Mental Health Care: A Cost or a Benefit?

Master Thesis

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October, 2014
Economic Evaluations in Child and Adolescence Mental Health Care

A theoretical framework towards cost-benefit analyses in the field of child and adolescence mental health care in the Netherlands

Master Thesis
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October, 2014

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Abstract

This thesis explores how to move towards cost benefit analyses in the field of child and adolescent mental health care, by identifying all possible cost and benefit items associated with this form of care. The aim of this thesis is to contribute to the conduction of full societal cost benefit analyses. These analyses should include all relevant costs and benefits, to give a more realistic representation of the value of CAMH care. The result of this thesis is a list of cost and benefit items, based on a literature review and interviews conducted, captured in a framework. Further, some important valuation difficulties surrounding the cost and benefit items are discussed, as well as difficulties surrounding costs benefit analyses in general. This explorative research requires further efforts to be able to execute cost benefit analyses in the field of health care, but it sets the first steps necessary to enable better allocation decision making of the limited resources of the Dutch society.

Key Words: Economic evaluations, Cost Benefit Analysis, Child and adolescence mental health care, cost items, benefit items
Preface

This thesis originated from a cooperation of the Academic Workplace C4Youth, of the Department of Health Sciences at the University Medical Centre of Groningen (UMCG), and Accare, a provider of child and adolescent psychiatry, active in the North of the Netherlands. Now that the youth sector is facing a difficult time due to the upcoming transition and transformation, the sector wants to show what it is economically contributing to society to avert the focus on the costs only. The aim was first to conduct a preliminary research for a cost effective analysis (CEA) at Accare, which would include the exploration of the longitudinal database TakeCare, collected by C4Youth, for relevant data. Later, we came to the conclusion that there was a need for a cost benefit analysis (CBA) instead of a CEA. Also any quantitative analyses on the database were not attainable yet, because economic evaluations turned out to be more cumbersome than expected, and are new in this field and for the parties involved. The research period was therefore extended, and lasted nearly 9 months.

During this thesis I was granted a workstation at C4Youth, and I had the opportunity to cooperate on a project at Accare. Both gave valuable insights into the research field and the mental health care sector. Also, I was invited to come along to several conventions and meetings (see appendix 14). This link to practice, and encountered with the difficulties currently faced by the youth health care sector, made writing this thesis a very dynamic process and gave me the feeling this subject is very relevant for practice. I would like to thank both these organizations for their time and support they have given me. Special thanks go to Danielle Jansen, Lucienne van Eijk and Menno Reijneveld, and to Peter Dijkshoorn and Frits Nicolai. Further, I would like to thank Ben Crom, especially for his encouraging and supportive words. Last, I would like to thank all respondents who were willing to cooperate in an interview.

The process of writing this thesis was a very valuable experience for me, and triggered my interest in how to solve societal problems even more. With this thesis I have finished my Master’s degree and I am looking forward to put my knowledge into practice.

I hope you will enjoy reading this thesis.

Yours sincerely,

Denice Eertink,

Groningen, October 2014
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### List of abbreviations

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<th>Acronym</th>
<th>Description</th>
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<tr>
<td>ADHD</td>
<td>Attention Deficit Hyperactivity Disorder</td>
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<tr>
<td>AMK</td>
<td>Reporting point child abuse (i.e. ‘Advies meldpunt Kindermishandeling’)</td>
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<tr>
<td>AWBZ</td>
<td>Exceptional Medical Expenses Act (i.e. ‘Algemene Wet Bijzondere Ziektekosten’)</td>
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<tr>
<td>BFI</td>
<td>Behavioural Family Intervention</td>
</tr>
<tr>
<td>BJZ</td>
<td>Youth care office (i.e. ‘Bureau Jeugdzorg’)</td>
</tr>
<tr>
<td>CABA</td>
<td>Child and Adolescent Burden Assessment</td>
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<tr>
<td>CAMH</td>
<td>Child and Adolescence Mental Health</td>
</tr>
<tr>
<td>CBA</td>
<td>Cost Benefit Analysis</td>
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<tr>
<td>CBCL</td>
<td>Child Behaviour Checklist</td>
</tr>
<tr>
<td>CBS</td>
<td>Central Office for statistics (i.e. ‘Centraal Bureau voor de Statistiek’)</td>
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<tr>
<td>CCA</td>
<td>Cost Consequence Analysis</td>
</tr>
<tr>
<td>CD</td>
<td>Conduct Disorder</td>
</tr>
<tr>
<td>CD-MDD</td>
<td>Major Depressive Disorder with comorbid Conduct Disorder</td>
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<tr>
<td>CEA</td>
<td>Cost Effective Analysis</td>
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<td>CEAC</td>
<td>Cost Effectiveness Acceptability Curve</td>
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<tr>
<td>CHEERS</td>
<td>Consolidated Health Economic Evaluation Reporting Standards</td>
</tr>
<tr>
<td>CIZ</td>
<td>Centre of Care Indication (i.e. ‘Centrum Indicatiestelling Zorg’)</td>
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<tr>
<td>CMA</td>
<td>Cost Minimization Analysis</td>
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<td>CMHT</td>
<td>Community Mental Health Team</td>
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<td>COI</td>
<td>Cost of Illness</td>
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<td>CQI</td>
<td>Consumer Quality Index</td>
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<td>CR</td>
<td>Category Rating</td>
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<td>CUA</td>
<td>Cost Utility Analysis</td>
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<tr>
<td>CVZ</td>
<td>Former ZIN (i.e. ‘College voor Zorgverzekeringen’)</td>
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<tr>
<td>DALY</td>
<td>Disability Adjusted Life Years</td>
</tr>
<tr>
<td>DBC</td>
<td>Diagnostic Treatment Combination (i.e. DBC ‘Diagnose Behandel Combinatie’)</td>
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<tr>
<td>DOT</td>
<td>DBCs on the way to Transparency (i.e. ‘DBC's op weg naar transparantie’)</td>
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<tr>
<td>DSM</td>
<td>Diagnostic and Statistical Manual for mental disorders</td>
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<tr>
<td>DUP</td>
<td>Duration Untreated Psychosis</td>
</tr>
<tr>
<td>EQ-5D</td>
<td>EuroQol five Dimension Scale</td>
</tr>
<tr>
<td>FCM</td>
<td>Friction Cost Method</td>
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<tr>
<td>FMHC</td>
<td>Forensic Mental Health Care</td>
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<td>GB MHC</td>
<td>Generalized Basic Mental Health Care</td>
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<tr>
<td>GGZ NL</td>
<td>Branch organization of the Dutch mental health care (i.e. ‘Geestelijke gezondheidszorg Nederland’)</td>
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<tr>
<td>GP</td>
<td>General Practitioner</td>
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<td>GPBM</td>
<td>Generic Preference-Based Measure</td>
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<td>HCM</td>
<td>Human Capital Method</td>
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<tr>
<td>HRQOL</td>
<td>Human Related Quality of Life</td>
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<tr>
<td>ICD</td>
<td>International Classification of Diseases</td>
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<tr>
<td>LYG</td>
<td>Life Years Gained</td>
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<td>MDD</td>
<td>Major Depressive Disorder</td>
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1. Introduction

Mental health is in our knowledge-based economy of crucial importance, and investing in mental health would benefit society, according to the academic world (Rijkschroeff-van der Meer, 2012). When we take into consideration that half of lifetime mental health problems have already developed by the age of 14 (Knapp et al., 2011), we can argue that investing in young people would be most beneficial. Estimates of the economic burden children and adolescents, suffering from a mental health disorder, place on society, range from €7,376 to €64,701 annually per child, depending on their age and the disorder (Suhrcke, Pillas & Selai, 2008). The societal costs associated with mental disorders can be even more considerable on the long term. It has been found that adults suffering from a mental health disorder have a greater chance to be unemployed, to be dependent on social welfare and they have a greater need for care (Sytema et al., 2006). Cost of illness (COI) studies on adults with mental health problems run in the billion dollars per year, based on the United States (Rice, Kelman & Miller, 1992). These studies do not only include the direct costs of treatment, but include among others morbidity costs – the value of reduced or lost productivity – and mortality costs – the value of lost productivity due to premature death as a result of mental illness. In fact, it has been estimated that the costs of health care services provided are only 5-25% of the total costs related to mental health illnesses (Hoa Le et al., 2013; Romeo et al., 2006; Rice, Kelman & Miller, 1991:1992).

In the Netherlands we spend circa 5,5 milliard euro on only the mental health care (MHC) services in 2009, that is 6.5% of all care costs (Rijkschroeff-van der Meer, 2012). Of this, 682 million euro was spent on child and adolescent mental health (CAMH) care (Bot et al., 2013). The costs of CAMH care saw a growth rate of 10% per year over the period 2001-2011. The prevalence of MHC disorders, especially in young people, is still rising and so is the appeal to child and adolescent mental health (CAMH) care. These rising costs are a problem for the Dutch government, and they want to bring back their spending.

However, it is estimated that nearly 65% of the children and adolescents (below 18 years old) who are in need of MHC, already do not receive care (calculated over the years 2001 and 2002) (Sytema et al., 2006). It is questionable if all children in need of care are still able to receive care, when less resources are available. Moreover, since the economic costs of mental illnesses are so high, cutting back on MHC might worsen the problem on the long term. But currently, governmental bodies who allocate the health care budgets perceive CAMH care only as a cost item. Instead, care providers claim that investing in MHC could generate extensive benefits by saving high costs on the long term. So far it has not been scientifically researched whether or not CAMH care truly is beneficial on the long term; if it can cope with the rising health care service costs, and lower the associated societal costs. Since the need for MHC increases and financial budgets go down, this question should be answered to make wise budget decisions.

If CAMH care is beneficial, can be best assessed with cost-benefit analyses (CBAs). In a CBA all the relevant costs and benefits of an intervention or form of care are included, no matter if these are incurred inside or outside the health care sector. Thus not only all effects on one’s health and health care services are looked at, but also the effects in other sectors such as criminality and education. All effects are converted into monetary terms, which make it is...
possible to include the multiple outcomes of effects (Hsia & Belfer, 2008). The total benefit is calculated by simply adding up all monetized effects. The net total balance is drawn up by subtracting the costs from the benefits; when the benefits exceed the costs, the intervention is beneficial. However, more meaning is given to the number if you compare two or more interventions. Then the one with the highest ‘surplus’ (difference between costs and benefits) should be favoured. Since the outcomes are expressed in monetary terms, comparisons can be made between interventions for different disorders and even between interventions in different sectors. When the decision makers can easily compare the interventions/forms of care a better allocation of the limited resources can be made.

Currently, CBAs are often only used in the fields of infrastructure, water- and nature management, culture, alcohol care and prevention, and education (Ecorys & Verwey-Jonker instituut, 2008; Abma et al., 2013), but are rare in the field of MHC. Studies that are conducted in this field focus mostly only on the economic costs (or burden) of mental illnesses and MHC (Rice, Kelman & Miller, 1991; McCrone et al., 2008), instead of also on the benefits of MHC. Costs and benefits of MHC for children and adolescents are even more under-researched (Romeo, Byford and Knapp, 2005). The biggest problem with conducting CBAs is to translate the intangible effects (e.g. health) into monetary terms. In other words, what price tags does the Dutch society put on these effects? Therefore economic evaluations focused more on the more easy to measure effects, such as the gains in employment (e.g. the value of increased production after successful treatment) instead of the gains in clinical outcomes (e.g. the value placed on a reduction of the symptoms’ severity) (McCrone & Knapp, 2007). Moreover, the few attempts of CBAs do not include all cost and benefit items related to CAMH care, and thus do not represent the true value of CAMH care (Scott et al., 2001; Hoa Le et al., 2013).

This research sets the first steps that needs to be tackled if we want to move towards CBAs in the field of CAMH care in the Netherlands. The main purpose of this research is to determine which costs and benefits are related to providing CAMH care, and which theoretically should be taken into account into a CBA (Pomp, Schoemaker & Polder, 2014). This step actually precedes the CBA, and this research can therefore be considered as a preliminary research for CBAs in the field of CAMH care. Next to this, some of the most important difficulties that problematize the execution of CBAs in the field of health care are addressed. These are related to measurement, and data availability issues.

I focus specifically on CAMH care, because this sector faces difficult times. This is, the government has decided to decentralize most forms of youth care to the municipalities as of 2015, partly to cope with the excess growth of costs. This is called the ‘Transition Youth Care’. Next to the decentralization, municipalities at the same time have to reduce the health care costs with 3% in 2015 (“Van Rijn en Teeven”, May 5, 2014). They will receive 3.868 million euro in 2015 to fulfil their responsibility laid down in the newly developed Youth Law. The savings will increase up to 8% in 2017 (“Meicirculaire-gemeente fonds”, 2014). In the new system, the municipalities will receive a budget to fulfil their obligation and can decide themselves how to spend the budget, for example to whom they outsource youth MHC (Sachse, 2013). A consequence for the youth care organizations is that they are no longer guaranteed to play a role as a provider anymore.
Since the municipalities have a lower budget to fulfil their new task, the fear among youth care organizations that offer specialized MHC is that they will be left out in the new situation. This is because specialized MHC is relatively expensive. Instead ‘inadequate, but cheaper’ care may be bought in by the municipality, such as social work. The general view is that the municipalities currently do not have enough knowledge to make a careful decision and judge the value of youth MHC. The difficult times facing the youth health care sector, require difficult decisions, and these better be made on economically grounded decisions. Thus in the field of CAMH care, there is a need for CBAs to be able to assess the net value of CAMH. This can help municipalities to make the most cost effective allocation decisions.

