts of 'severity' and 'acuity'. A total of 166 articles were identified between February and March of 2015, of these 27 were assessed by the author through reading the abstracts to be of direct relevance to this study.

These articles were used to define the concepts of acuity, severity and complexity and how they applied to child and adolescent mental disorders.

To focus on systemic, organisational and policy approaches to the organisation and commissioning of CAMHS, grey literature such as policy papers; service information and referral criteria; service models and frameworks; CAMHS reviews from relevant bodies; as well as key texts were searched. Only documents written in English were selected. Due to the timeframe for the study it was not possible to include other language resources. Low income countries were left out of the searches so that comparisons could be made between countries with similar levels of resources available (based on 2010 World Bank criteria). Specific searches were done for policy documents and CAMHS service referral criteria from the following English speaking countries: Australia, Canada, England, Ireland, New Zealand, Scotland and the United States. Policy documents or reviews from European countries were included when they were found in English. Seminal textbooks on CAMHS were also reviewed. These included textbooks on the US and UK systems. This resulted in over 100 documents which have been synthesised by the author under the key headings in this paper where relevant.

The documents were used to define the differing levels of intensity of CAMHS service organisation as well as models of CAMHS service organisation. The levels of intensity of care included primary care, community based care and hospital based care.

Three countries Belgium, UK and the US all with very different models of service organisation for CAMHS were reviewed to investigate how well the concepts of acuity, severity and complexity were used to determine the level of care delivered in their service design. The countries selected differed in their allocations of resources to hospital based vs community based care, their articulation of service models and market driven vs needs driven models of service commissioning.

Resources allocated to child and adolescent mental health

The Office of Technology Assessment (OTA) in its 1986 report to the US Congress reflected that more was known about preventing and treating children's mental health problems than was reflected in the care available to them[27]. In other words we know what to do but do not have the resources to deliver what we know works.

Having established that there is a high prevalence rate for mental disorders among children and adolescents across the globe, there is nowhere in the world that reports the need for CAMHS is fully met[2]. Even in high income countries CAMHS is historically underfunded[1,23]. This is reflected in the lack of mental health policy specific to children and adolescents, existing in less than 10 percent of countries globally[28]. In Australia no state or territory dedicates more than 10 percent of its mental health budget to children with a similar low level reported in New Zealand[29]. The CAMHEE study reported UK expenditure on specialist CAMHS was 11 percent of the total child health, CAMHS and maternity budget in 2006/07[30]. The small increases in CAMHS budget have gone into specific multi-agency projects with relatively little going into core CAMHS since then.

The WHO Atlas study (2005) reported 23 percent of European countries lacked specific programs for child and adolescents mental health , while 26 percent of the countries in the Americas lacked basic clinical mental health services for children and adolescents[2]. The study also found there was no parity with resources provided for adult mental health services. The study also found that CAMHS was largely funded by temporary or vulnerable sources rather than stable government funding. Not only was the funding for CAMHS less than adult mental health services[1] but a survey of 36 European countries found the quality of services and degree of coverage for youth were generally worse in

comparison to adult mental health services[31]. The service gap even in the high income countries is still high (from 80% to 20%).

Unmet mental health care needs of children and adolescents in specific countries

The following countries had information published on the mental health service gap for children and adolescents:

- Between 20 to 30 percent of young people between the age of 6 to 17 years old in the US who were identified as needing mental health care received it[4,32]. The rate of unmet need was higher among Latino and uninsured populations[32].

  In the UK, it is estimated that around half of the children and adolescents with psychiatric disorder causing impairment will receive some kind of mental health care[33]

- The BELLA study in Germany reported that consistently less than half of the children and adolescents with identified mental health problems requiring care received treatment[9].

- The Ontario child health study in Canada reported one in six children and young people with mental disorders received some form of specialty mental health service and that this figure may be lower in First Nation Aboriginal populations[12].

- The MAMHS study in Mexico reported less than 14 percent of children and adolescents with current psychiatric disorder received treatment. [14].

Appropriateness of care

The following countries had published information on the appropriateness of care.

- Not only is the child and adolescent population with mental disorders in the US grossly underserved, many are inappropriately served in overly restrictive settings [34]. It is estimated that 40 percent of hospital placements of children with mental disorders in the US are inappropriate in that they could have been treated in community settings.

- In the UK, only 10 to 20 percent of the population of children and adolescents with more serious need are actually seen by specialist CAMHS each year[26,33].

- The MAMHS study in Mexico reported that out of the children and adolescents who were able to access care, half only received minimally adequate care[14].

Resource gap in mental health care for children and adolescents

The amount of budget allocated to CAMHS is not readily available for specific countries. The National Health Service in the UK reported in 2013 that two-thirds of local authorities in England had reduced their CAMHS budgets over the last three years[35].

The lack of resources includes lack of specialist clinicians to treat children and adolescents with mental disorders. Ireland reports being severely under resourced in CAMHS with only 44 percent of the staffing level recommended in national policy[36]. Italy on the other hand reports the highest number of child psychiatrists per population in Europe[18]. Their child psychiatrists tend to treat

neurodevelopmental disorders as well as psychiatric disorders, which may distort the availability data.

It appears that across the globe the CAMHS sector's capacity to respond is outpaced by the need. Anywhere from 50 to 90 percent of children and adolescents who are reported to need mental health care do not receive it. The need for mental health care for children and adolescents is consistently reported to be growing rather than diminishing. The already unacceptable gap between those receiving care and those who do not will continue to widen if need is identified as increasing and resources are not.

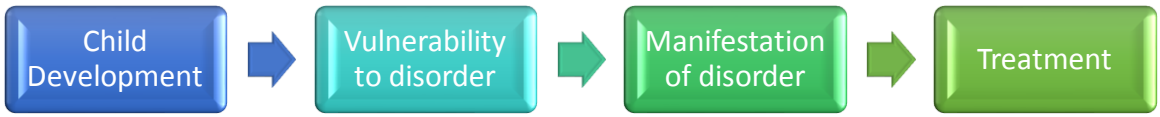
Service planners if they are to improve access to mental health services for their child and adolescent populations require more comprehensive information about the varying needs of children and adolescents with mental health problems. Multiple service providers are involved in delivering mental health care to children and adolescents and differing needs can be met by specialist CAMHS and the primary care sector. The tension between the two sectors can lead to service gaps through which in turn leads to children and adolescents with mental disorders falling through the gaps and missing out on care. While both sectors are important this paper will focus on the model of service organisation of the specialist CAMHS and how the two sectors interact.

Structure of CAMHS

Children and adolescents who require specialised mental health care are not a homogenous group. They have varying needs based on age, presenting disorder or constellation of disorders and circumstances in which they reside including their school, their family and their neighbourhood, which require different types of responses. The services that are designed to service them need to reflect the different factors influencing their treatment needs.

The following diagram demonstrates the trajectory towards treatment for children and adolescents. Each of these components, child development, vulnerability to disorder and manifestation of disorder, is made up of a range of factors.

Figure 1. Common path of determinants influencing the need for mental health treatment

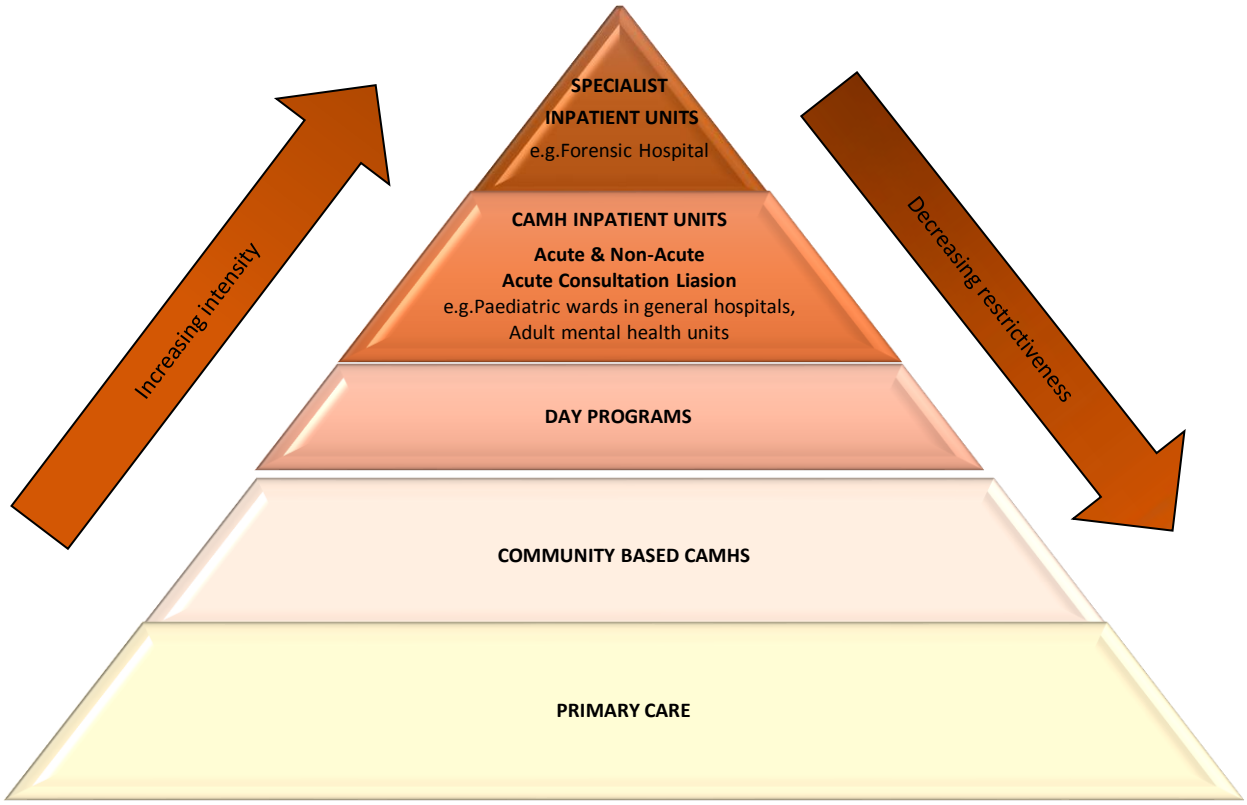


CAMHS differs structurally and operationally from adult mental health services. The service elements may be similar however they differ in terms of family involvement, interagency relationships and adjustment to developmental stage compared to adult mental health services. While the full range of services from prevention (universal, selected, indicated) to treatment as described in the Mental Health Spectrum Model[37] is required to ensure good mental health of the child and adolescent population this section will focus on the curative end treatment end of the spectrum, for those who have a mental disorder.

Different treatments are required for varying levels of severity of illness[1]. These different treatments may also require different settings and personnel. In program development, treatment levels can be confused with the specific treatment components provided within those levels. For example,

"inpatient treatment" can include a variety of treatment components provided in an inpatient setting. Figure two is an example of treatment levels available.