The research question addressed in this thesis is:

*What are possible costs and benefits of treatment of child and adolescent mental health disorders in the Netherlands, and what valuation difficulties do we face in the execution of full societal cost-benefit analyses in the future?*

First, some background information is given on the MHC sector in chapter two. The organization of the sector and the reimbursement system in place are addressed first. After this, the new situation in 2015 after the transition and transformation is further elaborated on. Last, the extent of disorders with children and adolescents is addressed, as well as the pros and cons for starting treatment at this age. Chapter three comprises the theoretical framework. First, economic evaluations in general are discussed, after which we move on to the action plan for CBAs specifically. Next, important decisions that have to be made concerning the perspective and time horizon are stated. The subchapters five and six cover the theoretical concepts of respectively the costs and benefits. Also, the cost and benefit categorization applied in this thesis is discussed here. The last part of chapter three addresses some factors that determine the amount of costs and benefits that could be related to CAMH care. The methodology applied in this thesis is discussed in chapter four and comprises of a literature review, and on individual interviews conducted. This is followed by chapter five in which the results are stated, which are captured in a framework. The focus of this thesis lies on the identification of all cost and benefit items. Issues of measurement methods are only addressed when these are not settled yet, or are still highly debated. This means the focus lies on the measurement methods of intangible effects, since most (saved) cost items are already more thoroughly researched. Further, data availability issues that still need to be solved to be able to obtain the required data to measure the costs and benefits are addressed where attainable within this thesis’ boundaries. The results are discussed in chapter six, and this chapter contains the conclusions as well.
2. Background

In this chapter some background information is given on the mental health care (MHC) sector. In chapter 2.1 mental health is described. In the next chapter, 2.2, the (youth) MHC system in the Netherlands will be described to understand the context of the CAMH care sector. Also the reimbursement of the system will be addressed in chapter 2.3. This system is applicable to CAMH care (individuals from 0 - 17 years old) and adult MHC. Chapter 2.4 shortly addresses the changes that are about to take place in the youth care sector, which is partly the reason for the necessity of economic evaluations. In chapter 2.5 I specifically focus on mental health disorders with children and adolescents; how large is the problem actually and why focus specifically on the youth.

2.1 Mental health

The WHO (World Health Organization) constitution refers to mental health as more than the absence of mental disorders or disabilities. They define mental health as “a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community.” (Fact sheet WHO N.220, 2014). Whether or not a health condition can be qualified as a mental disorder is determined by the Diagnostic and statistical Manual for Mental Disorders, fifth edition (DSM-V), or the International Classification of Diseases, tenth edition (ICD-10). These are international diagnostic classification systems, which revise over the years. The ICD-10 is maintained by the WHO and classifies all diseases, whereas the DSM-V is published by the American Psychiatric Association and specifically directed at mental disorders. Both can be used in the Netherlands.

Mental health is determined by multiple and interacting social, psychological and biological factors (WHO, 2001) (see figure 2.1). Some disorders have a substantial genetic component, such as schizophrenia (Schwab & Wildenauer, 2013), whereas others are caused more strongly by psychological factors, such as a specific phobia like dental fear and anxiety (Klinkberg & Broberg, 2007). This means that some disorders are more easy to cure or cope with than others, since neurologic factors are harder to influence than psychosocial factors. The extent to which a disorder is curable will partly influence if treatment will be beneficial. (Other factors influencing the amount of the costs and benefits are addressed in chapter 3.6).

2.2 Mental health care system

The distinction in whether or not the mental health disorder is curable is also reflected in the MHC system. In the Netherlands MHC is divided into curative care and long term care. Curative care is aimed at curing the mental disorder, whereas long term care focusses on people with more severe mental illnesses which cannot always be cured. These people will most likely be in care their entire lifetime. Curative care is regulated by the Health Insurance Act (ZVW, i.e. Zorgverzekeringswet) and long term care is regulated by the Exceptional Medical Expenses Act (AWBZ, i.e. Algemene Wet Bijzondere Ziektekosten). Long term care often extends over a year, and can include in-patient (clinical) care. When curative treatment extends over 365 days, the youth will transfer to the AWBZ.
Formally, the youth and adult MHC sector are strictly divided in the Netherlands. Children and adolescents in need of MHC can receive care at Child-and Youth Psychiatric Institutions. Different regulative authorities When young people reach the age of 23 they should transfer to the adult MHC sector, but this is not always done in practice. Also, parents who are involved in treatment because of their child’s illness and treatment, are often receiving care out of the youth care sector instead of the adult MHC sector. In 2010, a total of 182.715 clients received CAMH care out of the ZVW, of which 4.538 clients were older than 23 years (these clients are thus parents, and young adults who’s treatment was prolonged in CAMH care instead of transferring to adult MHC).

Basic and Specialized mental health care
As of 2014 the division in primary and secondary care in the curative MHC is altered into generalized basic (GB) and specialized MHC. GB MHC is aimed at short term treatment for people light to mild psychological conditions. Specialized MHC concerns more complex psychological problems. It is more extensive, and often involves longer term treatments and several specialists (“Basis GGZ en gespecialiseerd GGZ”, n.d.). This division must lead to a lower use of expensive specialized MHC, due to a shift of patients between the levels. People can get access to GB or specialized MHC when referred to by a medical specialist, a pediatrician, their company doctor, Youth Care Office (BJZ, i.e. Bureau Jeugdzorg) social

Figure 2.1. Interaction of biological, psychological and social factors
Source WHO, 2001
district teams\(^1\) or most commonly their general practitioner (GP). The GP is supported by a ‘POH’- MHC (Praktijkondersteuner Huisarts), an office supporter of the GP specialized in psychosocial problems. (HHM, 2013) The POH-MHC can provide a light form of care with a low risk. If the POH cannot treat the patient himself and/or a DSM disorder is suspected, he can support the GP in accurate reference to a GB or specialized MHC provider. Figure 2.2 presents this reference model. The function of the POH-GGZ exists since 2008, but has been strengthened in its content and financially, to avoid unnecessary referral to more expensive MHC. As of 2015, the referral function of BJZ disappears, and instead each municipality have to set up a counter where parents and youth can receive help for youth, who can also refer to some form of CAMH care (“Geestelijke Gezondheidszorg”, n.d.; ).

![Figure 2.2. Reference model](image)

The GP can refer to GB MHC or specialized MHC, if he and the POH are not equipped to help. If referred wrong, the mental health care providers can refer to a less or more intensive form of care. (The dotted arrows signal a referral to a less intensive form of care).

### 2.3 Reimbursement system

Next to the changes made in the division of the mental health care system, the reimbursement system of MHC institutions has also relative recently been adjusted. The basis for the remuneration tariffs differ somewhat between the forms of mental health care, which will be discussed next.

\(^1\) These teams operate in neighbourhoods to help the residents to be active, participative and to support them in their societal functioning.
2.3.1 Curative care

GB MHC

Regarding GB MHC, one integrated reimbursement system has been developed and introduced per 2014, on the basis of a restricted number of unequivocal severity-of-care products, that differ in intensity. The former system was based on the declaration of separate consultations. Four severity-of-care products are established, these are ‘short’, ‘average’, ‘intensive’ and ‘chronic’, depending on the severity of the disorder. Also a fifth ‘transition’ product is established which can be used if the referral to the GB MHC is not justified. The products consists of the following components:

- Intake, diagnostic, routine outcome monitoring and reporting
- Complementary psycho-diagnostic
- Treatment (face to face, or blended, i.e. combination of face to face and e-health)
- Consultation

(Bakker & Jansen, 2012)

For each product a maximum tariff is established by the NZa (see table 2.1). The insurers and care providers can negotiate on the actual prices for remuneration, there is no lower limit. All components of the complete treatment are incorporated in the price. That are the personnel costs, employer expenditures, material costs and capital expenditures (including interest, depreciation and rental costs).

<table>
<thead>
<tr>
<th>Product</th>
<th>Tariffs 2014 in euro’s</th>
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<tbody>
<tr>
<td>Short</td>
<td>453.79</td>
</tr>
<tr>
<td>Average</td>
<td>773.19</td>
</tr>
<tr>
<td>Intensive</td>
<td>1,212.41</td>
</tr>
<tr>
<td>Chronic</td>
<td>1,118.96</td>
</tr>
<tr>
<td>Transition</td>
<td>185.22</td>
</tr>
</tbody>
</table>

Table 2.1 Tariffs severity-of-care products 2014

Source: NZa, 2014

Specialized MHC

As of 2008, a start has been made to reimburse curative care on the basis of Diagnostic Treatment Combinations (DBC, i.e. Diagnose Behandel Combinaties), which was mandatory as of January 2013. A DBC describes the total path a patient goes through during the period of treatment. It consists of care products, which contains all activities generally needed to diagnose and treat the patient, and the amount of time and numbers assigned to these activities. For each (group of) activity a remuneration price is established, which must represent the true cost price. The Dutch Care authority (NZa, i.e. Nederlandse Zorgautoriteit) bases the remuneration tariffs on the actual historical costs out of the most recent financial years of health care providers (NZa, 2014).

Since 2013, the tariffs for the DBCs, before based on the average costs, are replaced with an asymmetric bandwidth, in the form of so-called max-max-tariffs, with a lower limit of 0% up to 10% above this maximum (Schippers, 2012). This means that the prices that are determined for
the DBCs, are the standard maximum price the insurers may pay the providers, but they are allowed to agree on a price 10% above this standard maximum price. With this, the former budgeting system is thus replaced with performance defrayment. The new DBC defrayment system is individual and demand oriented, and the earnings will depend more on the performance of the institutions. The care providers can negotiate with the insurers on the prices set for a DBC by the NZa. The earnings of the care providers will depend on the amount of invoiced DBCs, and the agreed prices. (*Bestuurlijk akkoord toekomst GGZ 2013-2014*, 2012; NZa, 2014)

### 2.3.2 Long term care

For long term care, the care providers still receive a budget, which varies with the amount of care their patient group needs. The amount of care needed when dealing with a certain condition is embedded in severity-of-care packages (ZZPs, i.e. Zorgzwaartepakketten) since 2009. These care packages prescribe the kind of care patients need when diagnosed with a certain condition, and they determine the amount of compensation the care providers will receive. (Bakker et al., 2009). For individuals under 18 year the Youth care office (BJZ, i.e. Bureau Jeugdzorg) determines if someone is entitled to AWBZ care, and when older than 18 year the Centre of Care Indication (CIZ, i.e. Centrum Indicatiestelling Zorg) determines this. An indication is given off, together with the corresponding ZZP, and the quantity and period of care is determined.

A care provider can receive a remuneration on the basis of the fixed tariffs that are each year determined for the ZZPs by the NZa, which are based on the level of costs of each year. The tariff include all cost components; of the treatment, the administrative actions and accommodation costs. These costs are financed by so called care-offices, who make agreements between the care providers in their region and the health insurers, based on the expected amount of clients in need of long term care in their region. In each region one care office is active and makes sure the needed care, as established with the indications, is provided (Significant, 2014).

A care provider can also receive a remuneration from the patient directly, who can buy in his own care with their personal budget (PGB, i.e. Persoonlijk gebonden budget). Certain forms of care in the AWBZ cannot be paid with the PGB, such as long term residence and/or treatments. ("Taakverdeling bij de AWBZ", n.d.; Bureau HHM, 2011)

Table 2.2. below gives a simplistic overview of the division in the MHC system, and their basis for remuneration.

<table>
<thead>
<tr>
<th>Division mental health care</th>
<th>Basis of remuneration</th>
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<tbody>
<tr>
<td>Curative care</td>
<td></td>
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<tr>
<td>o Generalized Basic (GB) MHC</td>
<td>Severity-of-care products</td>
</tr>
<tr>
<td>o Specialized MHC</td>
<td>Diagnostic treatment combinations (DBCs)</td>
</tr>
<tr>
<td>Long term care</td>
<td>Severity of care packages (ZZPs)</td>
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</tbody>
</table>

*Table 2.2 Mental health care categories and their basis of remuneration*
2.4 Transition and transformation

As mentioned, most forms of youth care are going to be transitioned to municipalities as of 2015, and new laws are transforming the system to cope with the rising costs. The excess growth of the costs of CAMH care can be partly explained by policy (Bot et al., 2013). In the Netherlands, the current act for youth care, which was introduced at the first of January 2005 contains the right to youth care for most forms of care (child and adolescent social care, mentally disabled care and mental health care). However, this led to an increase of youth care. The most important shortcomings of the current youth system are:

- Financial incentives direct towards use of expensive specialized care
- Cooperation of organizations around children and families is lacking
- Any deviant behaviour is diagnosed unnecessary

This all leads to an increase of costs. ("Jeugdwet memorie van toelichting", 2013)

The shortcomings of the current system, have led to the proposition to decentralize the total care for youth to the municipalities as of 1 January 2015. In the proposed legislation the legal right to care is replaced by an obligation of municipalities to help children and adolescents. The goal is to simplify the youth system and to make it more efficient and effective. The ultimate goal is to reinforce the own strength of the child/adolescent and his/her parents and social network, in order to diminish the appeal to the public financed services and with that to decrease the costs ("Jeugdwet memorie van toelichting", 2013). Timely detection and intervention must avoid expensive, specialized youth care (Sachse, 2013).

To achieve the goals of the transition, not only will the local council become the only responsible party – instead of several authorities holding responsibility over the care for youth – also one uniform defrayment system of financing will be made. This will replace the current scattered way of financing from diverse defrayment systems. The former Youth Care Act (WJZ) is going to be replaced by a newly developed Youth law, for which the municipalities will hold the responsibility. Parts of AWBZ and ZVW care will be transferred to the Youth Law. The Youth Law will cover the (mild) care for mentally impaired youth below 18 years old, CAMH care, provincial youth care, and the current, less severe AWBZ care. Thus, the law will be applicable for all children and adolescents experiencing developmental issues and who are in need of short or longer term support. Only the most vulnerable children and adolescents with severe mental or multiple disabilities will receive care out of the also newly established law ‘Long term Care Act’ (Wlz, i.e. Wet Langdurige Zorg), previously the core AWBZ. With the transition, a division in financial responsibility is created for CAMH care (below 18 - years old) and adult MHC (above 18 - years old). These will fall under the responsibility of respectively the municipalities and the ZVW.

To make sure the transition to the municipalities will succeed, an agreement has been made to let the health insurers continue to buy in the necessary CAMH care for the first three years as of 2015, under the mandate of the municipalities. After these three years, the municipalities themselves will buy in CAMH care with the providers. Regarding the remuneration of individual CAMH care the current reimbursement structure will thus be maintained the first three years. However, when municipalities decide to offer CAMH care in a general service, such as a
psychologist in a social district team, another remuneration system has to be used, since this is currently not represented in the remuneration tariffs used. How the Dutch municipalities will fulfil their task as of 2015 is still decided upon. For more information on possible options for the remuneration of CAMH care per 2015, I refer to the document “Factsheet Jeugd GGZ inkopen met DBC’s en Basis GGZ” of the VNG (2014).

2.5 Child and Adolescent mental health

Since this thesis is about economic evaluations on CAMH care, this subchapter will address the extent of mental health care problems with children and adolescents in the Netherlands and why I specifically focus on children and young people.

2.5.1 Prevalence

To assess the prevalence of psychiatric problems with young children the parents and professionals can be used as informants. For the assessment of psychiatric problems with adolescents the youth themselves, their parents, professionals and teachers can be questioned. Well known standardized rating scales are for example the Child Behavior Checklist (CBCL) (for the parent(s)), the Youth Self Report (YSR) and the Teachers Report Form (TRF). Based on the scores on the different scales of emotional and behavioral problems, the youth can be classified as normal, border-line or clinical. A clinical diagnosis means that the individual has a mental disorder as defined by the DSM. The estimates of the prevalence can vary widely, among others due to different measurement tools used and the type of informant questioned.

Among children in the Netherlands, in the age of 0 to 12 year, social workers in the youth health care report that 9 to 33% have psychosocial problems, depending on their age group. According to the parents only 4 to 6% have problems. The large difference is partly due the fact that the youth health care also incorporates minor problems, whereas the percentages of the parents are only based on severe problems. However, in almost half of the cases the social workers did not report severe problems where the parents did. (Zeijl et al., 2005) Also, it has been researched that parents rate their children lower on emotional, and higher on behavioral problems than the youth self, because of the low visibility of emotional problems (Tick, 2007).

Regarding adolescents (12 to 18 years old), on average 1 out of 5 have psychological problems, according to self-reports of the Dutch adolescents. (Ter Bogt et al., 2003) Another earlier study in 1993 was conducted by Verhulst et al. (1997) on the prevalence of forty mental disorders, as defined in the DSM, with adolescents in the age of 13 to 18. They also found similar percentages based on self-reports and parent reports; respectively 21.5% and 21.8%. However, not all who are indicated with emotional problems experience problems in their daily lives. About 8% of the 13 to 18 year-olds are classified as clinical. (Verhulst et al., 1997) And about 5% of the youth in the Netherlands has a severe mental disorder.
2.5.2 Identification, treatment and prevention

Timely identification and treatment can be beneficial to prevent problems on a later age, since early manifestation of mental disorders in childhood and adolescence are frequent precursors of mental disorders in adulthood. It is known that most mental disorders begin during youth, between 12 and 24 years old (Prince et al. 2007). It has been researched that half of lifetime mental health problems have already developed by the age of 14 (Department of Health (U.K.), 2011). But timely identification is a challenge; the first detection of a mental disorder, is often later in life than the start of the disorder (Prince et al. 2007). If identified, early treatment may prevent costs later in life. For example, common mental disorders, highly prevalent in working populations, are related to long term sickness absence. On a societal level, sickness absence and work disability are extremely costly due to lost productivity. The costs of these two consequences are estimated at €20 billion annually in the Netherlands (Iris Arends, 2013). Also there is evidence that a long duration of untreated psychosis (DUP) results in poorer outcomes when treatment begins (Marshall et al. 2006), which lead to a greater use of psychiatric services (and thus higher costs) than if the DUP was shorter. Thus early MHC treatment might lower the costs of illness on the short and long term (into adulthood).

A strong proponent of early intervention in disadvantaged children is Heckman. He argues that many major economic and social problems such as crime, teenage pregnancy, dropping out of high school, and adverse health conditions are linked to low levels of skill and ability in society. Heckman (2006) provides economic evidence on the positive effect of early intervention. He researched the effects of schooling interventions for disadvantaged children in the U.S., and shows that early interventions in young children have much higher returns to human capital investments than later interventions (see figure 2.3). The figure shows that at current levels of funding the opportunity costs of funds, i.e. the economic returns of investments in financial assets, are lower than the economic returns of investments in preschool programs for disadvantaged children, and higher than the economic returns of most schooling an post-schooling programs; thus investments early in life are more beneficial than investments later in life. However, early investments must be followed by later investments if we want to realize the maximum value. This is because the returns on the school and post-school interventions are higher for persons with higher abilities, and abilities and skills are formed in the early years.

Naturally, prevention would be better than treatment. In England it has been estimated that 64.400 children under the age of 18 year old are ‘looked after’. These children and adolescents have a five-fold increased risk of mental disorders, a six- to seven-fold increased risk of conduct disorder and a four- to five-fold increased risk of attempting suicide in adulthood. Care leavers continue to share many of the same health risks and problems as looked after children (Department of Health (U.K.), 2011). However, despite observed risks of developing a mental health disorder with children and adolescents in the Netherlands, they cannot receive a remuneration for MHC treatments if they are not diagnosed with a DSM disorder (classified as clinical). The Dutch government even aims at diagnosing less (behavioural) problems as clinical (called ‘demedicaliseren’), to avoid legitimizing treatment by a professional which should save costs (GZH, 2014). However, this might increase (future) costs since the access to MHC is denied for at-risk children and adolescents, which troubles the prevention of actual developing a mental health illness.
Stigmatization

However, as addressed in the Introduction, even those who are diagnosed with a mental disorder are not always treated. Stigmatization is a key barrier to mental health services access and utilization (Heflinger & Hinsaw, 2010). Stigma of mental illness can be defined as the negative attitude and effects triggered by a label of mental illness (Hayward & Bright, 1997). When diagnosed with a mental illness, it can cause the mentally ill person to feel and act differently. For example they might not finish their education or do not apply for a job, because they expect to fail or be rejected because of the psychiatric diagnose. Stigma also creates a negative perception towards mentally ill persons by others. It can result in reluctance to invest resources in MHC, and lead to discrimination in the provision of services for physical illness in those who are mentally ill (Fang & Rizzo, 2007) and to a lower use of diagnostic procedures for treatment of the physical illness. (Lawrence & Coghlan, 2002) Discrimination might also be experienced at the work floor; mentally ill have more difficulty of finding and maintaining a paid job (GZH, 2014). People of any age can be affect by stigma, but especially children and young people can be negatively affected since their brains, identities and social skills are still developing. (Department of Health (UK), 2011)
Thus even though timely identification, early treatment and prevention may contribute to a lower cost of illness to society, by preventing more problems in the future, we have to be aware that diagnosing too early can work like a self-fulfilling prophecy. The stigma of mental illness can have a negative impact on the life of the patient, with all the costs related to this. For example, stigma might work through on the labour participation rate (and thus on income/productivity).

3. Theoretical framework

In this chapter I will address the theoretical issues concerned with a CBA. First, in chapter 3.1, economic analyses in general are discussed and why a CBA is the best option in this case. In chapter 3.2 the steps that need to be taken when conducting a CBA are explained in short. Next, the perspective and the time horizon taken are discussed, in chapter 3.3 and 3.4. This is followed by a description of what is understood with costs and benefits in respectively chapter 3.6 and 3.7. These chapters also address the categories that are adopted. Last, variables that influence the attainability of the costs and benefits are addressed in chapter 3.7, to stress there are many insecurities surrounding the actual realization of the theoretical costs and benefits.

3.1 Economic Analyses

In general, mental disorders have been most often characterized in the literature by cost-of-illness (COI) studies, which quantify the burden of disease to society in dollars, but there is a wide range in quality and little consensus about the standardized ways to proceed in the quantification of illness (Hsia & Belfer, 2008). Also these studies thus only incorporate the costs of mental health problems. Less frequent are full economic analyses, who also incorporate the outcomes of MHC. These full analyses help to prioritize child and adolescent mental health, by setting of the costs to some outcome measure. These are especially useful when resources are limited.

Romeo, Byford & Knapp (2005) systematically reviewed all published studies between 1980 and 2003 on economic analyses in the area of CAMH and assessed their quality. The authors find that the number of economic evaluations in the field of CAMH interventions is low, only 14 published studies were classified as true or full economic analyses. Two essential components are that first they examine both costs and outcomes. And second they compare two or more interventions, by looking at the incremental costs of the interventions over time and relative to an appropriate comparison group, mostly with the standard form of care. The authors find that the quality of these studies was limited by small sample sizes, constrained measurement of costs, narrow perspectives and over-simple statistical and econometric methods. The authors emphasized the need for more studies to be undertaken, but those need to be conducted to a better standard.

A more recent literature search was conducted by Hsia & Belfer (2008). They searched on papers that discuss the economic effects of CAMH disorders, which also resulted in a limited number of papers. Almost all publications on children with AD/HD concern direct medical costs only,
without reference to indirect costs to society. However it has been demonstrated that there are costs associated with mental health outside the health care system. Studies on conduct disorder have considered costs beyond the traditional boundary of health care expenses, such as the wide-range effects mental illness has on families. The concrete identification of these costs however has been lacking.

**Full economic analyses**

There are five forms of analyses that meet the definition of full economic analysis. I will describe them in short and explain why I choose for a CBA.

**Cost-Utility Analyses (CUA):**

CUAs measure and then value the impact of an intervention in terms of a generic outcome measure, that is common to all aspects of health and well-being, such that interventions across all areas of health care can be compared. The most common outcome measure used to indicate the utility is quality-adjusted life years (QALY). The QALY represents the amount of time spent in a particular health state, adjusted for the health-related quality of life (HRQOL) experienced during that time. The QALY is not the single, universally accepted measure (Eichler et al. 2004). Other general outcome measures are the number of symptom free days, the number of life years gained (LYG) (unadjusted for quality), or the disability adjusted life years (DALY) which incorporates the presence or absence of disability in the life years gained.

The use of a uni-dimensional measure which makes comparison across health problems possible, is at the same time seen as a disadvantage. The utility measure may be too simplistic, and the quality of life (QoL) indicator is not sufficiently sensitive to the improvements expected in treatments for mental health problems. (Romeo, Byford & Knapp, 2005).

**Cost-Effectiveness Analyses (CEA):**

A CEA assesses the impact of a treatment. It describes and contrasts costs and outcomes of a course of events expected to occur with a treatment, with the comparative course of events that occur without the treatment or the course of events that occur with an alternative treatment (Gold et al., 1996; Mohseninejad, 2013). The result is expressed in terms of a ratio where the denominator is a gain in health, and the numerator are the costs associated with the health gain (Mohseninejad, 2013). Thus, the total costs of the treatment are related to a single outcome. The outcome measure will usually be condition specific (McCrone & Knapp, 2007). For example, when researching the effectiveness of interventions for psychoses you might use the outcome measure ‘number of psychoses’. The difficulty with a single measure is that often improvements in more than one area are expected (Romeo, Byford & Knapp, 2005), and you can only compare interventions that use the same outcome measure.

A common result is that the new treatments are found more effective, but simultaneously more expensive. To solve this, cost-effectiveness acceptability curves (CEACs) can be made to show the probability that a new intervention will be cost-effective for each pre specified or implicit valuation of an outcome improvement by the decision maker (Romeo, Byford & Knapp, 2005). This means that a certain level of costs and effects are agreed upon beforehand, that must be achieved to be acceptable in a given health care system. These pre specified levels are called ‘thresholds’, and determine if a treatment is worthwhile. If the ratio is below the maximum threshold, the program is considered cost effective and the treatment is worthwhile (Eichler et
al., 2004). If it is above the maximum threshold, the treatment must be stopped or actions must be taken to decrease costs and/or increase the benefit. The set threshold per unit of effect which determines how much a person is willing to pay for the care offered, is a subjective standard and will differ among societies and individuals.

**Cost- Minimization Analyses (CMA)**

CMAs are strictly not full economic evaluations, since they only compare the costs of interventions and select the one with the lowest costs. This can be only accepted if the interventions are equally effective. This method is especially attractive for decision-makers if they have to deal with severe constrained resources (McCrone, 2007).

**Cost- Consequence Analyses (CCA):**

CCAs do not focus on one outcome measure, since mental health problems most likely affect people in numerous ways. CCAs take into account all consequences. They do not combine cost data with information on outcome data, but presents cost and outcomes alongside each other. This can help to make an overall decision on the compared treatments, and can supplement a more rigorous CEA. (McCrone, 2007; Romeo, Byford & Knapp, 2005).

**Cost- Benefit Analyses (CBA)**

A CBA has much resembles a CEA. Only with CBAs not only the costs are measured in monetary terms, but also the outcomes; that are the effects of an intervention (the gain in health). However, the outcome of a CBA is a net balance, instead of a ratio. The positive effects are not solely the gain in health (expressed into monetary terms) but also the saved cost/indirect benefits of the care intervention incurred in other sectors. Thus, these saved costs are not deducted from the costs and incorporated in the nominator, as with CEAs. If the benefits outweighs the costs, the intervention is beneficial. If the objective is to compare two or more alternatives, the treatment with the greatest net benefit is the most efficient (Romeo, Byford & Knapp, 2005). The great advantage of this type of economic evaluation is the possibility to compare interventions in other sectors, if these outcomes can also be measured using monetary units. Decision makers are not only able to decide in which health care domain they should invest, but also if it is more beneficial to invest in other sectors such as education or employment. A CBA can thus assess if a treatment is *socially* worthwhile. However, it is extremely difficult to express mental health outcomes into monetary terms. Especially the non-economic gains, such as the gain in health. To economically value effects on health, ‘willingness to pay’ thresholds can be set. These determine how much an individual, or how much society, is willing to pay for the gain in health.