Figure 2. Treatment levels of care for children and adolescents experiencing mental health problems



According to the World Health Organization the proportion required in the various levels is roughly the same across countries[1]. In comprehensive services, these levels are not discrete. Apart from the primary care sector, the rest of the levels of care are provided by specialist CAMHS either in the community, including ambulatory clinics or in the hospital setting including day hospital, non-acute, acute and specialist inpatient units.

The goal of good service planning is to have a range of services of increasing intensity and complexity to meet the needs of children and adolescents with mental health problems and ideally the bulk of the services should be provided in the community[38] The model should reflect the needs required at each level of care. Children and adolescents may flow between the levels dependent on their symptoms, degree of disability and what care is available at each level and other factors. Even within a service level the intensity of the treatment provided may change. For example an intensive community treatment team may go from daily contact to a few times a week as a young person's symptoms improve according to evidence/standards.

CAMHS placement in the service spectrum

Children and adolescents are often not recognised as having serious mental disorders which can lead to misunderstanding the important role CAMHS can play in the delivery of specialist mental health care. Child and adolescent mental health is a sub-specialty of mental health, which in turn is a specialist health area.

CAMHS can be dismissed as being an early intervention service and therefor can be mistaken as not having a curative role. This is dependent on the definition of early intervention. Early intervention can mean detecting and treating a disorder earlier as is evident in the following definition:

> "Early recognition and intervention: detecting a problem or illness at an earlier stage and increasing access to effective treatment, e.g., earlier detection and treatment of depression or psychosis"[39].

It can also mean individuals who are at-risk of developing a problem and fit in the category of selective prevention interventions in the Mental Health Spectrum Model. Early intervention in child and adolescent psychiatry does not equate with primary care provision. Children and adolescents can have severe disorders requiring quite intensive specialist multidisciplinary expertise.

A scan of English speaking country's referral criteria from CAMHS services across Australia, Canada, England, Ireland, New Zealand, Scotland and the US describe CAMHS as servicing children and adolescents who have "complex and severe mental health problems", "moderate to severe mental health problems" or "significant mental health problems" (over 50 specific services criteria were accessed via the internet). The terms 'severe, 'complex' or 'significant' appeared in every referral criteria, generally without definition. The age serviced by CAMHS is up to 18 years of age generally. This can vary around the upper and lower age limits. For the purposes of this paper the standard age of up to 18 will be adopted.

The assumption is that the needs of this population identified in the referral criteria that require entry into specialist CAMHS cannot be met in the primary care sector.

Levels of CAMHS care

The levels of mental health services provided to children and adolescents with mental health problems are identified in the pyramid in Figure 2.

Primary based care

A significant proportion of mental health services are provided through the primary care sector, especially in countries with very limited resources where it may be the only resource available The primary care sector can include a range of professionals including general practitioners, school counsellors, paediatricians, and primary health or community health nurses to name a few. With limited resources in mental health there is a push internationally to treat common mental disorders with less complex needs in the primary care sector. Caution must be taken as experience has shown that primary level provision does not necessarily reduce demand for specialist CAMHS services[40], it may actually increase. This increase may be due to higher detection rates as primary care professionals become more aware of mental problems as the push to have them deliver services increases.

The Australian Youth Mental Health study[15] reported on service type attended by the level of emotional or behavioural problems experienced by the child or adolescent. Three quarters of those attending specialist mental health services reported very high levels of problems and approximately 60 percent of those attending primary care professionals reported very high levels of problems. In comparison only 2.5 percent attending specialist mental health services reported a low level of problem.

Surveys conducted in the UK reported that children with psychiatric disorders were more likely to be seeking help for mental health problems from social services, special education and juvenile justice as well as CAMHS[33]. This demonstrates that young people with mental health problems will be seen by multiple service providers across a broad spectrum of services. These services must work together in a coordinated framework for the best outcomes for the child or adolescent and their family. The organisation of service systems can either hinder or enhance these working relationships between sectors.

Community based specialist CAHMS care

Community based specialist CAMHS includes outpatient services. The majority of specialist CAMHS care can be delivered in the community. These services traditionally are less intensive as they do not require round the clock care. They are delivered by specialist child and adolescent professionals.

Hospital based CAMHS care

At the high intensity end of the spectrum of care are all the inpatient services described in Figure 2. They are considered high intensity because apart from the Day Hospital they require round the clock care. The purpose of brief inpatient treatment includes: protection; diagnosis and treatment planning; and stabilization[41]. Hospitalising in mental health beds to determine diagnosis is contentious, but is still used by some. Just watching the young person to clarify a diagnosis is not likely to clarify the diagnosis and is using an expensive resource with potentially very little gain.

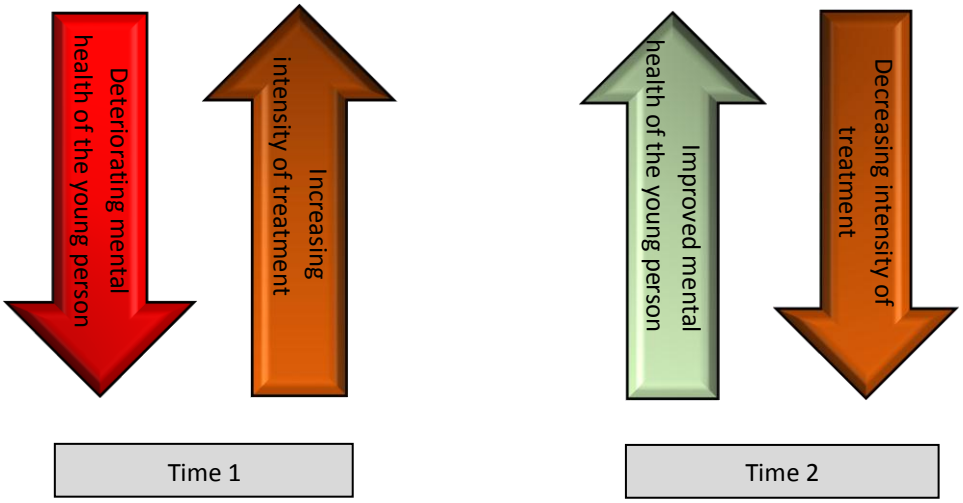
The criteria for entry into a CAMHS inpatient unit is similar in many countries and tends to include the common criteria of being a danger to him or herself; unable to protect him/herself from common dangers or attend to basic needs; or is likely to deteriorate unless he or she were receiving close observation; and their needs are not able to be safely met in the community. For example a new treatment may be tested which may be safer to start in the safer environment of the hospital setting where they can be closely monitored.

The principles for hospital based care for children and adolescents with mental health problems articulated in the policy directive for NSW Health in Australia[42] which is based on mental health legislation, includes the following: care should be provided in the least restrictive environment possible; care should be delivered as close to home as possible; and care should be based on effective treatments. While most mental disorders in children and adolescents can be treated effectively in the community, some children will still need hospital based care and is important that the beds are available to the group that need them the most.

Influencing factors on level of CAMHS care provided

In theory, as figure 3 below shows the mental health status of the young person is an important factor that should drive demand for level of care[38,41]. This however can be different to the reality of care for many young people, with many young people not receiving the care level required based on their need. The design of service systems can influence the level of care received.

Figure 3. Service level demand driver



Market driven vs values driven systems driving level of care

The marketization and privatisation of services means that the system can become financially driven rather than values driven[43] or based on professional principles[44]. The US Surgeon General pointed out that treatment decisions are not based on model practice or on need driven by the young person's mental status when services are profitability driven[11].

Many young people needing less restrictive care may find themselves in hospital settings with a more restrictive environment than required due to the lack of availability of services in the community. Equally young people requiring a more intensive level of care may not be able to access the level required due to unavailability of services at that level. In some countries, with a market driven system rather than universal medical health care, the lack of accessibility to the level of care required is due to a lack of medical insurance by large sectors of the population resulting in only certain sectors of the population able to access certain care levels. The MAMHS study in Mexico [14] identified that 40 percent of the population were uninsured. They were serviced by publicly funded health facilities where there was a user fee for each episode of illness making it prohibitive for large portions of the population. Treatments were also found to be unavailable in the primary and secondary sectors. Only two percent of the population were found to have access to the most expensive services.

Clinical skills of the workforce driving service level of care

Lack of resources also includes lack of trained skilled clinicians. There is a worldwide shortage of psychiatrists and psychologists trained in child and adolescent mental health[23]. This means that many children and adolescent's mental health needs are treated by clinicians who may be delivering services potentially developmentally inappropriate to them, or who are untrained to address the

complex care needs required. It may also result in inappropriate referral to a level of care due to lack of confidence in assessing the needs of the young person.

Psychosocial factors affecting service level of care

Children and adolescents rarely present with a single disorder. They are more likely to have a range of difficulties. Psychological disorders as a result of adverse life experiences are common, pure psychiatric disorders are rare in this population[45]. Studies in the UK have identified that some young people have been unable to access services at all because they are either too young or too old, too ill or not ill enough, or can end up in hospital because of unmet social care needs[46].

Where do countries prioritise their CAMHS resources?

In NSW, Australia and New Zealand service level planning is based on an indicative number of care packages being required at each level of care per 100,000 population[29]. The "care packages" in the NSW model are categorised according to severity of problems, coded as "mild", "moderate" or "severe"[47]. This model is designed to inform resource allocation to each level rather than dictate clinical practice. The category of severe includes complex psychosocial situations or factors, which gives some indication of context but are not clearly defined.

If children around the globe have similar mental health needs, allowing for some variability in clinical presentation,[23] then it would be anticipated that the resources at each level would be similar proportionally between countries. Table 1 below is based on the Atlas 2011 study[48] and compares the mental health facilities for children and adolescents in various countries. Not all countries were included as many were lacking data on CAMHS specific services. Low income countries were excluded for the purposes of this analysis.