To recall, the objective of this thesis is to gain more insight into the benefits of CAMH care, which are currently less visible than the costs. With CBAs, the indirect benefits of care (saved costs) are not subtracted from the costs, and thus make the benefits of CAMH care more visible. Furthermore, when non-health benefits are substantial, CBAs can be most helpful (Gold et al., 1996). This happens to be the case, as previous research has shown (Hoa Le et al., 2013; Romeo et al., 2006; Rice, Kelman & Miller, 1991:1992). CBAs can take these effects, incurred in other sectors into account, because the effects are quantified in monetary terms. Thus, in conclusion a CBA is the most supportive economic analysis for our objective. It can answer the broader question ‘does it pays to invest in CAMH care?’
3.2  Action Plan Cost-Benefit Analysis

The CBA was initially used in the Netherlands to improve the decision making of projects regarding the infrastructure. The ‘OEI-leidraad’ (Overzicht Effecten Infrastructuur, i.e. overview of infrastructure effects) was set up in 2000, which is a manual on how to conduct CBAs for infrastructure projects (Eijsenraam et al., 2000). This document functions as the basis for all related manuals and guidelines on CBAs published since then (Ecorys et al., 2008). A more general manual aimed at how to conduct CBAs in the social domain emerged out of the OEI-leidraad (Ecorys et al., 2008). More recently, Faber & Mulders (2012) wrote a paper specifically for policy makers to get acquainted with societal CBAs to provide support for their decision making process. A more extensive general guideline for societal CBAs was published by the CPB/PBL (Romijn & Renes, 2013). And very recently, the RIVM (Pomp, Schoemaker & Polder, 2014) has published a manual in which they further specify the guideline on CBAs in the social domain to CBAs in the health care sector. All four guidelines presents eight till nine steps that need to be followed when performing a CBA. These are roughly the same, only sometimes steps are merged, a different order is used or different terms. Table 3.1 reflects the combination of steps that are recommended (see Appendix for the original steps of the guidelines).

<table>
<thead>
<tr>
<th>Steps of a societal cost-benefit analysis</th>
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<tbody>
<tr>
<td>1  Conduct problem analysis</td>
</tr>
<tr>
<td>2  Definition zero alternative</td>
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<tr>
<td>3  Definition project alternative</td>
</tr>
<tr>
<td>4  Determine the extra costs of project alternative compared to zero alternative</td>
</tr>
<tr>
<td>5  Determine the effects and benefits of the project alternative compared to zero alternative</td>
</tr>
<tr>
<td>6  Present an overview of the extra costs and benefits of the project alternative (the net effect)</td>
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<tr>
<td>7  Present a distribution effect</td>
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<tr>
<td>8  Conduct sensitivity and scenario analyses</td>
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<tr>
<td>9  Present the results</td>
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</tbody>
</table>

Table 3.1. Steps Cost Benefit Analysis
Based on Pomp, Schoemaker & Polder, 2014; Romijn & Renes., 2013; Ecorys & Verwey-Jonker Instituut, 2008

I will explain these steps in short, and give a brief description of the problem, and a possible option for the zero alternative and the project alternative one can take. These are the first three steps which are necessary before one can start measuring.

1. First the problem that needs to be solved, or opportunity one wants to seize, needs to be described. The problem the Dutch society faces is the increase of costs on care for youth, which becomes unpayable for society in the future.

2. The zero alternative is used as the reference case, to compare the effects of the new policy measure (the project alternative) with. This can reflect the developments expected if we do nothing (continue with current policy), or some other situation. Since the current policy is about to change, and a future CBA will eventually be conducted in this new setting, the situation as of January 2015 (after the transition) would be a logic comparison situation. That is the situation when the municipalities are the
responsible parties for youth care in their regions, and less money is available to provide youth care. Due to the limited budget and the relative high treatment costs of CAMH care in comparison with for example social care, the investments in CAMH care might diminishes, which means less children and adolescent can receive MHC or MHC will be offered in a later stage. Of course the actual effects of this policy change are still uncertain, but the continuation of the ‘current’ policy can be used as the zero alternative.

3. The project alternative are the measures suggested to resolve the problem, and is the situation that is analysed in a CBA. Proponents of CAMH care suggest the solution to unpayable health care in the future is to invest more in CAMH care, instead of cutting down the budget. The assumption of this project alternative is that investing (early) in people with mental health problems (children and adolescents) will save costs on the long term. The project alternative suggested to research is thus an investment in CAMH care, which may be given shape in recognizing mental health problems more early, and/or addressing under treatment, and/or provide more cost-effectiveness treatments. In which treatments, what health care providers and/or what systems we exactly should invest in, and what measures/actions need to be taken to realise this investment lies outside the scope of this research, but the project alternative needs to be described thoroughly.

4. The next step is to determine the extra costs of the project alternative, compared to the zero alternative. The costs necessary to implement the solution can be one-off only or periodic, and fixed or variable. The implementation costs need to be made visible separately. Important is that only the additional costs in comparison to the zero alternative are included. Thus neither the costs of the zero-alternative, nor the benefits of the zero-alternative will be necessary to measure the incremental costs of the proposed alternative.

5. The following step consists of identifying the effects of the measure in comparison to the zero alternative, the quantification of the effects, and the monetization of the effects to determine the benefits. Some effects are hard to monetize, such as the improvement in mental health. If it is not possible to monetize the effects, they still need to be included in the overview.

6. Next, the extra costs of the project alternative are subtracted from the benefits. This results in a positive or negative balance. However, this result is not the only aspect one should take into account to decide if we should invest in CAMH care. Also the non-quantifiable or non-monetized effects need to be considered when taking a decision.

7. Also, one should look at who benefits and who pays. This can be reflected in a distribution effect (see chapter 3.3), which need to be made visible separately. One may decide to let the loss or gain of one party weigh more in their decision than the loss or gain of another party.

8. A CBA is partly conducted on the basis of assumptions. Therefore, different scenarios can be analysed to reflect the uncertainties of future demographic and economic developments. Also sensitivity analyses must be conducted to reflect on the insecurities of the assumptions made. One might calculate the effects of a 10% increase and decrease of the most important assumptions made.

9. Last, the results are presented and interpreted in an overview. Not only the result, but also the important uncertainties and non-quantifiable or non-monetized effects are considered, and the distribution effect is reported.
Thus very simplistically, the ultimate objective of a CBA is thus to analyse all additional costs and benefits of a policy measure suggested to solve a problem, in comparison to another policy. The project alternative that can be researched is a policy of investing more in CAMH care, to analyse if the additional benefits of CAMH care actually will outweigh the additional costs on the long term. The investment can be given form in several ways. Usually more than one alternative is set off against the zero alternative (Pomp, Schoemaker & Polder, 2014), thus different interpretations of an investment can be analysed. (See Appendix 2, for an illustration of possible project alternatives). To measure the effects of an investment, two groups could be compared; one group receiving MHC as regulated in the current (or future) policy setting, and another group receiving more MHC. But, before we start measuring (step four and further), the costs and benefit items one needs to include in the CBA, to get a complete representation of the value of CAMH care, need to be uncovered. This is what this thesis aims at.

3.3 Perspective

To determine these cost and benefit items, first the perspective we take in the CBA must be made clear. There are several views one can take. For example, you can look at the project from the child’s point of view, the parent’s or the informal carer’s point of view (mostly family and friends). Or from the perspective of the health care provider, the health insurer, the school, the government/Minister of Health, the employer, the tax payer etcetera. In short, you can take the perspective of all the particular agents who are affected. One can also take the societal perspective, which is the sum of all the perspectives. In a societal CBA it does not matter who carries the cost and who carries the benefits; the so called ‘distribution effect’ is not encountered. A cost to one party can be a gain to the other. For example, a session with a psychologist is a cost for the health insurer (depending on the insurance system in a country) and a gain to the psychologist. Both are taken into account, but would probably not affect the total welfare of society since they cancel each other out (Gold et al., 1996). Economics differ in how to aggregate the individual welfare of all citizens into the welfare of one society. You can simply add up the welfare of all individuals, or you can value the welfare of one group of individuals more than another group (Pomp, Schoemaker & Polder, 2014). In welfare theory, individual welfare is very broadly defined, as it does not only look at income, but also at leisure time, health, nature, culture, religion etcetera (Pomp, Schoemaker & Polder, 2014). In the field of (mental) health care, the most important aim is to improve one’s (mental) health. Thus it could be ethically justified to value the welfare in health (more broadly: the well-being) of the mentally ill more, than any other welfare aspect and group in society.

Out of the guidelines for pharmaceutical-economic research in the Netherlands they determined that an economic evaluation needs to take the social perspective (Bouwmans & Hakkaart-Van Roijen, 2013). Also, the standard texts in health economics recommend the societal perspective as the perspective for economic analyses (Pelham, Foster & Robb, 2007). As Hsia & Belfer (2008) wrote “Ideally, economic evaluations done for the purpose of priority setting should be inter-sectoral, to include not only costs borne by the health sector, since health interventions often affect these sectors as well”. This is especially essential for mental disorders, since cost-of-illness studies on mental disorders estimated that large parts of the economic burden are not incurred in the health care sector (Hoa et al., 2013; Olesen et al. 2012; Greenberg & Birnbaum,
2005). DuPont et al. (1996) even estimated that over three quarters of costs associated with anxiety disorders in the 1990s were attributable to lost or reduced productivity. The review of economic analyses in the field of CAMH care by Romeo, Byford and Knapp (2005) however showed, that the 13 true full economic evaluations done up till then include only health care costs and take the providers perspective, instead of the societal perspective. They ignore the costs imposed on services in other sectors in society. Also, although economist generally aim to use the societal perspective, it often results in a payers perspective for the Minister of Health (Hsia & Belfer, 2008).

In this thesis I will take the societal perspective, since our main concern is to research what the best possible choice is for society as a whole to cope with the high costs of health care for youth. I will thus not limit the search to costs and benefits indicators falling inside the health care sector, but also look for costs and benefits incurred in other areas such as employment, education, safety etcetera that are affecting other actors in society as well. The existing guidelines for societal CBA do recommend to report the distribution effects separately (step 7 in table 3.1). This makes it possible to value the welfare of one group more than another. Also, for decision makers who base their policy on ‘equal distribution’, it is visible which group is possible negatively affected and might need compensation.

### 3.4 Time Horizon

Another important aspect that needs to be defined before we can determine the cost and benefit indicators, is the time horizon we take. This is partly determined by the time period on which the mental problems emerge. Many mental problems are chronic conditions, thus the costs and benefits are spread over a longer time. Also of importance is the time it takes before the effects of the measure become visible; that is when the costs and benefits occur (Romijn & Renes, 2013). Costs of investments in MHC are incurred directly, whereas the benefits do not arise immediately. It is assumed that the investments are earned back over a longer time period. This is especially true for investments in prevention.

In this thesis I will use a lifetime horizon; from the moment the child or adolescent enters care until he or she dies. However, there are difficulties attached to such a long time horizon. First, there are many insecurities on future developments. For example, changes in the growth of the economy can alter the wages per hour, which are among others used to calculate the productivity effects. There are three forms of insecurities you have to be aware of: knowledge-, policy- and future-insecurities (see Romijn & Renes, 2013). That is why different scenarios of demographic and economic developments should be used in the calculations. The longer the time period the more speculative the numbers. Second, to be able to set off the costs to the benefits, these must be valued in the same base year. This is especially important with benefits that accrue in a far future. To do this, an acceptable, realistic discount rate must be established. The discount rate should adjust for inflation, for opportunity costs – that is the lost profit which could have been made if the money was not invested in youth health – and for the time preference – that is the preference of people to rather receive money today than tomorrow. The right discount rate is still a topic of discussion under Dutch health economics (Romijn & Renes, 2013). In the guidelines
for farmaco-economic research set up by the Healthcare Institute in the Netherlands (Zorginstituut Nederland, i.e. ZIN) they established two discount rates that should be applied; the discount rate for the future costs is set at 4% and for future effects at 1.5% (CVZ, 2006). With this, they differ from the international standard in which an uniform discount rate is common. The guideline bases their deviation on the thought that if get wealthier we will be willing to spend more on a gain in health. Thus the future effects should be discounted less.

3.5 Costs

Before searching for possible cost factors related to MHC, I will describe what drives costs, how they can be allocated to a product or service and which classification of costs is made. Next the framework which I will use to categorise the costs found in the literature and induced from the interviews is represented.

Cost object
The product or service that creates the costs is called the costs object. In MHC these are the services provided, i.e. treatments. The service can be described on different levels. The lowest, most well-defined level are the separate activities conducted such as ‘screening the patient’. A higher level of service can be ‘one day of in-patient care’ in which different kind of activities are included. Another more broadly defined cost object can be the diagnostic treatment combinations (i.e. DBCs, ‘Diagnose Behandel Combinaties) for example, which contain every activity conducted in one year, or you can take the several components of the DBC (divided into diagnostic activities, treatment activities, nursing activities etc.) (Nza, 2013)

Cost drivers
To be able to reduce costs, care providers must efficiently manage the use of the cost drivers of the activities. A cost driver is any factor that affects total costs, that is a change in the level of the cost driver will cause a change in the level of the total cost of a related cost object. (Bhimani et al., 2012). Cost drivers in the health care sector can be for example, the labour hours spent on a patient, the frequency of the activities performed or the level of expertise needed. Changes in a particular costs driver do not automatically lead to changes in overall costs. Consider the amount of patients treated as a driver of labour costs. If management decreases the number of patients, the labour costs do not automatically decrease. Managers must take active steps to reduce labour costs. (Bhimani et al., 2012)

Classification of costs
Fixed and variable costs
Tracing the costs of resources helps to understand how these costs behave. Two basic types of cost behaviour pattern are variable and fixed costs. A variable cost changes in total in proportion to changes in the related level of total activity or volume. A fixed costs does not change in total despite changes in the related level of total activity or volume. Costs are defined as variable or fixed with respect to a specific cost object and with respect to the given time period. For example, housing costs of the psychologist’ office are fixed for a certain period of time if a rental contract for some years has been signed, but they are variable on the longer term.
**Direct and indirect costs**

Costs can be direct or indirect related to the cost objects. In the traditional accounting literature, direct costs are costs that are directly related to one particular cost object and can be traced to it in an economically feasible way. For example, a direct cost of psychological care are the labour costs of the psychologist. Indirect costs are costs that are related to the particular cost object, but cannot be traced to it in an economically feasible way. They are not directly attributable to one cost object, but are usual the general overhead costs made for a group of products. For example, the building costs of the psychologist’s office. These costs are allocated to the cost object using some form of cost allocation method. (Bhimani et al., 2012).