Table 1. Availability of mental health facilities for under 18 year olds by country

			Number of facilities/beds reserved for children and adolescents only						
Country	Demographics		Facility Type					Total Number	Rate
	Population (2011)	Population under 18	Mental health outpatient facilities	Day treatment facilities	Psychiatric beds in general hospitals	Beds/places in community residential facilities	Beds in mental hospitals	Total psychiatric beds available	Psychiatric Beds per 100,000 population under 18
Australia	21,211,888	4,666,615	215	UN	269	31	0	269	5.76
Austria	8,387,491	1,509,748	UN	UN	262	UN	135	397	26.30
Belgium	10,697,588	2,139,518	11	7	228	UN	620	848	39.64
Brazil	195,423,252	60,581,208	86	122	120	24	350	470	0.78
Chile	17,134,708	4,797,718	Un	2	88	UN	36	124	2.58
England	52,234,000	11,491,480	UN	UN	560	UN	UN	560	4.87
Finland	5,345,826	1,069,165	UN	UN	250	UN	12	262	24.51
France	62,636,580	13,780,048	1,500	862	880	UN	1,542	2,422	17.58
Germany	82,056,775	13,949,652	3,151	131	UN	NA	UN	-	-
Greece	11,183,393	1,901,177	34	13	UN	UN	10	10	0.53
Hungary	9,973,141	1,795,165	68	2	UN	UN	40	40	2.23
Ireland	4,589,002	1,147,251	UN	UN	40	UN	42	82	7.15
Israel	7,285,033	2,258,360	35	3	63	UN	229	292	12.93
Italy	60,097,564	10,216,586	150	50	380	764	0	380	3.72
Japan	126,995,411	20,319,266	0	0	0	0	788	788	3.88
Luxembourg	491,772	103,272	2	2	31	0	12	43	41.64
Mexico	110,645,154	36,512,901	0	0	0	UN	120	120	0.33
Netherlands	16,653,346	3,497,203	10	980	UN	0	1,700	1,700	48.61
Norway	4,855,315	1,116,722	100	UN	UN	UN	326	326	29.19
Poland	38,038,094	7,227,238	173	26	464	0	638	1,102	15.25
Portugal	10,732,357	1,931,824	25	3	24	0	0	24	1.24
Spain	45,316,586	7,703,820	146	55	UN	UN	0	-	-
Sweden	9,293,026	1,858,605	UN	UN	157	UN	N/A	157	8.45
Turkey	75,705,147	24,982,699	UN	UN	UN	0	97	97	0.39
US	317,641,087	79,410,272	UN	UN	UN	50,420	UN	-	-

UN – Information unavailable, N/A – Item not applicable

The calculated rate of beds per 100,000 population of under 18 year olds in the table above excluded the beds in residential facilities. If these were to be included then the rate for Brazil would change to 0.82, Australia to 6.43, Italy to 11.2 and the US to 63.

Table 1. clearly demonstrates a significant variation between countries in their investment in CAMHS specific inpatient facilities. The rate ranges from 0.33 per 100,000 in Mexico to 48.61 per 100,000 in the Netherlands (or to 63 per 100,000 in the US using the residential setting figures).

Countries that have a rate less than 10 per 100,000 include Mexico, Turkey, Brazil, Greece, Portugal, Hungary, Chile, Italy (not included if using residential settings), Japan, England, Australia, Ireland and Sweden.

The countries that have a rate higher than 20 per 100,000 include Finland, Austria, Norway, Belgium, Luxembourg and the Netherlands (including the US if using residential settings). The US clearly stands out with a rate of residential placement at 63 per 100,000 population. There appears to be an over reliance on hospitalisation of children and adolescents with mental disorders in these countries, particularly the US. It is not surprising that previous US studies estimated 40 percent of the hospital placement of children were inappropriate[34]. Apart from the US all the countries with high CAMHS specific hospital bed rates are European. The CAMHEE report on CAMHS in Europe advised that there was still an overuse of institutionalisation of children in mental hospitals in some countries in Europe[7].

CAMHS inpatient facilities are considered low volume and high cost, similar to other highly specialised or intensive facilities elsewhere in medical planning[49]. Therefore the high rate of CAMHS specific hospital beds in some countries is puzzling. Budget holders are generally looking for more efficient treatment and service arrangements[50], particularly in the current global economic climate. Considering the mental health budgets in CAMHS are particularly low, it is surprising to find high levels of investment in more expensive and exclusive treatment levels of care. The cost however cannot be looked at in isolation from the effects.

Apart from the high cost of hospitalisation compared to intensive community care, inpatient interventions may be traumatic, disruptive to the child and their family and ineffective in addressing core family issues that underlie emotional dysregulation which are a common feature of hospital presentations[51]. First do no harm should be a central principle in delivering any health service to any age group, however, the long term impact particularly to children can result in more frequent hospitalisations over the lifetime.

A recent review of the evidence looking at alternatives to inpatient care for children and adolescents looked at both European and US studies[52]. The European studies reported approximately 15 percent of the potential inpatient clients were suitable to be managed by home treatment programs. The US studies reported major reductions in hospitalisations when intensive home based treatments were used. The European evidence also suggests that assertive community treatment cannot replace the need for inpatient care but it has the potential to reduce it. Further evidence is required to determine which model is best for which group of young people.

The data presented in Table 1. are based on funded beds however admission rates would give a more accurate picture of who is accessing inpatient care. The US is reported to have much higher admission rates compared to the UK. One study suggested the difference was five times higher[53]. The data on bed numbers suggest it may be much higher.

Without further data on the profile of the inpatient populations for each country it is difficult to explain the wide variation in the rate of psychiatric hospital beds for children and adolescents. One factor could be the availability of outpatient or community based care. Among the countries with high rates of CAMHS beds, Belgium, Luxembourg and the Netherlands all report low numbers of outpatient facilities. The resource allocation for CAMHS it appears is heavily skewed towards hospital based care in these countries.

A study in Belgium reviewed the organisation of mental health services for children and adolescents in Belgium. Two issues emerged which could shed light on the situation. First the lack of outpatient

services led to crisis presentations which ended up inappropriately in residential facilities. They also identified a lack of adequate filtering systems into levels of care[54]. This is in stark contrast to Ireland which has very restrictive criteria filtering access to more intensive and costly levels of care[36].

It is hard to gauge the need for CAMHS inpatient beds without taking into account the entire range of CAMHS services available. The Royal College of Psychiatrists (2006) benchmark, based on epidemiological evidence, estimates 20-40 CAMHS beds per million population of young people up to their 16th birthday are required[53]. This benchmark cannot be extrapolated to the data presented in Table 1. as the population data are up to the age of 18 and it is likely that the 16 and 17 year old age group may extend the benchmark figure considerably as the age of onset of some disorders peaks in this age group.

Other possibilities for the wide variation include differing diagnoses that children and adolescents present with that are hospitalised in the different countries; variation in threshold for admission to higher intensity treatment and differing models of care impacting on the length of stay. If children and adolescents are being hospitalised for longer periods due to their model of care then they understandably would need more beds as the beds available would be occupied for longer. The length of stay in hospital however, has been shown to be an inconsistent predictor of outcome[41].

In Italy communication disorders and learning disabilities make up approximately half of the casemix of CAMHS[18]. Some countries may still be hospitalising children with conduct disorders despite the lack of evidence of effectiveness. Hospital data on presenting disorders and length of stay would give a clearer picture of which children and adolescents are accessing this high intensity level of care and may go some way to explaining the variation.

It may also be possible that child and adolescent hospitalisations for mental health problems occur in paediatric beds and adult mental health beds at higher numbers in the countries with less CAMHS specific beds than in countries with high numbers. This can result in hiding the true number of hospitalisations of children and adolescents with mental health problems in countries with reported lower bed rates.

CAMHS service pressure points

Internationally CAMHS are dangerously overstretched with increasing referrals, greater complexity in presentations to the service and higher expectations from their agency partners as they become more burdened themselves[46]. A British consultant child and adolescent psychiatrist giving evidence to parliament reported that over the last five to six years her local service referral rate had increased approximately 20 percent every year[55]. The service was commissioned to see 2,000 clients but they were now receiving 4,000 referrals a year. This kind of pressure on the system means there is little or no capacity for early intervention. The service then becomes more crisis driven which in turn puts pressure on demand for hospital beds as young people become more unwell without appropriate care in the community.

Recent audits of CAMHS in the UK report an increase in waiting times which could be driven by the increasing referral rates as well as by the reported increase in complexity and severity of presenting problems[56]. Ireland in 2013 also reported a 24 percent increase in waiting lists[36]. Mental health service provision has always balanced the tension between treating illness and managing risk.

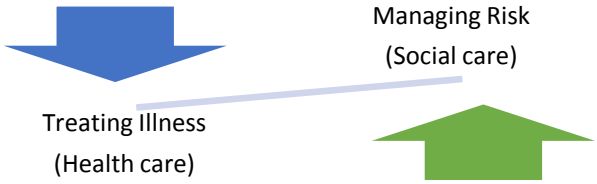


Figure 4. Service spectrum tension

The balance however, with the rising complexity and severity reported shifts services more towards the right of the diagram, towards managing risk. CAMHS struggles to contribute to promotion and prevention and even early intervention in the face of increased severity and complexity of presentations. In some cases services are so stretched managing the risk that they are unable to offer effective treatments, let alone support to primary care. Yet all the evidence points to the fact that delivering treatment at an earlier stage of illness is likely to be more effective and less costly than the resources that will be required over a lifetime if early intervention is missed[46].

Almost 40 percent of the admissions to CAMHS inpatient units in the UK according to a 2012 report were for self-harm or suicide[53]. This indicates that behaviours, not diagnosis could be driving admissions. Many of these young people admitted display features of borderline personality functioning and have suffered abuse and neglect. A CAMHS mapping exercise in the UK in 2002 identified that 65 percent of the children seen in CAMHS had multiple problems. A previous audit in 1999 reported the most frequent number of problems to be 5 with fewer than 5 percent having only one problem[26]. There remains however, a lack of clarity in the UK about who is referred to CAMHS and why. It is not clear if the number of problems or type of problems or a combination of the two are driving referrals, but more importantly driving who is accepted into CAMHS.

These results are not unique to the UK. A recent study in Ireland of 12 to 15 year olds that had recently been referred to CAMHS reported that the majority had one or more disorders, with almost a quarter having four or more disorders[57]. They also found that behavioural disorders were the most common presentation.

The situation does not appear to be any better in the US. The US Surgeon General's Report in 2000 reflected it was no easier to get help in 1990's than in the 1960's and it "costs more now to get a worse outcome"[11]. The report also identified that the US lacks a unified infrastructure to stop children falling through the gaps resulting in long waiting lists for services. Among the many barriers reported to accessing care, the managed care system in the US sets arbitrary eligibility criteria. The benefit limits are not only inadequate to meet the mental health needs of the more chronically ill children and adolescents but they are based on a middle class population, essentially denying access to the poor[44]. The care needs of the family are also missed in this system which is not family focused.

There are pressures facing CAMHS. The increasing complexity and severity of cases presenting to CAMHS are stretching an already overburdened system. There are also a lack of services sufficient to meet the demand. The long waiting lists are a reflection of the increasing demand from complex and severe presentations combined with a lack of resources. They also reflect a lack of comprehensive service system organised in a way that can best meet the need. The balance in the provision of specialist mental health care to children and adolescents appears to be currently tipped towards managing risk and less towards clinical treatment.

When are CAMHS specialist services required?

Assessing the need for CAMHS specific services is a complex task. Eligibility criteria vary widely. Attempts have been made to standardise the way health care workers make decisions about care however, there is still much work to be done in this area[58]. Given the constraints on resources and the arbitrary eligibility criteria the best clinical decision may be far from the reality of practice.

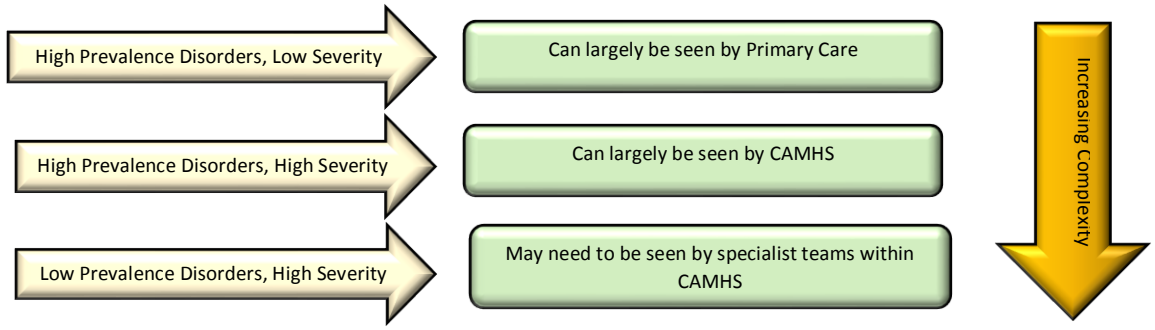


Figure 5. Users' flow

Level of severity and level of complexity experienced by the child or adolescent are crude indicators of whether the need can best be met by the primary care sector or whether they need specialist CAMHS expertise to best address the need. The level of acuity or how unwell the young person presents at a specific point in time is likely to determine what type of setting the care will be delivered in.

Although the terms severity and complexity are widely used to describe criteria for entry into services, they lack clarity of definition[26]. If CAMHS itself is not clear on the entry criteria, then how can referrers know when to refer and what to expect when they do refer. A study in Sydney, Australia found a difference between the schools rating of urgency of a young person's need for mental health intervention and the rating of urgency given by the local CAMHS service[59]. This difference can lead to service tension between the CAMHS service and primary care providers. To avoid waiting lists, reduce tension between service partners and provide an efficient service CAMHS must become clear in its referral criteria[60].

Severity

Mental health disorders presentations are often categorised as "mild", "moderate" or "severe". This categorisation is used in commissioning mental health services and is one of the factors used to determine what level of care is appropriate. Identifying a clear definition of each of these levels in the mental health context can be difficult. There is very little in the literature which gave any clue to defining severity in the CAMHS context, despite the fact that it is so widely referred to.

The Australian National Service Planning Framework categorises mental health under these three levels to determine service commissioning based on population planning. Specialised mental health services are described as delivering care to the moderate to severe end of the spectrum. They identify the moderate category as "having significant or persistent symptoms with low to moderate levels of comorbidity, disability or risk". The severe category is defined as "having severe, persistent or multiple symptoms with significant comorbidity, disability or risk"[61]. The use of the terms

"moderate" and "severe" in the definitions of moderate and severe makes the definitions somewhat unhelpful.

Some would argue that there is blurred differentiation between these arbitrary levels of severity of illness[24]. A Norwegian study tested the agreement between four CAMHS clinicians on diagnosis and severity[62] using a sample from a CAMHS outpatient clinic. To rate severity they used the HoNOSCA (Health of a Nation Outcome Scale - Child and Adolescent) and the CGAS (Children's Global Assessment Scale). They found the agreement scores by clinicians on their rating of diagnostic category were good to excellent. Their individual agreement score on severity rating was moderate. When the clinicians collaborated they improved their reliability score on the severity rating. If our specialist CAMHS clinicians cannot consistently agree on severity rating then how can they expect referrers to be clear on who should be referred to CAMHS?

For countries with large complex systems in CAMHS these definitions become important as they can be used as gateways to differing levels of service provision. When systems become stretched and under resourced they are more likely to narrow their definitions and tighten their boundaries in response.

Some argue that functioning (behaviour) and not severity of disorder (symptoms) is more likely to predict whether a child is referred to CAMHS[5]. In a review the researchers found evidence in US studies that competence on the part of the referrer and presenting problems contributed significantly to whether children were referred to mental health services. Two impairment criteria have been suggested for consideration [24] including:

1. impact assessed by distress on the individual or impact on daily life and relationships; and
2. burden on the family, indexed by impact on parent's mental and physical state.

The downside to using this alternative is that it would miss those who may be unconcerned about their own behaviour or emotional state, for example those with "callous unemotional traits". In other words they may not rate their impairment as high because they do not perceive their behaviour or relationships to be a problem, while others around them may.

The use of functioning to determine need fits with the World Health Organization's model in which the diagnosis is less important than the degree of impairment, especially in developing countries[23]. The degree of disability can vary with the circumstances of the child; the nature of the community in which they live; and the demands of the family. This gives weight and recognition to the impact of environmental factors in the expression of disorders.

As one researcher[63] points out, why would individuals and families present to services if there was no impairment? Families sense something is wrong which they associate with an "impairment". For primary care referrers this also makes sense as they search for alleviation of harm that is associated with a presumed dysfunction or impairment.

In a US study they found that "impairment" and "symptom severity" were related and overlapping constructs but remained unique illness parameters[64]. It is difficult to determine if impairment is the result of psychiatric symptoms. Impairment as a measure lacked sensitivity in non-psychiatric samples resulting in higher false positive ratings, identifying more cases than there were. This may lead to higher referral rates to CAMHS. When tested in a sample of psychiatric referrals the measure lacked specificity resulting in higher false negatives, identifying less cases than there actually were. This may result in less children and adolescents receiving treatment than who may need it. Either scenario is not ideal.

The US researchers also found many youth who met impairment cut-off for specific disorders did not meet symptom cut-off. On the other hand most youth who met symptom cut-off were impaired. The severity rating of the impairment was moderately to highly correlated with the severity rating of symptoms. The algorithm for determining whether an individual meets criteria for a specific disorder (caseness) will be different to determining their impairment level. Considering the high level of complexity of cases presenting to CAMHS if the service system is funded based on meeting criteria for specific disorders then it is unlikely to meet the need of a large portion of young people who are facing high levels of disability. If the services were also structured based on specific disorders then they may not deliver care in a manner that would best meet the complex needs of the presenting population.

The BELLA study in Germany investigated symptoms compared to impact of disorder in assessing mental health problems[9]. They found that it was important to measure impact as it was more discriminating than just symptom scales. They found this to be in line with the World Health Organization's International Classification of Functioning, Disability and Health (ICF)[65]. Disability and functioning in the ICF model is an outcome of the interaction between health conditions and contextual factors. The ICF model supports the notion that diagnosis alone does not predict service need, length of hospitalisation, level of care or functional outcomes.

The measure used is important as it can have implications for eligibility to services. If a patient must meet diagnostic criteria to access a service then they may be severely impaired but still not receive a service. On the other hand if CAMHS were to use impairment criteria alone then that can lead to confusion as to the role of CAMHS and open the floodgates to a scare resource as children suffer impairments for many reasons and CAMHS may not have the expertise to treat those being referred. Neither the diagnostic model nor the impairment model on their own is adequate for planning services. CAMHS needs use both criteria of impairment and diagnosis in defining its parameters clarifying its role and function in order to maximise its ability to meet the needs of the population while not overburdening the system and rendering it ineffective.

Measuring severity

There is a potential for unreliability in assessment of functional impairment[5]. Vague terms such as "need for treatment" do not make explicit the level of impairment nor guide service delivery. The CGAS defines functional impairment more explicitly[5]. The CGAS has been evaluated and found to be a reliable measure of overall severity of disturbance[66].

The HoNOSCA is used to rate various aspects of mental and social health with the total score representing the overall severity of the child's psychiatric symptoms. The utility of this measure lies in its coverage of a range of issues that are likely to be of significance in determining care[67].

Applying both the HoNOSCA and the CGAS to measure functionality as well as symptoms without being tied to a specific diagnosis appears to be the best way currently to measure severity in order to determine level of care. Diagnosis in this model does not determine need. Personal communication with the Director of a local CAMHS inpatient unit with attached outpatient clinic in Sydney confirmed that the eligibility criteria for entry into the service was first based on what other services were available and then severity based on impairment (CGAS) and the availability and functioning of the family and not based on disorders.

Severity of disorder vs serious disorder

UK studies indicate that there is no clear relationship between types of disorders and the level of service contact[33]. The term "serious disorder" is often referred to in the literature. It usually refers to disorders such as psychosis, which have a low prevalence but tend to result in high functional disability.

Serious illness and severity can then become confused in commissioning of services. This labelling of more "serious" disorders tends to negate the fact that some clients with more highly prevalent disorders such as depression and anxiety can also have very serious impairment. For example if depression were compared to psychosis, a large portion of the population with depression may be able to function reasonably well in the community with potentially little input from professionals, while the inverse may be true of psychosis. A smaller portion of the population with depression suffer very high functional impairment. If depression were to be excluded then from service provision based on it not being a "serious" enough disorder there would be a group of people with very high need denied access to services. Labelling of disorders in this fashion does little to ensure services are based on need.

Acuity

An acute illness is usually defined as an illness having a rapid onset with a short duration. This is in contrast to a chronic illness which has a long duration. A person with a chronic illness can have acute episodes. An acute episode means that the person is more unwell today than they were yesterday. Persistence is another marker used to indicate severity of a disorder. Persistence is dependent on the type of disorder, age of presentation and the type of care received[5]. As previously noted there is a high level of adults with mental disorders where the disorder began in childhood or adolescence indicating the stability of the disorder.

A British study found that two-thirds of the children with persistent disorder had no contact with a mental health service over the three year study period[33]. They also found that children with persistent disorder were more likely to be seen by CAMHS. They concluded that this reflected appropriate prioritisation by CAMHS. This would only be true if the children with persistent disorders who were referred also had high severity ratings for symptoms and/or impairment. Some children with persistent disorders may have periods of high acuity, which may result in the need for higher level services at particular points in time. It is therefore the acuity, not the persistence which has a greater influence on which care level is required.

Complexity

Children and adolescents rarely present with a single disorder and are more likely to have a constellation of difficulties including comorbid mental and physical conditions. The diagnosis of most conditions does not indicate the diversity of presentation or complicating factors that determine the level and nature of the resources required to treat the child or adolescent[24]. The intensity of input from CAMHS is reportedly geared towards the complex end of need[68]. Complexity however, can refer to multiple factors associated with the patient and their circumstances, number of service providers involved, the context of their lives[24] and the types of interventions required. Complexity is not a simple linear progression towards higher intensity and restrictive mental health care.

Complexity could include the following client variables: severity of disorder or impairment, co-occurring conditions (either physical or mental/behavioural), parental problems, cultural background, history of trauma abuse or neglect. Complexity could also include the following clinician variable or service context: skill set required to treat the condition, service capacity or number of resources required to treat the level of impairment.

Some of the common features of the highly complex group while not homogenous include high level of psychosocial adversity, numerous and disrupted care placements and experience of substantial trauma, abuse and neglect. They are likely to present with poor attachment, severe and persistent behaviours that are out of control in mainstream settings, engaging in serious self-harm and not motivated to stop, and violent behaviour that places others at risk[69].

The needs of service users with highly complex conditions are low in volume but high cost to the system. It has been suggested that indexing complexity could better inform resource requirements[24]. The Paddington Complexity Scale is one such scale used in resource estimation formulae. It works by measuring the psychosocial complexity such as child protection issues, school issues and physical illnesses. One study found it to be useful in describing clinical profiles of children and adolescents receiving mental health services. It was also moderately correlated with the HoNOSCA[70]. It gives a formal means of conducting a good psychosocial assessment.