The cost price can be determined by adding up the direct costs and the allocated indirect costs. It is also called the integrated cost price, which represents the total costs of the product or service.

**Categorisation of costs**

Economists conducting COI studies, often group costs into 3 forms of categories, according to Pelham, Foster & Robb (2007). These are ‘health sector costs’, ‘productivity-related costs’ and ‘other costs’ such as costs born in other sectors. A similar categorisation of costs is used by Drummond et al. (2005), who divide the costs into ‘costs within health care sector’, ‘costs borne by the patients and family’, and ‘costs in other sectors’. Hakkaart-Van Roijen, Tan & Bouwmans (2011) have written a guideline for cost research in the health sector, were they group the costs as follows. They make a distinction in direct and indirect costs, and in costs related to the health care sector and not related to the health care sector. The categorisation and the definitions used in this thesis is represented in table 3.2 below.

<table>
<thead>
<tr>
<th>Categories</th>
<th>Definition</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Direct costs inside the health care sector</strong></td>
<td>All medical expenses that are directly connected to the care activities (i.e. prevention, diagnosis, therapy, revalidation and nursing)</td>
<td>E.g. diagnostic tests, and/or consults with psychiatrist</td>
</tr>
<tr>
<td><strong>Direct costs outside the health care sector</strong></td>
<td>Health care related costs carried by the patient or the family</td>
<td>E.g. travel costs</td>
</tr>
<tr>
<td><strong>Indirect costs inside the health care sector</strong></td>
<td>Medical costs that occur during the gained life years.</td>
<td>E.g. pharmaceutical costs in additional life years</td>
</tr>
<tr>
<td><strong>Indirect costs outside health care</strong></td>
<td>Non-health costs borne by other sectors</td>
<td>E.g. day care costs</td>
</tr>
</tbody>
</table>

Table 3.2 Definitions and examples of the costs, as applied in this thesis
Based on Hakkaart-Van Roijen, Tan & Bouwmans (2011)

I will use this framework, which is consistent with the guidelines on societal CBAs mentioned above. Using the same structure makes it easier to compare with other economic evaluations. Note that the use of the term direct and indirect is not consistent with the definitions used in the accounting literature stated above. However, in health economics it is common to refer to the health care costs as direct costs and the non-health care related costs as indirect costs. I will
follow the definitions used in health economics, seen the focus is on CBA in the health care sector.

3.6 Benefits

The benefits of CAMH care are the monetized effects the intervention generates. The effects can be defined as the consequences of the project, and the monetary value represents the value society places on the effects. The effects can be positive, but also negative. Negative effects will be considered as a cost. Investments in CAMH care can have multiple effects on several actors, such as the child or adolescent receiving MHC, their parents, their brothers and sisters, grandparents, friends, parents’ friends, or other informal carers. Since we take a societal perspective, in theory, we need to take the effects on all these actors into account to calculate the benefit for the society as a whole. This means that the effects can work on endlessly, which is strengthened by the long time horizon. At some point we may have to decide on a cut-off point, for example to not include the gain in welfare of the future partner of the child and the effect this has on the partners’ productivity. In my theoretical framework I will be as inclusive as possible, and not decide on what we should in- or exclude in an actual CBA.

Categorisation of the benefits

Just as with the categorisation of costs, there can be made a distinction between direct and indirect effects. Faber & Mulders (2012) describe direct effects as ‘effects for actors in the market where the policy measure directly intervenes’ and indirect effects as ‘effects for actors in other markets than the one the policy measure aims at’. The latter can also be passed-on direct effects, which cannot simply be added up with the indirect effects. In this definition by Faber & Mulders, we can also distinguish for external direct and indirect effects; these are effects that accrue to individuals outside of the health care market. Put another way; unintentional positive or negative effects on third parties. For example, a positive external effect can be for example the gain in welfare of the class members and the teacher of a child treated for his/her AD/HD.

However, in the guideline of the RIVM (Pomp, Schoemaker & Polder, 2014) they state that the definition of direct and indirect effects used by Faber & Mulders (2012), which is also used in the general Dutch manual of societal CBAs, differs from the definition used in healthcare economics. In healthcare economics direct effects are effects in health, and all other effects are indirect effects (or are savings and deducted from the costs). This is also in line with cost-effectiveness analyses (CEAs), in which a gain in health is the only benefit and all other positive effects are subtracted from the costs. The authors (Pomp, Schoemaker & Polder) recommend to reserve the term ‘direct’ for the effects in health and well-being. I will follow this recommendation, since they designed their guideline specifically for CBAs in the health sector. In table 3.4 the definitions are stated, in line with the rapport of Pomp, Schoemaker & Polder (2014) and healthcare economics. The direct benefit (gain in health) is solely preserved for the patient under treatment. Any other health-gain of third parties, can be seen as a deduced effect of treatment, and are scaled under indirect effect.
Categories | Definition | Examples
--- | --- | ---
**Direct benefit** | Gain in (mental) health and well-being of the individual under treatment | E.g. less anxious, or fewer psychoses
**Indirect benefit** | Any other effect not directly related to the (mental) health of the patient | E.g. more productive, and/or prevented health care costs

Table 3.4 Definitions and examples of the benefits, as applied in this thesis
Based on Pomp, Schoemaker & Polder (2014)

In the manual of Ecorys and Verwey-Jonker (2008) on CBAs in the social domain they use a different classification (see table 3.5). They divide the effects into one of three domains, namely social, economic, or nature & environment. These contain respectively the welfare outside the market (i.e. the well-being), the welfare on the market (such as productivity), and the perception of welfare of nature & environment. Since this thesis is a preliminary research for CBA in the field of CAMH care, the division into specifically these three domains is not useful. At least the domain ‘nature and environment’ is not relevant for health care interventions. But a further specification of the indirect effects into domains is something to consider. Also Faber & Mulders (2012) pointed to the possibility of further refinements to the direct – indirect classification. I will further refine the indirect effects into different domains relevant for the (mental) health care sector. These domains will be in line with subgroups found in the literature, such as the ones used in cost-of-illness studies. For example costs to education, cost to juvenile justice, cost of addiction, workplace cost, mortality costs etcetera (Rice, Kelman & Miller, 1992; Greenberg & Birnbaum, 2005; Pelham, Foster & Robb, 2007).

<table>
<thead>
<tr>
<th>Domain</th>
<th>Actor</th>
<th>Societal effects</th>
<th>Individual effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social (well-being)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nature &amp; Environment</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Table 3.5 Categorisation by Ecorys (2008)

In the rapport of Ecorys and Verwey-Jonker (2008) they also make a distinction in actors; namely societal and individual effects. With societal effects they mean the external effects of the project (the unintentional effects in other markets than the market the project aimed at). With this classification we need to adjust for possible double counting, before we can measure the total benefit to society. (See Ecorys and Verwey-Jonker, chapter 4.3) Also, this distinction is based on the definition of direct and indirect used by Faber & Mulders (2012), and I will thus not maintain this distinction.

However, it can be rational to make a distinction in benefits for the child or adolescent and other important actors influenced in society. From the perspective of society any individual effects for are not important, but as it is suggested to include a separate distribution effect that shows who incur the costs and benefits and how much (Romijn & Renes, 2013; Pomp, Schoemaker & Polder, 2014), it would be helpful to emphasis any effects for the main actors affected. Also, one might decide to prioritise the child in CAMH care, thus the effects for the child/adolescent are made visible separately. Further, parents (and other close informal carers) are a main group
influenced by the mental health of their children. For example, in their labour participation. Besides, parents are often also involved in treatment of their child. Since the parents are such an important group affected, I will also explicitly separate the parents and other informal carers out of the rest of society. A distinction in child/adolescent and family member is also made in the paper of Hoa Le et al. (2013) based on the cost categories found in studies on AD/HD related costs. To be clear, In table 3.6 the classification I will use is presented.

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Child/adolescent</th>
<th>Parent(s)/informal carers</th>
<th>Other members in society</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Short term (Moment of treatment – 23)</strong></td>
<td>Direct</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Indirect</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Category 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Category 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• …</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Long term ( 24 – death)</strong></td>
<td>Direct</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Indirect</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Category 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Category 2</td>
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<td></td>
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<td></td>
<td>• …</td>
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<td></td>
</tr>
</tbody>
</table>

Table 3.6 Categorisation of benefits applied in this thesis

**Short term and long term benefits**

Since the benefits are often incurred on the long run in this field, I will make a distinction in ‘short term’ and ‘long term’ benefits that can possibly be achieved. Benefits of treatment can only start to arise at the moment of treatment. Thus in the period of time of manifestation of mental health illness and initiation of adequate treatment there are no benefits, only costs related to the societal burden of mental health illnesses as measured by COI studies. The short and long term periods maintained are respectively ‘moment of entrance in care – 23 years’ and ‘24 – death’. The short term thus includes the infancy (0-23 months), childhood (2-12 years old), adolescence (13-18 years old) and young adulthood (19-23 years old), which is based on the definition applied by the National Centre for Biotechnology Information (NCBI; the MeSH terms of PubMed). This divide in short term and long term is based on the assumption that for example a productivity gain due to mental health treatment, might only be gained when someone has a full time job. This is more likely from the age of 24, when total education is finished. Also when a person is older than 23 years, he/she will transfer to the adult MHC in the Netherlands. Some CAMH care providers only take on clients till the age of 18, but some up to the age of 23. But if they are already in treatment in a CAMH care organization, and additional treatment is necessary after the age of 18, almost all CAMH care organizations often continue treatment.

The divide in short and long term however can result in some doubling, since some benefits can occur both at the short term as well as at the long term, such as the effect on the QoL. Long term
effects can also be deduced effects of short term effects. For example, MHC can affect the performance at school, which at the long term can affect the income level. For overview reasons, I will discuss both short and long term benefits simultaneously.

**Cost or benefit?**
There can also be some overlap in the costs and the benefit items, because some items can be a cost on the short term but a benefit at the long term. For example, at the short term parents need to invest quite some time in the treatment of their child, which comes at the expense of their productivity. But on the long term, when the treatment is finished and the child’s mental illness is diminished, their productivity might be higher than before the treatment because the child requires less attention and care. I will frame ‘productivity of the parents’ then as a cost ánd as a long term benefit. The net result, that is the (gained) productivity after treatment minus the (lost) productivity during treatment, can be a net cost (if negative result) or a net benefit (if positive result). The net result determines if the treatment is beneficial, regarding the productivity of the parents.

Thus, in the execution of economic evaluations, the indirect benefits (e.g. saved productivity costs in the future) will in practice be deducted from the costs (e.g. lost productivity in the short term) (Pomp, Schoemaker & Polder, 2014). To correspond with the measurement of the net costs/benefits in practice, one may choose to place the possible saved cost items, regarded in this thesis as indirect benefits, with the cost items. This would be consistent with CEAs, which include the health care outcome measure direct as the only single benefit. However, in CBAs any saved costs are represented as indirect benefits (see for example, the SCBA of a smoking ban in the hotel and catering sector, or the SCBA on a school with extended utilities both regarded in Faber & Mulders (2012)). To be consistent with this representation, I have chosen to represent the saved cost items as indirect benefits. If I would place them under the cost items, the visibility of what benefits can theoretically be related with CAMH care would otherwise be low.
3.7 Relevance of cost and benefit items

It is important to keep in mind that this research states theoretical possible cost and benefit items of CAMH care for all mental health disorders. However, the type and characteristic of the disorder determines partly if these items are all relevant and thus needs to be included in a CBA. For example, a child with schizophrenia may display more criminal behaviour than a child with an anxiety disorder, who have a tendency of avoiding public places. Another factor that determines whether or not a cost or benefit item could be relevant is the treatment. For example, if medication is not part of the treatment, the cost and benefits associated with medication are not relevant to include in the CBA. Thus, when conducting a CBA on a specific patient group and/or treatment, one needs to decide which cost and benefit items are theoretically relevant for that target group. The relevance of the indicators also depends on the expected amount of the costs and benefits. When it is very time consuming to measure the costs and benefits and the effect is expected to be very small, then one can decide to not incorporate the item in the CBA (Pomp, Schoemaker & Polder, 2014).

Whether or not, and to what extent, costs and benefits are also actually generated depends on several factors. These are among others the curability of the mental disorder, the severity, the existence of comorbidity, the length of illness (e.g. chronic condition), the age of onset, the chance of relapse, the type of treatment and its effectiveness, and of course characteristics of the patient, such as his intelligence/education level, gender, age, ethnicity and his social environment (Suhrcke, Pillas & Selai, 2008).
4. Methodology

This is a qualitative research, which means the possible costs and benefits that theoretically could be generated are not actually quantified. Two methodology methods are adopted in this thesis, a literature review and interviews.