The multi-agency cost of supporting this highly complex group is highly variable. Complexity does not always equate with increasing intensity of service in the CAMHS service spectrum. There is no simple formula which says x number of complex factors equals a certain level of care. The majority of young people with severe, complex and persistent mental health problems may never require hospital based care[46]if this is available. The increasing number of complicating factors present in a patient may determine an increasing level of care, but it may also mean the complexity is in the number of external agencies that must be interacted with or a combination of both. The complexity needs to be unpacked to determine what resources are required. Just saying a child is a “complex” case may not be all that helpful as they are not a homogenous group and the simple definition fails to guide care needs.

Children and adolescents with high social care needs tend to have multiple pathways into services and can transition between the levels of care within both the mental health services and the social care services. The pathway can depend on services being able to meet the young person’s needs across several domains[69]. There can be tension and frustration between multiple service providers involved in the care of this particular group of young people. The evidence base for the treatment of most disorders does not necessarily fit well with this group of patients.

Models of CAMHS Service Organisation

In developing and commissioning CAMHS the following three rules are suggested[71]:

1. Simplicity – CAMHS is already complex
2. Clarity – both staff of the service, the service users and their families and agencies in the community need to know what the service is providing
3. Consistency – need minimal change and disruption to the service

Consistency, one could argue should also mean consistency in what is provided across services at the same level of care, allowing for some flexibility based on population variability. What care a child or

adolescent with mental health problems receives should not be dependent on their postcode or their family's income level.

The lack of CAMHS policy and resources globally has led to fragmentation of services, inefficient use of resources and an inability to incorporate new knowledge in a systematic fashion[23]. There is also great variability in what services are offered, when they are offered and why. Models of care and service systems need to be carefully considered and systematically developed based on evidence and not reactionary or historically based.

In CAMHS there are effective treatments yet globally children and adolescents and their families are still lacking care. Fragmented services have led to poor quality care, lack of compliance with treatment and an inability to maintain children and adolescents in the least restrictive environment[23]. While the evidence base on parameters for hospitalisation is growing there is still great variability on the ratio of services provided between hospital and community across countries.

Pathways into care

Pathways into care for children and adolescents with mental health problems and their families can be arbitrarily determined by the systems of care that are designed to serve them. It is important to take a step back before examining the possible models for CAMHS service systems and remember some basic principles about how care is accessed. Children and adolescents seldom decide when to seek health services[1]. Referral to CAMHS is often based on a parental or caregiver request for help[33] or a community agency (schools, social services, juvenile justice system). The pathway is more complex than for adults as children and adolescents rely on the adults around them to identify problems and then to initiate service use.[72]

Caregivers, teachers and other professionals, while not necessarily agreeing on severity are reasonably good at recognising external subjective states (e.g. conduct disorder, oppositional defiant disorder, ADHD, drugs, suicidal attempt). The behaviour disorders tend to be highly visible. This may lead to a high rate of presentations of behavioural disorders or children and adolescents with emotional dysregulation to CAMHS. Children and adolescents however are much better at reporting their internal states (e.g. depression, anxiety, suicidal thoughts) than their carers or their teachers, but they may be unable to express this state to the adults around them. If nobody asks them, their mental health problems are likely to go unrecognised[1] and therefore untreated. The pathways into a child and adolescent mental health service may favour the highly visible disorders depending on how they are constructed, which may in turn mean that certain groups will be largely left untreated.

An Australian study asked young people aged 14 to 18 years old at a Sydney based child and adolescent mental health service what had influenced their decision to seek help[73]. The researchers found that parents had the strongest influence in their decision to seek help. They also found the higher the level of influence on the part of the parent in getting them to a service related to a greater disagreement between the parent and the child on the severity of the problem. UK studies indicate when young people themselves elect to seek help from services they may be a notably different cohort to those chosen for referral by their parent or carer[26]. The entry pathways into CAMHS are important in determining who receives care.

Entry through the Primary Care Sector

The majority of children and adolescents with mental health problems receive care from the primary health sector and do not move onto specialist CAMHS. This appears to be independent of the service system structure in place. Referral to CAMHS is often based on the anxiety not only of the professional at the primary care level but also the parent or carer in how to manage the problem presented by the child or adolescent[74]. There are a number of professionals in the primary care sector that could be considered part of the mental health system particularly those whose job roles include regular daily contact with children and who tend to have a profound effect on children's psychosocial development[74] (e.g. schools).

Prevalence studies indicate 12 - 20 percent of children visiting primary care facilities had psychiatric disorders across various countries[1]. This rate is very close to the population prevalence rate reported earlier indicating that a high portion of children with mental disorders presented to this sector Only 10 – 20 percent of these cases however, were identified by primary health workers. The low detection rate by the primary care sector appears to be universal[36]. As a first filtering system into CAMHS the primary care sector appears to be failing the majority of children, adolescents and their families.

General Practitioners

A review of studies from various countries reported the rate of mental disorder in children and adolescents recognised by the general practitioner to be anywhere between 6 and 27 percent[72]. This represents considerable under-diagnosis. Based on US studies, only 2-5 percent of general practice child and adolescent presentations involved emotional or behavioural problems. In UK studies the rate was reported to be about 24 percent. In the US anywhere between 30 – 80 percent of those recognised were then referred. Compared to others in the medical profession, general practitioners were generally found to assess a lower number of children attending their clinic as needing specialist mental health care[5]. US studies found that the competence of the general practitioner as well as the type of problem presenting contributed to whether children were referred to mental health services[5,72].

The general practitioner assessment of mental disorder had a high level of specificity but had a low level of sensitivity with only a quarter of disorder being recognised. This low detection rate could be in some part be attributable to the average general practitioner visit is being only 11 – 15 minutes long[11]. A comprehensive CAMHS assessment can take anywhere from one to three hours and involve a multidisciplinary team. The low detection rate could also be attributed to the limited training in mental health given to general practitioners.

While detection of mental disorders in children and adolescents remains a problem for general practitioners there are other sides to the problem that must be taken into account. Based on a UK study the general practitioner bases his or her decision to refer to CAMHS on both the presenting problem and the perceived likelihood of acceptance by CAMHS[75]. The study goes on to identify that the entry criteria to CAMHS is poorly understood by general practitioners. The likelihood of a referral from a general practitioner being rejected by CAMHS in the UK was over three times higher compared to all other referral sources.

Two things stand out from this finding from a planning perspective, first CAMHS must become clearer in its definitions of what is appropriate to refer to CAMHS. Secondly general practitioners should not be the only referral source into CAMHS. This is consistent with the World Health

Organization policy practice guidelines[76] and the Quality Network for Community CAMHS Standards from the UK[36] which recommend referrals come from a range of providers such as local emergency departments, schools, social services, paediatric services, youth offending teams and drug and alcohol services.

Bypassing primary care with direct access to specialist CAMHS is prominent in many countries. The interface between primary care and CAMHS varies between countries[72]. The Netherlands, Ireland and the UK for example have the general practitioner in the gate-keeping role. In Ireland referrals to CAMHS are only accepted from general practitioners. If the only referral source to CAMHS is through general practitioners then the impact on general practice must also be taken into account. While other primary care workers such as primary care nurses, school counsellors and youth services may provide the primary level of mental health care, the general practitioner does not have sufficient time generally to treat mental disorders. Their role is more of initial assessment, guidance and support, referral and possibly medication management. By making the general practitioner the only source of referral then many children and adolescents who are in need of mental health care have an added barrier to accessing care because as the evidence indicates general practitioners are poor at detection.

Using the general practitioner as the gateway into the system needs is not cost neutral. The visit to the general practitioner to make the referral is an extra cost in the system to the government in countries with public healthcare such as the UK, Canada, Australia and New Zealand. In countries without publicly funded health care this cost is borne by the parent or carer. While the cost of this visit is not seen in the mental health budget it will contribute to the health costs overall. There are some hidden costs in this model as well which include the time that the general practitioner spending seeing the patient, possibly to the detriment of seeing other patients with serious physical health issues and a cost in delaying treatment for the child, adolescent and their family as they must wait to see the general practitioner before accessing the mental health care that is required.

Some systems expect the general practitioner to service the primary mental health care needs of the bulk of the child and adolescent population with mental disorders. Is this just shifting the burden of mental health care onto an already overburdened and time poor workforce? Although out of scope for this paper a cost benefit analysis would be useful in comparing the general practitioner as the gatekeeper to CAMHS to other pathway models to determine the best way to manage referral into CAMHS.

Paediatricians

Paediatricians in some countries are primary care practitioners and in others are specialist health providers, requiring referral from a general practitioner. The paediatrician in the mental health system however is considered a primary care provider, being a key referrer to specialist CAMHS. Paediatric providers have reported a lack of skills and knowledge to manage most mental health problems[36].

An Australian study demonstrated that Australian paediatricians were being referred large numbers of children with severe and complex behavioural presentations[77]. The researchers demonstrated a clear overlap in the clinical characteristics of presentations to CAMHS and paediatricians. The main difference they found is that adolescents in the paediatric clinics were more hyperactive and the adolescents found in a typical CAMHS had higher emotional symptom scores. Using the Strengths

and Difficulties Questionnaire (SDQ), the burden of distress and social impairment was significantly higher in the CAMHS clinic compared to the paediatric clinic ($p < 0.001$).

When there are comorbid mental disorders and developmental disorders it can become very unclear as to which service fits the need of the patient best. The authors of the study questioned whether triage is random or based on the model of care in the service setting and what therapies can be offered in the different settings. The grey area of overlap in client base can create confusion for refers and families as they are not clear which service to approach for care. The role differentiation between paediatricians and CAMHS can lead to children and adolescents falling through the gaps as both may reject patients believing the other should be treating them.

Parents and Carers

The other and most important factor that determines service usage is parents and carers. General practitioners largely rely on parents to bring the problem to their attention. Despite the system of service structure adopted by a country, the parent universally plays a key role in determining service use[72]. The parent has to first recognise a problem and then perceive that there is a need for services to address the problem. A US study reported that identification of behavioural or emotional problems by general practitioners overlapped by only seven percent with parents identification of problems[11].

The parent's confirmation that there is a significant problem is not related to what type of disorder but rather to the social competence of their child[5]. A review of studies found that the predictors of parental perception of a problem included symptom severity, level of impairment, presence of externalising disorder and mental health problems in the parent themselves[72]. The review also identified the factors determining the parent's perception of the need for services to address the problem. These included perceived impact on the family or burden and whether the parent estimated the child's problem to be greater than other children. The results of the review indicated that the majority of parents of children with a mental disorder did not perceive a problem and they did not tend to raise a problem when they did identify it with their general practitioner. When parents did perceive a problem their request for referral played a greater role than how severe the disorder was in determining whether a referral was made. Adults who bring children and adolescents into services are affected by the burden[78] of their child's illness as well as the general burden the family faces and it appears that this burden is what drives them to seek care.

The BELLA study in Germany also examined parental perception of need for treatment. They found that between 26-37 percent of the children in their study with specific mental health problems were considered to be in need of treatment as reported by their parents[9].

It is clear that children, adolescents and their carers need clearer awareness of how to recognise when they might have a mental health problem, but more importantly clarity about when, where and how to get help[79].

Other Primary Care Providers

If the majority of children and adolescents with mental health problems receive care from the primary health sector and do not move onto specialist CAMHS, then who is providing the care? The primary care sector can include a range of other professionals apart from general practitioners and

paediatricians including teachers, school counsellors, primary health or community health nurses and professionals in social care and juvenile justice services to name a few.

In Brazil the Psychosocial Community Care Centres for Children and Adolescents (CAPSi) were established in 2002 as primary care units. These were strategically placed in the service spectrum to coordinate and deliver mental health services. They are staffed by multidisciplinary teams. They were not necessarily set up to treat the severe end of the spectrum but recent data from Sâo Paulo indicated that the majority of patients seen are severe[13]. This leaves a gap for children and adolescents with less severe and more common mental disorders. The recommendation was for one unit per 200,000 inhabitants. The reality in 2011 was there were only 136 accredited CASPi units with some regions having none, leaving only one unit per 1.3 million population in the Southeast and one unit per five million population in the north. It is not surprising then that the majority of cases seen are at the severe end of the spectrum.

The example of Brazil is not an uncommon one. If there are not enough resources at the specialist end of the spectrum as described in Brazil, combined with a lack of resources at the primary care level, then the primary care level is left to deal with more severe cases for which they lack skill and resources. The result is that children and adolescents with less severe presentations, in this case estimated to be 90 percent, can be left without a service in the setting which is supposed to cater for their needs. With the opportunity for treatment at an earlier stage being largely missed it is likely to lead to more intensive costly interventions required over the lifetime. The lack of specialist CAMHS and the lack of primary care services delivering mental health care is a double blow to the children, adolescents and their families in this resource poor scenario.

An audit in the UK identified that people working in the primary care sector were generally dissatisfied with CAMHS. They saw CAMHS as not meeting the legitimate needs of their clients[74]. The primary care sector are meant to see the mild end of the spectrum, however, the audit found that 90 percent of the young people with recognisable mental health problems are never seen by CAMHS. In the UK, CAMHS report seeing less of the child and adolescent population (10%) than the estimated prevalence of clinically significant cases[5] (12-15%). The audit also found that CAMHS only spend one percent of their time supporting primary care. The situation then arises where an overstretched CAMHS service pushes back to a primary care service which is anxious about the children and adolescents in their care and feels unsupported in managing them.

Strategies to expand the expertise of the primary health professionals and increase their confidence in managing mental health problems encountered in the children and adolescents in their care would improve the accessibility and responsiveness of mental health care to children, adolescents and their families who do not meet “caseness” or eligibility criteria for CAMHS but are in need of a service. A common complaint by schools when referrals to CAMHS are rejected by CAMHS is that they still have to deal with the problems on a day to day basis. Due to mandatory education requirements in most countries, they cannot opt out of having these children in their care.

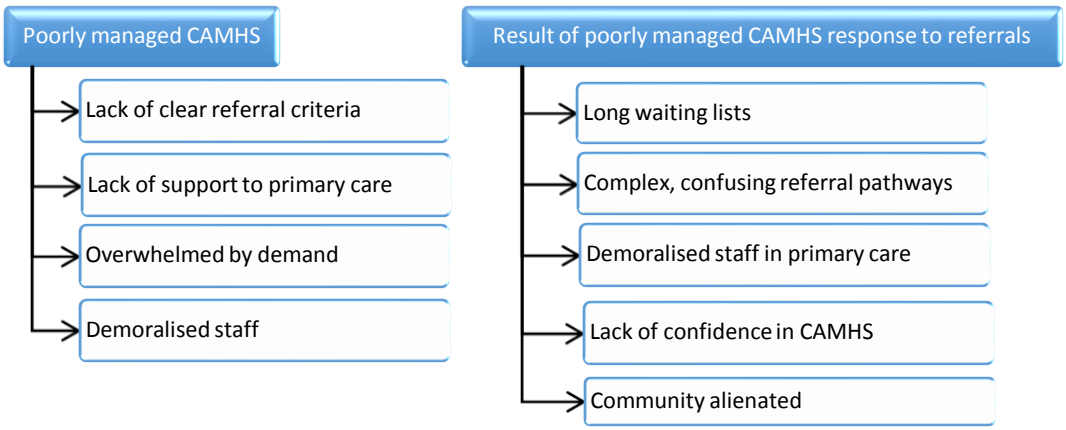
An example of a CAMHS delivered program to support the education sector is the School-Link initiative of New South Wales, Australia which began in 1999 and is still running[80]. The program was structured with a School-Link Coordinator employed by the Local Area Health Service CAMHS to support schools in mental health promotion, prevention and early intervention. An extensive training program for school counsellors to improve their detection and confidence in dealing with high prevalence, low severity disorders was a key feature of the program, resulting in 98 percent of the school counsellors who participated in the review of the program reporting that their counselling practice had improved because of it[81]. Presentations and mentoring to other school staff such as

welfare or pastoral care coordinators and principals and executive staff assisted in clarifying the role of the school, key groups within the school structure and CAMHS when dealing with the mental health of their school population. The review of School-Link in its initial phase indicated that it had established a strong partnership between health and education, raised the awareness of child and adolescent mental health problems and contributed to the areas of prevention and early intervention[81]. The review also reported that 70 percent of schools and 66 percent of school counsellors who took part in the survey indicated an improvement in their capacity to support adolescent students with, or at high risk of developing mental health problems through provision of targeted or early intervention programs. Although accessing CAMHS had improved for some, the majority (66%) reported continuing difficulty in accessing services for their students. The skills and competence of the CAMHS staff to support schools in this type of role is critical to the success of improving access to mental health care for children, adolescents and their families.

Without assistance the primary care sector cannot provide substantial or effective interventions[26]. Professionals within the CAMHS sector are expected to receive clinical supervision, so why does CAMHS expect the primary care sector to provide mental health care to children and adolescents without support from mental health trained professionals? CAMHS must have built into its system structures that give it the capacity to support the primary care level through strategies such as consultation, co-location and training for primary providers[36]. This would avoid an overflow of referrals to CAMHS which could be managed at a lower level of intensity with some support.

The figure below demonstrates what can happen to relationships with primary care when the CAMHS system does not work well[82].

Figure 6. CAMHS referral response failure



CAMHS Service Systems

There are very few countries which have clearly defined CAMHS service system descriptions. While systems vary greatly most developed countries have services at each of the service levels identified earlier. It is how these services at the different levels relate to each other that determine the service system as a whole. Is it organised as a cohesive comprehensive system or is it made up of a disparate set of services with little connection? Are there clear referral criteria between the levels using clear definitions of acuity, severity and complexity to ensure the system works efficiently and effectively?

Examples from three different countries with very different systems of CAMHS service structure will be examined to illustrate how the design of the system can influence what type of care will be provided to whom. The three countries selected were Belgium, England and the US. They were selected as they were all developed countries, they had widely varying models of care and there was information in the literature which outlined some of the key issues and structures.

Table 2. Comparison of CAMHS beds available, service models and referral criteria between Belgium, England and the US

Country	Population under 18	CAHMS beds in General Hospital	CAMHS beds in Mental Hospital	Total bed per 100,000 under 18	CAMHS Service structure description	Clear referral criteria and pathways into CAMHS
Belgium	2,139,518	262	620	39.64	Unclear	Unclear referral criteria and pathways
England	11,491,480	560	UN	4.87	4 Tiered Model of Care	Clear criteria and pathways
US*	79,410,272	UN	UN	63 (using residential bed data)	Managed Care and Systems of Care	Clear referral criteria into Systems of Care

**Based on federal data*

Belgium model of CAMHS care

A review of the CAMHS organisation was conducted in 2012[54]. The focus of the review is on the commissioning of services and the service structure regarding levels of care in CAMHS. The conclusion was that Belgium did not have a clear cut CAMHS strategy and there was an absence of an overarching vision and evaluation framework. While having a lower bed base than some other European countries, Belgium still appears to rely heavily on hospitalisation for treatment of children and adolescents with mental disorders. Much of this hospital based care is in the private hospital sector. This is not a reflection on the quality of the hospital care.

The review identified a lack of system in place to filter where care is to be delivered. The current referral pathway from assessment does not specify where the care is to be provided based on the intensity of care needed. This diffuse and unstructured access to CAMHS due to an extreme fragmentation between organisations and sectors results in primary care providers and families and carers trying multiple entry points, resulting in inflated waiting lists.

In Belgium there is a high rate per population of CAMHS beds compared to other countries. The beds are mostly found in private mental hospitals. The review identified a few areas of deficit including a lack of diversity of supply. Compared to other countries (see Table 1) Belgium appears to have a lack of outpatient services for CAMHS. The other identified areas of deficit include a lack of emergency services and a lack of home and community based treatment models, especially with sufficient intensity to provide an alternative to inpatient care. The patterns of admission to hospital are

strongly influenced by what is available. Unfortunately having a high bed rate for the population does not guarantee a hospital bed when required as they could be filled with children and adolescents who have no alternative care.

In this system the therapist or service drives the intervention and setting for care with limited options for care available. This is in contrast to other models such as the UK tiered model where the intervention and setting it is delivered in is tailored to the need of the child or adolescent. There is little flexibility in the system.

It is clear that just addressing the criteria for entry into inpatient care will not address the problem of overutilization of hospital based care. Resources need to be placed in community care otherwise there is no alternative to placing a child or adolescent in restrictive care which is costly, is considered inappropriate and ineffective in the treatment of some disorders and can be harmful to the young person.

Changing a historically based model of care is not an easy task for any government. The review identified that the fragmentation and the relationships between the sectors needs to be strengthened to move forward towards designing a system that better suits the needs of the population.

There is no evidence in the current CAMHS systems structure in Belgium that acuity, severity or complexity drives intensity of service delivery or what setting care is provided in. History and market forces appear to play a major role in how the service system operates rather than evidence based models of care.

US model of CAMHS care

The rate of residential care far exceeds any other country. CAMHS specific hospital bed data were unavailable in the Atlas data report of 2011[48]. Even without the hospital bed data the residential bed base alone indicates a high rate of dependence on restrictive care in the US. Again this is not a reflection on the quality of care in residential settings but a reflection on how care is structured and managed and for whom it is designed. This high rate of institutional care may be a reflection of the lack of community base care.

The US system is not a homogenous system and is dependent on the resources in individual states. There does appear to be two simultaneously overarching types of operating systems[44]. The first is the Managed Care system which serves the entire eligible population. Managed Care is a system for financing and delivering health care that is tied to either health insurance or Medicaid with predetermined schedules of treatment based on diagnoses. This is a system driven model of care. The second is the Systems of Care which is federally funded for specific subgroups of children and adolescents with serious or severe emotional disturbance and structured to wrap the services around the young person and their family and is family and needs driven.