Literature review

Economic evaluations conducted so far in the field of MHC often do not include all relevant cost and benefit items. This could be because of data, measurement, time and/or money constraints, or because they are not aware of other related costs and benefits or do not perceive them as important (Romeo, Byford & Knapp 2005; Hsia & Belfer, 2008). A literature review is thus conducted to create a theoretical framework of all possible items that theoretically could generate costs or benefits when providing CAMH care in general, and should be encountered in a societal CBA. In general means, I account for all mental health disorders, irrespective of whether or not the cost and benefit items are relevant for all mental health disorders. (see chapter 3.7). This thesis also addresses the related measurement issues that are now often the constraint of conducting a full societal CBA.

The databases that were searched are: Google Scholar, Academic Source Premier, and the Library of the University of Groningen. I have searched the international literature on a combination of the following free text terms: Cost(s), benefit(s), -analyses or -studies, economic evaluation, effectiveness, cost of (mental) illness, economic burden on society, youth, child and adolescent, mental health, care, disorder(s), illness(es). The Dutch literature is searched on the same translated terms. I also used the snowball effect; I looked up references found in articles. And when found an author who was specialized in this area, I searched for more articles on the specific author. I also collected research that was recommended to me by my supervisors, interview respondents, and other participants. The articles date from 1980 to 2014. I have tried to focus mainly on the most recent literature, to be consistent with the most recent developments in this research area.

The cost and benefit items found in the literature were framed into the model adopted in this thesis (see chapter 3.6 and 3.7 respectively). Thus the costs were categorised as direct or indirect, and as falling inside or outside the health sector. The direct costs inside the health care sector are already extensively analysed. There is already consensus on that these costs exist, and are relative easy to measure. Thus how to measure the already widely accepted direct cost items is not discussed in-depth, instead reference to up to date cost reports on useful costing methods and cost prices are made. The benefits are also categorised as direct or indirect, of which the latter are further positioned on the short term and/or long term. The short term represents childhood and adolescence (moment in care – 24) and long term represents adulthood (24 – death). Because of this long time horizon, the literature search is not limited to child and adolescent literature solely, but also takes into account costs and benefits that can occur in adulthood.

For each cost and benefit item, the current state of knowledge and their relationship with mental illnesses is discussed. This is the main focus of this research. Next to this, some important (unsolved) aspects of the quantification and valuation of these items are discussed, and
suggestions how and where to obtain the required data are made. This means that for each cost and benefit item the literature is also searched on these specific aspects. For example, if productivity was raised in economic evaluations, the literature was searched for researches on the relationship between productivity and mental illnesses, on measurement methods of productivity and on data availability issues.

**Interviews**

Next to the literature review, interviews were conducted in the period from June 30 to July 30, 2014. These were conducted to see what costs and benefits of CAMH care were raised by people in practice, and what problems they foresee in conducting societal CBA. This is done to see if the literature is supported by them, and to gain additional insights from practice. The interviews were semi-structured which is suited for qualitative research (Mortelmans, 2007). An interview protocol was written, which functioned as a strong guidance during the interview (see appendix 11). The questions were written out, and a list of items that needed to be addressed in the answer was set up. If one of the items was not addressed, I specifically asked for it. Next to this, there was room for the interviewee to tell his story. The interviews lasted approximately 60 minutes. Before the interviews found place, I had send the respondents a topic list in which the structure of the interview was set out. This was done to get a better understanding of the goal of the interview and to enable the respondents to prepare themselves if wanted. The topic list can be found in appendix 12. Furthermore, to test the interview protocol, a pilot-interview was conducted with a researcher employed at Accare, after which minor adjustments were made to the protocol. The actual interviews were conducted with individuals from different branches, to get a holistic view on CAMH care. All respondents spoke Dutch, so the interviews were conducted in Dutch. Of the eight respondents, there were 3 academic professors/researchers; one in Social Medicine, one in Pharmacy, and one in Medical Technology. 2 psychiatrists; one child and adolescents-, and one adult-. 2 researchers/policy advisors of the branch organization GGZ NL of the department Quality and Responsibility. And 1 director of an Office of Youth Care. The names of the respondents are kept anonymous, which allowed the respondents to speak freely. Initially also respondents employed at a municipality or province were tried to interview, but this proved to be not attainable because of practical reasons. Eight persons were contacted, who are involved in youth care in the region Groningen and presumably were able to answer the questions, but they did not respond, or had no time because of the work load created by the transition, or felt they did not had enough knowledge on this subject.

The questions asked differed somewhat per participant depending on his profession and knowledge, but the main questions asked where in line with the classification of costs and benefits used in the literature. Thus questions were raised about what could be direct and indirect costs, and direct and indirect benefits on the short and long term, viewed from the societal perspective. They were also questioned on the relevance and attainability of including these items in a CBA, and the additional measurement difficulties. For example: ‘Which item(s) do you find most important to include in a CBA, and which find you not?’ Further an ethical issue was raised; how they perceived looking at CAMH care from an economic perspective. (See appendix 13 for examples of questions included in the Tic-P for children with psychiatric problems).
The interview data were progressed and analysed according to the methods proscribed for qualitative research, for which I used the book of Hennink, Hutter & Bailey (2011). First the data needed to be prepared for analyses. The interviews were recorded, transcribed and anonymized. The total transcript was not translated in English. Only when I started with the second step, ie. developing codes, I translated the relevant data in English. Codes, referring to issues, topics, ideas, opinions etcetera, were developed to identify the range of issues raised by the participants. Some codes were deductive, which means ‘prompted by the interviewer’ (Hennink, Hutter & Bailey, 2011). These codes were set up beforehand, derived from the literature and theory, and follow the categorisation of costs and benefits maintained in this thesis. These codes were used as topics in my interview guide. Other codes were inductive codes, raised by the participants themselves which were added after reading the interview data. These reflect the issues of importance to participants which were not anticipated beforehand. Once the codes were developed, a codebook was made, which is simply a list of all the deductive and inductive codes. After this was done, the gathered interview data were analysed on these codes. The results of the interviews were presented and compared with the literature to see if they confirmed, contradicted or complemented the literature.

The internal validity in qualitative studies is determined by the congruency of the findings with reality, and determines for a large part the credibility of the results (Shenton, 2004). With the incorporation of the correct operational measures the credibility of the results is tried to be strengthened, such as the use of open interview questions, the use of a consistent line of questioning with the categories addressed in the literature, and the applied data analysis methods recommended for qualitative research methods (e.g. development of codes). In addition, the interview tactics, such as summarizing, repeating, probing questions, and reverting to previous answers to clarify their statements again are applied to collect unambiguous data. Further, the honesty in informants was encouraged by their voluntary participation, their anonymity, and by stating beforehand it is encouraged to think out of the box, and no wrong answers can be given. The credibility is further strengthened by the triangulation of the interview data with documents consulted and observations made at Accare and the UMCG, and the conversations hold with employees of these organizations and with members of congresses and meetings I attended. Also, the accuracy of some of the interview data obtained was checked afterwards. Regarding the credibility of the cost/benefit items obtained by the respondents, it was checked if these items were incorporated in previous research already, and thus gained more creditworthiness.
5. Results

For comprehensibility reasons, this chapter contains the summary of the results of the literature review and the interviews conducted, captured in a framework. The framework contains the possible cost and benefit items of treating children and adolescents with a mental illness, a short elaboration on the items, key measurement and data availability issues, and whether the costs/benefits are likely to accrue on the long or short term. The in-depth discussion of the items can be found in the appendixes referred to. The corresponding appendixes to the chapters are:

<table>
<thead>
<tr>
<th>Chapter 5.1.1</th>
<th>Direct costs inside health care</th>
<th>Appendix 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 5.1.2</td>
<td>Direct costs outside health care</td>
<td>Appendix 6</td>
</tr>
<tr>
<td>Chapter 5.1.3</td>
<td>Indirect costs inside health care</td>
<td>Appendix 7</td>
</tr>
<tr>
<td>Chapter 5.1.4</td>
<td>Indirect costs outside health care</td>
<td>Appendix 8</td>
</tr>
<tr>
<td>Chapter 5.2.1</td>
<td>Direct benefits</td>
<td>Appendix 9</td>
</tr>
<tr>
<td>Chapter 5.2.2</td>
<td>Indirect benefits</td>
<td>Appendix 10</td>
</tr>
</tbody>
</table>

In the appendixes is included: The literature the framework is based on, the elaboration of the relationship between MHC care and the cost or benefit item (supplemented with economic evidence if existent), (additional) information regarding measurement and data availability. As previously addressed, the focus of this thesis lies on the identification of all possible related cost and benefits items to child and adolescent mental health care. Measurement and data aspects are only addressed when there are difficulties to include the items, or the appropriate data collection method and valuation methods are still highly debated.

Some notes to the framework are given in this chapter for a better understanding, and to address the key issues that require more attention. Also any items left out in the framework are addressed. Items are left out of the framework when few costs/benefits are expected to be associated with the items, little support from the literature or interviews was found, or the existence of these cost/benefit items are very dependent on the policy measures taken to finance an investment in MHC. The framework is subdivided according to the categorisation adopted in this thesis. To recall, these are direct and indirect costs inside the health care sector, and direct and indirect costs outside the health care sector. The direct and indirect benefits are viewed from three perspectives: the child/adolescent, the parents and other informal carers, and the rest of society.
## Direct costs items inside health care

<table>
<thead>
<tr>
<th>Items</th>
<th>Description</th>
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<th>Short term</th>
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<th>Appendix</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>In-patient and out-patient MHC organizations</strong></td>
<td>The direct costs of MHC treatment, and the MHC institutions</td>
<td>Includes the variable costs (quantity * per unit costs) and fixed costs. See cost manual of Hakkaart-van Roijen et al. (2011) for valuation methods</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| • Personnel cost                           | The salary costs of all practitioners.                                                                fcntlons.  
|                                            | Includes general training costs                                                                                                           | Price: Own costs research preferred, but when not possible use reference prices practitioners  
|                                            |                                                                                                                                           | Quantity: Service use registrations in DBC system (tariffs not suited!), or questionnaires.  
|                                            |                                                                                                                                           | Price: Reference prices are given in the cost manual.  
|                                            |                                                                                                                                           | Quantity: DBC data are not free accessible, and do not contain all services that might be used.  
<p>|                                            |                                                                                                                                           | Questionnaires: E.g. Tic-P questionnaire about the care consumption                                                                                                                    |            |           |          |
| • Costs for the employer                   | Costs of social contributions and taxes                                                                                                                                                                    | Registration systems at MHC organizations                                                                                                                                                                                                                                                             |            |           |          |
| • Overhead costs                           | Indirect related costs to MHC treatment. E.g. costs additional staff (e.g. secretariat and managers), administration costs, telephone costs, material costs                                                                                             | Registration systems at MHC organizations                                                                                                                                                                                                                                                             |            |           |          |
| • Cost of capital                          | Costs of financing MHC facilities. i.e. interest, depreciation and rental costs                                                                                                                             | Registration systems at MHC organizations                                                                                                                                                                                                                                                             |            |           |          |
| <strong>Diagnostic and laboratory tests</strong>        | Costs of tests conducted to set a diagnose or to check a patients’ condition. E.g. blood checks                                                                                                             | Registration systems at MHC, and their referrals to external laboratories for check-ups.                                                                                                                                                                                                             |            |           |          |</p>
<table>
<thead>
<tr>
<th>Pharmacological treatment</th>
<th>Medication can be prescribed as part of the MHC treatment, which can be prolonged for many years to prevent relapse. This is called maintenance-treatment.</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Medication cost</td>
<td>Costs of pharmaceutics prescribed for mentally ill patients.</td>
</tr>
<tr>
<td></td>
<td>See for example Stichting Farmaceutische Kengetallen (SFK); this company registers detailed information on the medication use in the Netherlands. This can be multiplied by the price of the medicine, which for example can be found on the website <a href="http://www.medicijnkosten.nl">www.medicijnkosten.nl</a></td>
</tr>
<tr>
<td>• Costs of prescribing medication, service used, and check-ups</td>
<td>Costs of prescribing the medication, the services used by patients receiving medication (such as costs of the pharmacy), and the medication check-ups by the psychiatrist for example.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>• Negative side-effects of medication</td>
<td>Side effects, such as depression, a gain in weight and somatic diseases, can lead to a higher visit rate of the GP, and higher use of mental and general health care services. Thus, negative side effects can increase the health care service use.</td>
</tr>
<tr>
<td>• Medical claims due to accidents</td>
<td>Juridical and compensation costs to patients, because of medical claims due to accidents or massive side effects, for example due to anti-psychotics</td>
</tr>
<tr>
<td>MHC provided by Community Mental Health teams (CMHTs)</td>
<td>Costs of practitioners that provide MHC in social district teams; the MHC provided in neighbourhoods, outside the GP’s office and MHC facilities.</td>
</tr>
<tr>
<td></td>
<td>The amount of MHC provided in CMHTs is not included in the DBC registration system. CMHTs are currently defrayed on the basis of a budget. The (future) defrayment system of the primary and secondary care in CMHTs are discussed separately in two rapports of VNG (2013; 2013), which can be consulted to see how we might derive the costs of MHC professionals in CMHTs.</td>
</tr>
</tbody>
</table>
### MHC provided by the office supporter of the GP

The costs of MHC provided in the GP’s office, by the GP and the POH-MHC that supports the GP. The costs are associated with the two tasks performed in the GP’s office; that is the provision of light forms of MHC care, and accurate reference to GB-MHC or specialized-MHC if necessary. Not visible in DBC registration system. See the advice rapport of the NZa to the Dutch government on how to defray these costs, which are divided in infrastructural costs, wage costs and management costs. [http://www.nza.nl/104107/139830/740611/Advies_Bekostiging_POH-GGZ.pdf](http://www.nza.nl/104107/139830/740611/Advies_Bekostiging_POH-GGZ.pdf)

### Implementation costs of MHC programs/ treatments

Non-recurrent costs of developing and introducing a MHC treatment program. E.g. registration, set-up/ management costs, telephone calls, and training costs of program leaders/ professionals (including materials, training course fee, and time at training, travel time to training and mileage costs to attend training for professional).