Managed Care

Entry into CAMHS through the managed care system is based on arbitrary utilization protocols[44]. The health insurer or Medicaid sets the benefit limit which is based on a model suited to a middle class population. Services bid for managed care contracts to deliver public managed behavioural health plans. The market forces rather than professional principles for care drive provision of service in this

model. The limited benefits offered under this system are inadequate to meet the mental health needs of the more chronically mentally ill children and adolescents. As the benefits are arbitrarily set the system is minimally driven by severity (determines which care package is available to a limited amount) but not by acuity or complexity.

Systems of Care

The Systems of Care model, funded by Congress began in the 1980's with the Child and Adolescent Service System Program (CASSP) to deal with the children and adolescents who were deemed to be most in need[4,83]. The basis for this development was that youth with the most severe mental health problems couldn't access community mental health as they were privately run practices which favoured seeing the mild to moderate end of the spectrum. The CASSP system was the start of the concept for wrap around services which now fall under the heading of Systems of Care.

The three core values of the System of Care are that it is child and family focussed, community based, and culturally competent[84]. The client is identified through the social care system as having significant impairment. The system, made up of a number of organisations delivering different components of care wraps itself metaphorically around the needs of the presenting child and their family. Each of the participating organisations must contribute to the pool of resources to provide the services. The group of participating organisations can look very different inn different localities based on the available services.

Inpatient care can be part of the mix of services offered but is not central to the model. Patient need rather than market forces drives the types and mix of services provided[84]. Entry into the Systems of Care program is based on significant impaired functioning in multiple domains of functioning that have persisted for at least a year. It is a biopsychosocial model and not just a medically driven model. The quality of the first titrated access into this system plays an important part in terms of access to care. The care is impairment-based not diagnosis based and seems to be directed at the group of children and adolescents with high social care needs rather than high mental health needs.

A few downsides to this system include: the lack of mental health services available in some states to participate in a system of care model; access is only available to a very narrowly defined group of children and adolescents based on their psychosocial needs; the focus on impairment criteria only excluding mental illness criteria could mean that children and adolescents with severe mental illness but not necessarily high psychosocial complexity might miss out on care. The two groups are not mutually exclusive but they are not completely the same group. Some young people with severe mental illness could have complex care needs but not necessarily complex psychosocial needs. The review did not include data on the states with this system in place but rather focused on the model of service delivery and again who it was designed to treat. The System of Care model is funded to service a very small minority of the child and adolescent population at the very pointy end of the social care spectrum.

The main advantage is in working with other sectors to give comprehensive care across multiple domains, unlike other models in less comprehensive systems where ensuring multiple need are met can be difficult and complicated. While the principles of delivering care in this system are clearly articulated, there is sufficient flexibility in the system to deliver care based on needs. The efforts to build the systems and organise the process of service delivery around this particular client group appear effective demonstrating promising results for the young people they serve based on national evaluation[85].

Intensity of service in this system does not necessarily equate to differing levels of mental health care but appears to be centred on multiple service providers involved in care and number of contacts with the service providers (intensity of case management). Complexity in terms of social care needs, severity in terms of impairment, and chronicity of the condition appears to drive this system.

UK model of CAMHS care

The UK CAMHS system is based on a tiered model of care which first appeared in 1995. The tiered model neatly equates with the levels of increasing intensity of care required and remains the preferred framework to organise the commissioning of CAHMS[86]. The tiered model was developed to form a strategy to address the diversity of functions in the CAMHS system and to meet the real profiles of the needs of the population[26]. For this reason the model, unlike the US Systems of Care model, is not based on specific groups of children or adolescents, nor is it based on disorders but instead attempts to address the system of mental health care in a population based framework.

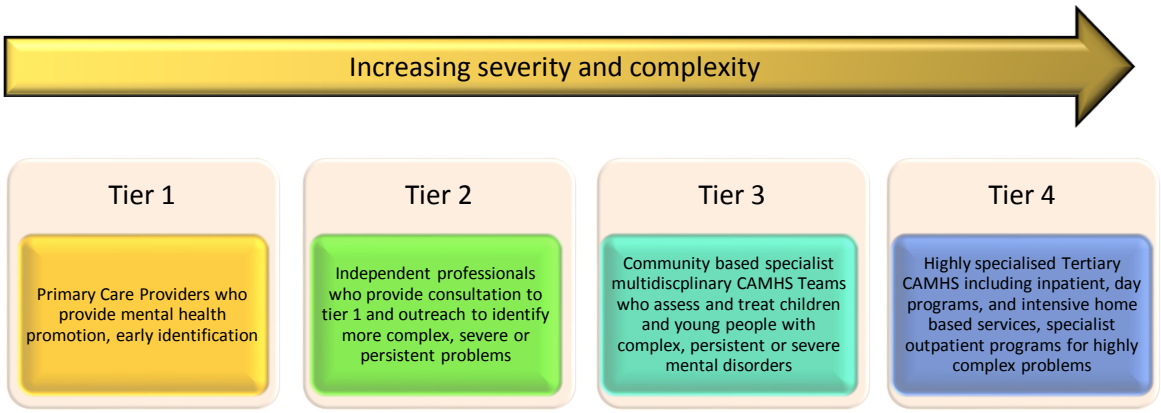
The tiered model is a framework built around filters and tiers with the intensity of input geared to the complexity of need[68,71]. The main method prior to the introduction of the tiered model was to respond to referrals which was inadequate with only approximately 10 percent of children and adolescents with mental disorders being referred. This tiered system takes into account the care needs in the primary care sector known as tier one and not just the moderate to severe end of the spectrum that is serviced traditionally by CAMHS.

The main concept behind the tiered model is that different clinical needs can be managed by different levels within the tiered system[68]. The effective management and functioning of the tiered system is dependent on the interface between the tiers as each one acts as a filter to the next level. The progression of a child or adolescent through the tiers is not linear, but dependent on the care needs of the child or adolescent at a particular point in time depending on the severity or acuity of their illness. As young people can move backwards and forwards through the tiers the interface between them becomes a critical feature of the model.

The filtering systems between tiers is designed to allow children and adolescents with more complex problems to reach the higher tier levels and to filter out more routine problems which do not require the higher level of resources at the higher tier level, decreasing wastage of expensive resources at the higher end of the spectrum[71]. The assumption is that the needs of the children and adolescents as they progress through the tiers, cannot be met by the previous tier.

The following figure is an adaptation of the National Health Service tiered model of service delivery[86].

Figure 7. UK National Health Service tiered CAMHS model of service delivery



The advantage of this model is that it attempts to clearly define the role of the professionals in each tier[71]. The resources at each tier is related to complexity of need[82]. The model fits well with the different elements delivered in different settings that are required in child and adolescent mental health service delivery. There is consistency in the model across the country which means that children, adolescents and their families should expect a similar service wherever they are. Another advantage is that service deficits can be easily identified provided you have norms of care that are monitored.

The intensity of the service is driven by severity and complexity. The National In-patient Child and Adolescent Psychiatry Study (NICAPS) in the UK in 2005 demonstrated that while the presenting problems between outpatient and inpatient cohorts were similar, the level of severity of disorder based on HoNOSCA scores were greater in the inpatient cohort[87]. They also found that the number of presenting problems was higher in the inpatient cohort (average number of problems was 7) compared to the outpatient cohort (average number of problems was 5). Complexity in this model does not just refer to psychosocial complexity as in the Systems of Care model from the US. Complexity in this model also refers to clinical complexity. Clinical services for specific disorders that require more complex clinical interventions, for example eating disorders, are defined at the higher tiered level.

The role of the primary health professional is to refer to tier two or three only when absolutely necessary. The role of the tier two or three professional is to refer to tier four only when necessary. This places the role of the gatekeeper on the services in the preceding tier. The NICAPS study reported that 67 percent of the patients referred by community based child and adolescent psychiatrists were granted admission[87]. The gatekeepers in this example are not always able to access the service they perceive is required.

One of the main criticisms of the tiered model in the UK is that through its clearly defined inflexible boundaries between the tiers, it has unintentionally created barriers between the services, causing services to be provided in a fragmented manner rather than as a comprehensive whole[88]. Each tier operates separately with a lack of integration between the tiers. Children and adolescents needs can change over time requiring a flow between the service levels. If each tier is pushing back to the next this can create tension and frustration between the different service providers resulting in children and adolescents falling through the gaps.

This fragmentation in the model is demonstrated by the lack of clarity in the delineation between tier two and three. It is not as clear as say the delineation between tier three and tier four. The professionals in tier two and three are both specialist mental health professionals with slightly differing roles. This could create confusion among primary care referrers as to whether the child or adolescent they have in front of them is a tier two or tier three case. Unless referrers were very clear, and this is known not to be the case, this can create an extra layer of confusion and of difficulty in accessing care. Also tier two and three can be part of the same CAMHS team.

It may be better to have the tier two and three defined together then within the structure of the service have a titrated response based on the presenting need of the child or adolescent. For example a brief intervention may be all that is required or a longer term therapy or intensive community based therapy may better suit the need of the presenting child or adolescent.

In contrast, CAHMS in Ireland is structured on a three tiered model. Tiers two and three are combined in the Irish model. This would go some way towards addressing fragmentation of services by creating a single point of entry into CAMHS as the upper tier is only accessed through the community based tier two in the Irish model and not two levels as in the UK model.

The Choice and Partnership Approach (CAPA)[89], developed in the UK by Ann York and Steve Kingsbury from the community CAMHS perspective to address the long waiting lists and service structure of Tier 3. The approach assists in the organisation of community CAMHS to determine roles and functions and skill sets required to form a fully complimentary CAMHS community team that is client focussed. It is based on demand and capacity theory. The benefit of this approach means that interventions must be tailored to need rather than the traditional method of therapist or teams driving the intervention. The commissioning of CAMHS still requires sufficient services to meet the demand.

The other downside to the tiered model is that it relies heavily on support from CAMHS to tier one, the primary care professional. As previously reported this is known to be severely lacking in the UK[74]. When resources are in limited supply and cannot meet demand this kind of system is more likely to use its filters between the rigid tiers to “guard” entry to that tier, with definitions and boundaries becoming tighter and more restrictive, leaving many children and adolescents to fall through the gap of what is offered at the primary care level and the specialist CAMHS services.

On the other hand, to open the doors so to speak without the resources available leaves services open to compromising the integrity of the care they provide. They can easily find themselves delivering care to a greater number of children and adolescents, but at a sub-optimal level of care. If each clinician carries too great a case load the focus of care shifts the balance to managing risk rather than delivering effective evidence based clinical interventions that can make a real difference to the trajectory of the young person in their care. This is a very real tension for many service commissioners trying to balance who receives care and what type of care they receive. It is very easy to fall into the trap of delivering a crisis driven system of care rather than a quality driven system of care without some balance in the caseload held by each clinician. Commissioners must make decisions about whether to deliver minimum care to all or maximum care to a few or somewhere in between.