### Research costs

Federal expenditures for medical and health services research.

### Social care services – As a supplement to or resulting from MHC treatment

The costs of social care services provided. E.g. foster care and addressing child abuse. Registration systems at social care services providing youth care.
### General health care services

As a supplement to or resulting from MHC treatment:

- Emergency –department, and surgery
- In-patient care general health care (hospital care)
- Out-patient general health care
- Primary care / (routine) physician contact (such as GP visits)

Costs of general health care services. It has been researched that about half of the care for common mental disorders is delivered in general medical settings, and that children and adolescents with mental health problems frequently attend primary care, thus general health care costs can rise because of MHC treatment. Reference prices times the amount of general health care services used, which is registered in the DOT registration system.

### Opportunity costs

The costs of foregone investments in other activities. E.g. foregone use of staff involved, and of accommodation used. See measurement method recommended in the cost manual, in chapter 2.2.

### Direct cost items outside health care

<table>
<thead>
<tr>
<th>Items</th>
<th>Description</th>
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<th>Short term</th>
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<th>Appendix</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time costs</strong></td>
<td>Costs of time lost due to treatment, which can be born by the patient, informal caregiver(s) and/or volunteered personnel</td>
<td>Can be added up to the other time costs of lost leisure, paid and non-paid work and valued together</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Travel time</strong></td>
<td>Time spend on traveling to treatment location</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Direct time costs</strong></td>
<td>Time spend on treatment. E.g. time spend in therapy session by patient and/or parents, and babysitting siblings during treatment by grandpa.</td>
<td>Effect on labour participation: HCM and FCM Effect on non-paid work: Replacement cost method or opportunity cost method (see cost manual) Effect on leisure participation: not valued, because expected to be already included in the valuation of health. Is accounted for in the indirect time costs Amount of labour participation: questionnaires (SF-HLQ) or existing research (preferably RCTs)</td>
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<td></td>
</tr>
<tr>
<td>- Paid work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Non-paid work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Leisure participation</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

APPENDIX 5

APPENDIX 6
<table>
<thead>
<tr>
<th><strong>Transportation costs client</strong></th>
<th>Costs of transport related to MHC treatment. E.g. fuel costs parents to enable MHC treatment of child, or visit child in in-patient facility.</th>
<th>May be associated with relative low costs; thus estimate these costs based on for example average distance to care institution, and average cost of the mean of transport (assumption: 1/3 travels per bike, 1/3 per taxi cab and 1/3 per car).</th>
</tr>
</thead>
</table>
| • Fuel costs mile ages, or public transport costs  
• Parking expenses | The costs of transport related to MHC treatment. E.g. fuel costs parents to enable MHC treatment of child, or visit child in in-patient facility. | May be associated with relative low costs; thus estimate these costs based on for example average distance to care institution, and average cost of the mean of transport (assumption: 1/3 travels per bike, 1/3 per taxi cab and 1/3 per car). |
| **Own contributions patient** | The out-of-pocket money required by patients that are required for services included in the basic insurance. These own contributions are thus not incurred in the health care sector. | The own contributions required for services inside the basic insurance care are known at the health insurance companies. Other contributions depend on the insurance package obtained by the patients. |
| **Day care costs** | The costs of day care. E.g. babysitter, nanny, day care centre. Child care services can also be offered as part of a MHC (prevention) program. Not all these costs must be included, because the use of other publicly funded child care services, parents otherwise would have used, may diminish. | Questionnaires can measure the amount of day care used, times the reference prices included in the cost manual. |
| **Psychological costs** | The costs associated with the stigma of receiving MHC, i.e. “disbenefits of treatment”. These costs can come at the expense of the patient’s QoL; for example if they experience discrimination. Or it can create economic costs; for example if the patients refrain from applying for a job and thus rely on state benefits. | The intangible costs of perceived stigma can be captured with a quality of life outcome measure. |
| **Other costs**  
• Telephone costs  
• Buying new clothes | Telephone calls made by clients to the professionals or program director  
Costs of new cloths, necessary because of a gain in weight (side-effect medication, or positive effect treatment anorexia nervosa) | --- |
### Indirect cost items inside health care

<table>
<thead>
<tr>
<th>Items</th>
<th>Description</th>
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<th>Appendix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical costs that occur during gained life years</td>
<td>The related and non-related medical expenses that are made during gained life years. E.g. a 70 year old man with depression is successfully treated, and lives 10 years longer because suicide is prevented. Related costs are for example, pharmaceutical costs of the anti-depressants he needs to take during these 10 additional years. Non-related costs are for example the costs of a hip-replacement he needs to undergo when he is 75 years because he felt down the stairs.</td>
<td>Related costs: Identical to the measurement methods of the direct costs inside health care. Non-related cost: PAID method</td>
<td></td>
<td>×</td>
<td>APPENDIX 7</td>
</tr>
</tbody>
</table>

### Indirect cost items outside the health care

<table>
<thead>
<tr>
<th>Items</th>
<th>Description</th>
<th>Measurement method(s) and data availability</th>
<th>Short term</th>
<th>Long term</th>
<th>Appendix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indirect time costs</td>
<td>Time spend on tasks related to MHC treatment, which effect one’s time allocation and productivity. E.g. homework assessments for patient, medication aid by informal carer, extra time invested by informal carer in the guidance of the child.</td>
<td>Identical to direct time costs</td>
<td></td>
<td>×</td>
<td>APPENDIX 8</td>
</tr>
<tr>
<td><strong>Special (and regular) education</strong></td>
<td>The costs of special education services may rise, because the services are part of the MHC treatment, and because treatment enables children again to participate in special education (instead of sitting home). Also since mentally ill children are less referred to special education in the Netherlands, more cooperation may be required of staff of regular education schools as part of treatment, which raise these costs. And again, the costs of regular education may rise because more children able to participate in regular education.</td>
<td>The amount of service contacts can be measured with questionnaires or retrieved out of national databases, multiplied by the reference prices. See the cost manual for more information on the costing methods.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Juridical organizations</strong></td>
<td>Costs of contacts made with juridical organizations, related to the MHC treatment. E.g. child protective services, police, ‘Halt’ (Dutch organisation which prevents and combats juvenile crime), rehabilitation and juvenile justice institute.</td>
<td>To measure the use of juridical services the same methods can be used as the methods of special (and regular) education; consult registrations at relevant organizations for the volume, and multiply these by the reference prices.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Contacts with community centre and church</strong></td>
<td>Contacts with church and voluntary organizations</td>
<td>The costs of contacts with community centres, churches and other voluntary organizations can be measured again in the same way as any other service use outside the health care sector (e.g. juridical organizations) Although the registration of these organizations may be less rich.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Support costs for reintegration</strong></td>
<td>Reintegration into working life, and guidance of the (former) patient during work</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>QoL loss – to account for negative effects on leisure time</strong></td>
<td>QoL must be included as a cost item to incorporate any loss of QoL due to treatment. A loss of leisure time (expected to be included in QoL) can occur on the short term due to the direct and indirect time costs of treatment. Further, treatment can also increase labour participation which comes at the expense of leisure time on the long term. This loss of leisure time is not always completely offset by the increase in compensation, partly because of the income dependable taxes and subsidies which people do not take into account.</td>
<td>The loss of leisure time can be captured with the QoL outcome measure that must be included to capture the intangible aspects (which, as included above, captures also the intangible aspects of the psychological costs).</td>
<td></td>
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</tr>
</tbody>
</table>
## Direct benefits

### Patient (i.e. child/adolescent and/or parent(s))

<table>
<thead>
<tr>
<th>Items</th>
<th>Description</th>
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<th>Long term</th>
<th>Appendix</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mental health &amp; somatic health</strong></td>
<td>Mental illnesses are associated with a higher risk of experiencing chronic psychical conditions and conversely, having a chronic psychical health condition doubles the risk of experiencing depression and anxiety. MHC treatment, thus can lower both mental and somatic illnesses. Since parents are often also involved in treatment, they too incur direct benefits.</td>
<td>An HRQOL indicator such as QALY, is recommended. Further it is recommended to measure with generic preference based metrics, (e.g. the EQ-5D or SF-6d). Routine Outcome Monitoring (ROM) data can become a rich database to measure among others, the effect of CAMH care on HRQOL. The QALY (or outcome HRQOL outcome measure) must be translated into monetary value. The most accurate method is the direct inference of thresholds from individuals.</td>
<td>✓</td>
<td>✓</td>
<td>APPENDIX 9</td>
</tr>
</tbody>
</table>

### Indirect benefits

### Patient

<table>
<thead>
<tr>
<th>Items</th>
<th>Description</th>
<th>Measurement method(s) and data availability</th>
<th>Short term</th>
<th>Long term</th>
<th>Appendix</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Education benefits</strong></td>
<td>The costs of lower education participation, lower educational performance and lower level of education achieved that are associated with mental health disorders, might be lowered with CAMH care.</td>
<td>National data bases may be consulted that register the level of education in the Dutch society. And registrations at school on skipping school-behaviour can be consulted for information on the attendance level. School rapports may provide insights into the performance of children.</td>
<td>✓</td>
<td></td>
<td>APPENDIX 10</td>
</tr>
<tr>
<td>• Attendance</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>• Performance</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Attained level of education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Increased (labour) participation</strong></td>
<td>Due to a gain in health (and the induced effects of education) MHC can have a positive effect on paid and non-paid work. These benefits especially occur on the long term, when children have finished their education and look for a full time job. On the short term, when children have reached the working age of 16, a gain in part time jobs may play a small role. The patients’ chance of work, his productivity level and his wage level, determine his income.</td>
<td>Paid work: Average salary * extra hours worked But: One might question whether or not MHC can make average salary attainable for mentally ill. Non paid work: extra hours non-paid work</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The QoL outcome measure can capture the gain of social participation, improved relationships and increased social inclusion.

### QoL gain – due to
- Social participation
- Relationships
- Social inclusion

CAMH disorders are associated with among others, lower social participation (e.g. sport activities), social exclusion on school and society, relationship difficulties with parents, friends and future partner (e.g. domestic violence and divorce). These aspects have a negative impact on someone’s QoL, and CAMH care may contribute to lower these costs.

### Parent(s) and informal carers

<table>
<thead>
<tr>
<th>Items</th>
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<th>Long term</th>
<th>Appendix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saved economic costs</td>
<td>The time loss on paid and unpaid work, addressed as a cost item for parents on the short term, might become a benefit on the longer term. This is, when the improvement of their child’s health allows parent to increase their productivity instead. Not only the parents productivity, but also that of other important informal carers may improve, such as other family members and teachers. Further, any damage costs formally incurred by parents (especially relevant with external disorders) can lower the economic costs incurred.</td>
<td>The valuation of a productivity gain is identical to the valuation of the productivity loss that might be experienced during treatment (see above).</td>
<td>×</td>
<td>×</td>
<td>APPENDIX 10</td>
</tr>
<tr>
<td>QoL – related to lower burden on informal carers</td>
<td>Again, the former loss of leisure time captured in the QoL measure, can also become a benefit when the amount of leisure time for parents increases as a consequence of diminished health problems experienced by their child. Furthermore, the overall burden on parents may lower which will improve their QoL. Such as the burden of stress.</td>
<td>The gain in QoL for parents can be captured by the QoL outcome measure. However, to measure the saved costs associated with a gain in QoL, we would have to measure the QoL of parents. This might be done for research purposes only, to gain more insight in the benefits of parents.</td>
<td>×</td>
<td>×</td>
<td></td>
</tr>
<tr>
<td>Mental and somatic health as non-patient</td>
<td>Even when parents are not involved in treatment of their child, they still can improve on their mental and somatic health due to the spill over – effects of CAMH care treatment.</td>
<td>Identical to the valuation of the gain in health described under direct benefit (see above).</td>
<td>×</td>
<td>×</td>
<td></td>
</tr>
<tr>
<td>Items</td>
<td>Description</td>
<td>Measurement method(s) and data availability</td>
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</tr>
<tr>
<td><strong>Saved costs of substance abuse of alcohol, tobacco and drugs</strong></td>
<td>Childhood psychiatric disorders are associated with substance abuse, and inversely, substance abuse is associated with an increased risk of developing a mental disorder. Example of saved costs are the costs of illegal drug plantations, imports and distribution. (Other saved costs associated with substance abuse are already accounted for in other items, e.g. saved costs of health care service use for society, and increased productivity of former substance abusers for patients)</td>
<td></td>
<td>X</td>
<td>X</td>
<td>10</td>
</tr>
<tr>
<td><strong>Saved costs of prevented suicides and increased life expectancy</strong></td>
<td>Suicides and shorter life years are frequently associated with mental health disorders. About half of the people that die from suicide suffer from a mental health disorder, and live between 9 and 32 years shorter. If MHC treatment can lower the amount of suicides and increase the amount of life years, costs associated with these aspects can be saved. Both saved suicides and increased life expectancy can be measured with the expected value of future productivity in the gained life years, valued at market earnings and/or household earnings.</td>
<td></td>
<td>X</td>
<td>X</td>
<td>APPENDIX 10</td>
</tr>
<tr>
<td><strong>Saved costs of criminality</strong></td>
<td>There are some CAMH disorders that are associated with criminality, such as behavioural disorders. These costs can be lowered if effective treatments are offered. Examples of costs are costs of the police and fire department, material and immaterial damage costs (such as trauma victims), and incarceration costs. See Dutch manual by Drost et al. (2014), which provides rich information on the classification, identification and valuation of the criminality sector</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><strong>QoL- related to disruption of society</strong></td>
<td>Any increase in QoL on for example class members, teachers, neighbours, due to a decrease of disruption by the mentally ill. Disruptive behaviour can be bullying, misbehaving in the classroom, and noise disturbances</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><strong>Saved health care service costs</strong></td>
<td>On the long term, the use of health care services may diminish. Not only the service use of the children/adolescents may lower, but also of their family members and future partners, and other informal carers.</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Saved special (and regular) education service costs</td>
<td>A shift in the use of special education services to regular education services may be perceived as a result of CAMH care treatment, which saves the higher costs of special education. Also lower support costs in regular education may be perceived.</td>
<td>See Dutch manual by Drost et al. (2014), which provides rich information on the classification, identification and valuation of the education sector.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saved costs of other services and consequences of MHC disorders</td>
<td>Any saved costs of other cost factors, not included yet. E.g. Lower service use of community centres, debt counselling and homeless centres, and saved costs of motor vehicle crashes</td>
<td></td>
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</tr>
<tr>
<td>Opportunity costs saved</td>
<td>On the long term, if we know how to break the vicious cycle of families in need of care, our investments can be made in other sectors or target groups</td>
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</tbody>
</table>
5.1 Costs

5.1.1 Direct costs inside health care
The reporting of the direct costs differs in almost each economic evaluations or cost-of-illness studies of MHC disorders. They distinguish different cost categories, they differ in the detail of these, and use different terms. This might result in some overlap of costs between the items, because the definitions and/or terminology used may overlap.