With the capacity and capability of tier three defining tier four, it is important in this model that tier three is sufficiently resourced to prevent the need for tier four intensive services. There is an ongoing tension between each of the tiers of care that are not easily resolved especially with increasing demand and decreasing resources across the service spectrum. The system however does

at least align itself to the concepts of acuity, severity and complexity for determining care unlike the Belgium and the US models.

Comparing the models of CAMHS service structure

The three countries, Belgium, US and UK have very different models for structuring and coordinating specialised mental health services for children and adolescents with mental disorders. Table 2 demonstrates a clear difference in whether the resources are allocated to hospital based services or community based services. This is an important distinction between how care is delivered. Hospital based care is not necessarily the best approach to treating mental disorders in children and adolescents and can be contraindicated in some conditions such as personality disorders[90].

The following table summarises the strengths and limitations of how each of the three countries presented has structured its specialist CAMHS.

Table 3. Strengths and limitations of the model of CAMHS service structure for Belgium, US and UK

	Belgium		**US**		**UK**	
	Strength	**Limitation**	**Strength**	**Limitation**	**Strength**	**Limitation**
CAMHS beds	High number of CAMHS hospital beds	Lack of resources in community Over reliance on hospital based care	High number of CAMHS residential beds	Over-reliance on residential care	Balance between community and hospital based care	Low number of CAMHS hospital beds
Pathway into CAMHS		No clear pathway into CAMHS		No clear pathway into CAMHS (MC) No clear pathway into CAMHS (SoC)	Clear pathway into CAMHS in Tiered model	
Needs driven		Care is not based on need	SoC is needs driven	MC is not based on need	Tiered model is needs driven	
Coordination between levels of CAMHS		No coordination between the levels of care		Unclear if there is coordination between levels of care in either model		Rigid boundaries between levels of care can lead to uncoordinated care
Relationship to primary care and other sectors		No clear relationship with primary care sector or other agencies	Strong partnerships with primary care and other agencies (SoC) Clear pathway into a range of care options (SoC)	Unclear relationship with primary care sector and other agencies in MC	Clear relationship and role delineation between Primary care and CAMHS	Tension between primary care and CAMHS

SoC – Systems of Care
MC – Managed Care

Conclusions

The prevalence of mental disorders among children and adolescents across the globe is alarmingly high and yet there is insufficient focus on this age group in either mental health service planning or in the allocations of resources. The provision of mental health curative services to children and adolescents can prevent long term impairment but are critically underfunded right across the globe. There are effective treatments for children and adolescents with mental disorders yet globally children and adolescents and their families are still lacking care constituting a violation of the UN Convention on the Rights of the Child and the Convention on the Rights of Persons with Disability.

This lack of focus means that advocacy for the provision of mental health services for children and adolescents should remain high on the agenda globally. It also means that what little resources there are need to be utilised in a manner that maximises effective return on investment.

Not only is there a lack of funding directed to CAMHS but the delivery of mental health care to this age range is complicated. There are a range factors such as developmental stage; psychosocial factors that impact on the type of care delivered; the number of services involved in the care; and the inclusion of family that can either complicate or facilitate mental health treatment to children and adolescents.

Mental health care should be tailored to the needs of the young person and their family. The level of intensity of care by the health sector solely (primary care, community based care, day patient or hospital based care) is determined by a number of factors including the acuity, the severity and the complexity of the condition as well as the family situation and the availability of services, which is rare. The context is also important. The literature has shown however, that these terms, while holding high importance theoretically in determining the appropriate level of care, are not clearly defined.

Acuity is defined in terms of how unwell the young person is at a particular point in time. Some children with persistent disorders may have periods of high acuity, which may result in the need for higher intensity level services at particular points in time. It is therefore the acuity, not the persistence which should influence which care level is required.

Severity can be defined in terms of severity of symptoms of a disorder or the severity of disability. Criteria for deciding the intensity of care and setting of specialist mental health care required must take into account both definitions of severity to ensure the appropriate care is received. The HoNOSCA and the CGAS are two scales which can give some guidance in determining level of care giving a more accurate picture of care needs.

Complexity can refer to complex treatments for specific disorders, complicated presentations of the disorder, comorbidities or a number of psychosocial problems such as abusive family situations, learning disabilities and parental mental health problems. Many young people with complex problems may not ever require hospital based or more intensive specialist mental health services. The role the multiple problems play in determining the expression of the condition needs to be understood to determine the best type of care to deliver to whom. The reported increase in complexity of young people presenting to CAMHS requires service planners to reflect the range of complexity in the design of their services.

The growing complexity of presentations to CAMHS means that diagnosis alone will not be sufficient to determine type of care required. Without clear definitions of acuity, severity and complexity, how the concepts are applied in commissioning and designing CAMHS can result in very different

responses. It is important to ensure that children and adolescents receive the right type of care to best service their needs, preventing wastage of this scare resource. The pathway into specialist CAMHS as determined by the service design can be complex and often not well understood by referrers. In designing CAMHS clear criteria with clear definitions will go some way to improving the pathways into care.

The variability in resource allocation to different service levels (inpatient, outpatient, community) within specialist CAMHS across countries indicates an inconsistency in how children and adolescents presenting to CAMHS are allocated to the care they receive. This reflects very different service systems rather than differing needs of children and adolescents in different countries. Service planners must work towards matching the resource allocation to different levels of care to service need.

How the different levels of care fit together to form a comprehensive service systems for specialist CAMHS needs to be carefully considered and systematically developed. The level of care in the system offered to the child or adolescent and their family should be based on clinical evidence of what works for whom. There is great variability however, between countries in what services are offered, when they are offered and why.

This review has largely but not exclusively focussed on the specialist mental health care delivered by CAMHS. The primary care sector plays an important role in delivering mental health care to children, adolescents and their families. They however, cannot replace the need for specialised mental health care for this age group. Children and adolescents can experience severe mental disorders that require specialist care. The relationship between specialist CAMHS services and the primary care sector is also very important in the delivery of mental health services to children and adolescents with mental disorders and their families. This relationship should be clearly defined in any CAMHS service model. In a well-designed service system the primary care sector and the specialist mental health system work together to provide comprehensive care.

In some countries there is still an overutilization of hospital based care, despite the growing evidence base that inpatient care is not necessarily the most effective environment to manage children and adolescents with complex mental health needs. The lack of community based services in many countries contributes to this dependence on hospital based care.

Systems that deliver mental health care need to be value- based and not market driven, where care is based on solid clinical evidence. The starting point for the development of a structure for CAMHS provision must be the child, adolescent and their family, not the requirements of the institution.

Three countries Belgium, UK and the US all with very different models of service structure for CAMHS were reviewed to investigate how well the principles of care were employed in their service design.

The market driven systems, such as managed care in the US does not appear to have the concept of severity or complexity at the core of how care is determined or the universality of the services. The setting of a cap on services is an attempt to curb excessive use of services by limiting the funding source. The lack of a well-defined system in Belgium also means that the concepts are most likely applied with a lowered threshold required for a higher intensity of care than is the case in other countries such as the UK. This can lead to inappropriate hospitalisation and wastage of resources.

The UK tiered system seems to be much more aligned with using the concepts of severity and complexity to guide intensity of care delivered than either of the systems in Belgium or the US.

Complex needs as we have seen however, may not necessarily require increasing intensity of mental health service but may also mean a greater need for other service providers. The rigid structure and boundaries between tiers can act as a barrier to care rather than a facilitator and does little to address the complex psychosocial needs of the child or adolescent.

The Systems of Care model from the US demonstrates that while mental health support may be required, mental health services are not necessarily responsible for the case management overall, especially when there are a number of complicating psychosocial factors involved. The downfall in this system is that many young people with severe and complex mental disorders are locked out of care as they may not reach the threshold of complicating psychosocial factors required to enter the system.

In the UK model the primary care sector plays a very clear gatekeeper role for entry into CAMHS compared to the other two countries. This can work well when each sector has sufficient resources and there is mutual support for each other. There is tension in this system when the flow is pushed back due to a lack of specialist services onto an unsupported primary care sector which is left to deal with very complex presentations without support.

The other important factor in the delivery of care to children and adolescents with mental disorders is the family. How the family understands the problem and is able to access care is critical to how the system works. If the primary care sector is the gate keeper to CAMHS then there is more work to be done in assisting parents and carers to identify the problem and to understand how, where and when to access help.

No matter how the CAMHS system is designed and constructed, there are still gaps in services for many children and adolescents with mental disorders. There are problems with access in general, access to the appropriate level of care, and in matching the service supplied to the need of the child, adolescent and their family.

CAMHS must become clearer in defining its role and function and how it relates to the other service sectors. It must also become clearer in the definitions applied to guide care in order to reduce confusion and waste of precious resources.

The growing complexity in case presentations identified requires the availability of a range of options for the mental health care of children and adolescents. Research has identified that many of the children and adolescents entering CAMHS care have a high number of psychosocial problems and many have experienced trauma, abuse and neglect. Simple neat linear models of care will do little to address these problems. Simple diagnostic based treatments are also not addressing the complexity of presentations. Regardless of how the service system is structured CAMHS must become more sophisticated and trauma informed in its treatment approaches to become more effective in addressing the increasing complexity of presentations.

With limited resources for mental health services for children and adolescents around the globe, there remains a high dependency for mental health care to be provided in the primary care sector, rather than through specialised CAMHS. The global challenge is how to effectively provide mental health services in the primary care sector in a cost effective and clinically effective manner. The research with the primary care sector identifies the need for support to carry out the task through consultation, clear referral pathways and training. Without a strong primary care sector able to provide at least a basic level of mental health care, too many of the world's children and adolescents will continue to suffer.

Limitations of the study

The main limitation of this research is that only documents in English were searched resulting in a bias towards English speaking countries or countries that published in English. There may have been other models of CAMHS service systems which could have provided different results but they could not be included. Another limitation of the study was that only the author reviewed the journal articles for relevance. This could have been improved by using another reviewer to determine interrater reliability. Another limitation is that only three countries were selected for the review, limiting the possible type of models available for comparison. The countries selected however, included the main types of variations found.

Key Principles in Designing CAMHS

In commissioning and designing CAMHS systems the following key principles should be considered:

- allocation of resources to the different levels of specialist CAMHS care (community based care, day patient or hospital based care) must reflect population need;
- clear definitions of acuity, severity and complexity must be included as part of the service criteria for each level of care;
- the relationship between the care levels within CAMHS must work together to form a seamless comprehensive service system;
- the system must not be overly complex;
- a clear relationship between the primary care sector and specialist CAMHS must be identified which includes support from CAMHS to primary care professionals;
- clear referral pathways from a range of referrers must be included; and
- recognition that young people and their parents or carers play a key role in determining care and respond to their needs for clearer awareness of how to recognise when they might have a mental health problem, and about when, where and how to get help.

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