It might be argued that the general health care service costs are indirect costs inside the healthcare sector, since the general care costs made are not part of the MHC treatment and are thus not budgeted in the MHC treatment. However, it has been researched that about half of the care for common mental disorders is delivered in general medical settings, and that children and adolescents with mental health problems frequently attend primary care (Kohlboeck et al., 2014). These general health care costs that may follow from MHC treatment can be seen as induced direct effects, and could be categorised under the category indirect cost inside the health care. But this category is specifically preserved in the existing CBA manuals and the cost manual of Hakkaart-Van Roijen, Tan & Bouwmans (2011) (see further) for the medical costs in gained life years. In all economic evaluations evaluated the general health care costs are seen as direct costs inside the health care sector. Some authors (Greenberg et al., 1999) explicitly divides the direct costs into direct psychiatric service costs and direct non-psychiatric medical treatment costs, whereas others do not. In conclusion, to be consistent with the existing literature, I will place the general health care service use under the direct costs.

The most often included cost items in economic evaluations are the service use costs of the different forms of health care services included in the framework (such as primary care, hospital services, social services and MHC services), the implementation costs of MHC programs (if relevant), and the costs of the pharmacological drugs. The item ‘costs of negative side effect of medication prescribed, as part of the treatment’ was only raised by one respondent. But this can be a realistic cost item. Negative side effects can be for example a higher risk on somatic diseases, due to a higher cholesterol level or a gain in weight etcetera. These can lead to additional (mental) health care costs, because of for example more visits to the GP, hospital and/or mental health care provider. See appendix 5 for a further elaboration. Further research might research if the costs of negative side effects of medication prescribed are relevant to include.

The health care service costs can also raise because of early detection of mental health disorders and thus early treatment, mostly relevant for untreatable disorders. This was raised by one respondent. He described this as follows: “At (...) we developed an intervention that enabled us to recognize autism two years early than normal. Because of this a child is treated earlier. However, it (autism) is a resistant disability that is reasonably untreatable. (...) And we are not sure what this (early detection) generates, (and the costs are) a 2 year early appeal to care, for the rest of his life.” Thus early treatment can also lead to higher costs, if the treatment is aimed at less curable disorders. This is not included in the framework, because any effects of specific implementation plans and/or policy measures are not taken into account. Instead, any possible
additional costs and/or benefits that follow out of the specific project alternative suggested should still be added.

**Measurement and data availability**
As previously mentioned, issues of measurement methods are only addressed when these are not settled yet, or are still highly debated. The same applies for data availability difficulties. The measurement of the costs of health care services used requires therefore little attention; the relationship between CAHM care and direct service costs is very clear, and MHC providers and other organizations are obliged to register all activities. I will refer to appendix 5 for a brief discussion of the most relevant measurement methods suited for the MHC sector, and useful data sources. A very helpful report to measure costs in general, is the cost manual of Hakkaart-Van Roijen, Tan & Bouwmans (2011) (further referred to as the cost manual or guideline). In this manual the authors describe several costing methods for direct and indirect costs inside and outside health care, to enable economic evaluations in the health care sector (see for an English version the summary article of Tan et al., 2012). The cost guideline was first published in the year 2000, and updated in 2004. For the year 2010 the guideline was adjusted on three points; the reference prices were adjusted for inflation, the methodology was where needed updated to the scientific knowledge, and the description of the DBC systematic was expanded. Currently the authors are revising the manual again. This manual can be consulted for all possible costing methods, which will not be repeated here.

**Inclusive or exclusive VAT**
One important aspect that I will address here and that is raised in the rapport of Pomp, Schoemaker & Polder (2014) is, if we should measure with cost prices of health care services inclusive or exclusive VAT (value-added tax). This depends on how the project alternative (in this thesis, the proposed investment in CAMH care) is financed. If the policy measures taken affect the amount of VAT the government receives, we should count with the cost prices inclusive VAT. For example, to finance the investment in health care, taxes might be raised. This lowers the spendable income of the citizens, which might lower the amount of VAT- products bought and thus the amount of VAT the government receives (Pomp, Schoemaker & Polder, 2014). The project alternative can also be financed to lower the amount of insured services and/or increase the out-of-pocket money (‘eigen risico’). But since health care services are mostly VAT free, this would not affect the amount of VAT received by the government. Even if people would additionally insure for services. This would justify calculating with cost prices exclusive VAT. Notice that calculating exclusive VAT is only applicable for the health care service products. On any assets and household articles health care providers purchase for example, they do have to pay VAT. These costs are incorporated in their depreciation, which is included in the cost item ‘cost of capital’.

In conclusion, the dispute about whether to calculate with or without VAT is not settled yet. This depends on whether or not the amount of VAT the government receives rises or not, and will thus depend on the policy measures proposed in the defined project alternative. If we should account for VAT, the cost prices of the VAT free service can be raised with a certain amount of costs. In the rapport of Pomp, Schoemaker & Polder (2014) the authors state more precise choices on this subject for the health care sector have to be made.
5.1.2 Direct cost outside health care

Earlier economic evaluations often only look at the direct costs of treatment incurred in the health care sector, but there is a trend to also look at the costs born in other sectors. If these costs outside the health care sector are related to treatment, these are direct costs.

Note that a distinction is made in direct and indirect time costs, which respectively account for time directly invested in treatment (direct costs) and the effect on ones’ time allocation and productivity (indirect cost) (Gold, 1996). According to the cost manual the valuation of the direct and indirect time costs is identical, so they do not make this distinction. To be consistent with the categorisation applied, I will separate them. But in the discussion of the valuation methods these are taken together (see appendix 6).

Regarding the costs of informal care, one interview respondent mentioned that time spent on informal care might not necessarily be seen as costs for everyone. For example, the grandfather or grandmother who is with retirement might feel like he or she is still of value, and it might take them out of isolation. This will increase their QoL, and thus might be even included as a benefit. In the manual of Pomp, Schoemaker & Polder (2014) the authors state that the quantification of the costs and benefits of informal care is still an active area of research. (For a discussion on this subject I refer to Brouwer et al. (2004) and Hoefman et al. (2010)).

Measurement and data availability

The debate on the validity of the two main methods to value labour productivity loss is not settled yet (Van den Hout, 2009). The valuation methods are the Human Capital Method (HCM) and the Friction Cost Method (FCM). The HCM values all lost time due to absence, (long term) working incapacity and premature death because of health problems. This method is based on the expected life time earnings of an individual, and takes the perspective of the patient. The friction cost method is based on the thought that in the end every employee is replaceable in the production process, and takes the perspective of the employer. Only the production loss or additional productivity costs that occur during the period needed to replace the individual who is absent for a long time due to illness (friction period) are included. This method thus excludes for the lost time from paid work due to premature death beyond the friction period. The HCM is criticized for overestimating productivity losses and costs, and the FCM for underestimating the productivity losses and costs. The guideline for pharmaco-economic research recommends the friction cost method, which is in line with the international standard. However, in economic theory the assumption in the FCM that all vacancies are filled by unemployed persons is not correct according to Johannesson & Meltzer (1998) (see page 2). In earlier COI studies therefore, the HCM is also often used (Rice, Kelman & Miller, 1991; DuPont et al., 1998; Greenberg et al., 1999; Romeo, Knapp & Scott, 2006; Sobocki, 2007). Greenberg et al. (1999) used the prevalence-based HCM: “The prevalence method considers the annual costs to society of all individuals who suffer from the condition within a given year, regardless of when the condition may have been diagnosed”. As long as the dispute on the right method is not settled yet, the guideline of the RIVM recommends to report the labour benefits according to both the FCM and HCM.
5.1.3 Indirect costs inside health care

Indirect costs inside health care are determined by medical costs that occur during gained life years. As stated in the framework, these costs can be divided into related and non-related costs. To recall, related costs are for example, pharmaceutical costs of the anti-depressants a patient needs to take during the 10 additional years he gained. Non-related costs are for example the surgery costs he needs to undergo in his additional life years because he was involved in a car accident. These surgery costs are not related to the treatment for his depression, but would have not been made if he did not receive treatment for his depression, because he would have been dead by then.

The inclusion of the medical costs during gained life years is still a topic of debate. Regarding economic evaluations of pharmaceutics, the Dutch guideline for pharmaco-economic research explicitly states that the non-related costs in life-years gained should be excluded from the economic analyses (CVZ, 2006). Economic evaluations of pharmaceutics then almost always do not include these costs. Rappange et al. (2008) also states that economic evaluations of health care interventions most often ignore the non-related costs. The pharmaco-economic guideline does not elucidate why they recommend to exclude these costs. But this might be understood, because otherwise gained life years comes at a very high cost, and many evaluations would then suggest that it is not cost effective to put a medicine on the market. Then, ‘a dead patient is the cheapest patient’ (Postma & Krabbe, 2006). However, there are calls to open up the discussion of whether or not indirect medical costs during gained life years should be included (Rappange et al, 2009; Van Baal et al, 2011).

In the article of Rapange et al. (2008) the authors provide an overview of the discussion whether or not the non-related medical costs should be included in economic evaluations or not, and conclude that the dominant argument is to include the non-medical costs. The two most important arguments of inclusion are first, that we need to be consistent; if we include the gained life year as a benefit, we must also include the medical costs that are made during those gained life years. Second, ignoring future medical costs does not result in optimal decision making, since it appears that inclusion of the medical costs alters outcomes of cost-utility ratios as shown by Meltzer (1997). Also, in the manual for SCBA in healthcare (Pomp, Schoemaker & Polder, 2014), they state that from the point of a societal perspective and welfare theory we should include the medical costs in gained life years. In appendix 7 the relevance of medical costs in gained life years in relation to MHC treatments is addressed.

Measurement and data availability

Since the arguments in favour of inclusion of these costs grow (Van Baal et al, 2011), a practical issue is how these costs should be measured. Especially with MHC for children and adolescents, the relationship between the intervention and the life years gained because of that intervention is difficult to make, since the time horizon is enormous and many other variables influence the amount of life years gained and thus the medical costs incurred. But as Rappange et al. (2008) states, a clear guideline by the Dutch ZIN would help increase developments in this area. Moreover, a reasonable estimation is better than an unreasonable estimation of zero. For possible valuation methods I refer to appendix 7.
5.1.4 Indirect costs outside health care
As mentioned in chapter 5.1.2, there can also be indirect time costs of lost productivity (paid and/or non-paid work) and leisure time. These (indirect) time costs are already addressed in chapter 5.1.2 and the corresponding appendix 6, because the valuation methods are identical. Next to these costs, the other indirect costs are related to contacts made by youths and their parents to non-care organizations, due to treatment. The valuation of these service use is identical to the valuation of health care services (i.e. volume times per unit-costs).

5.2 Benefits
To recall, benefits are the monetized effects of an intervention. Effects are the consequences of an intervention, which can be positive and negative. Any possible negative effects are scaled under costs (chapter 5.1) and in this chapter I will discuss possible positive effects (i.e. gain in health and saved costs). Possible ways to monetize the effects will be discussed under the heading measurement and data availability (similar to chapter 5.1).

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Child/adolescent</th>
<th>Parent(s)/informal carers</th>
<th>Other members in society</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short term</td>
<td>Direct</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>(Initiation of treatment – 23)</td>
<td>Indirect</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long term</td>
<td>Direct</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>(24 – death)</td>
<td>Indirect</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5.1. Categorisation of benefits applied

5.2.1 Direct benefits
The direct benefits are the effects on (mental) health and well-being for the person under treatment solely. As mentioned, patients in CAMH care are the children and adolescents, but often also their parents, thus the health of the parents as patients should be included. Effects on mental health of other persons are scaled under indirect benefits, since any gain in their health is not directly intended with the CAMH care treatment (these are deduced effects). Thus, as presented in table 5.1, there are no direct effects for other members in society.

Mental and somatic health of child/adolescent and parent(s)
It has been researched by the World Health Organization (WHO) that mental disorders independently contribute substantially to the burden of disease worldwide and they state that there can be no health without mental health (Prince et al., 2007). ‘The burden of mental disorders is likely to have been underestimated because of inadequate appreciation of the connectedness between mental illness and other health conditions’ (Prince et al, 2007; page 859). This relationship between mental health and somatic health works two ways. Mental illnesses are associated with a higher risk of experiencing chronic psychical conditions (CMHA, 2008).
Conversely, having a chronic psychical health condition doubles the risk of experiencing depression and anxiety (Patten, 1999; and 2001). See appendix 9 for more research on this relationship. In conclusion, it can be argued that treating mental disorders at a young age might
prevent physical impairments related to the mental health disorder experienced at the short term, and prevent the arise of somatic illnesses at the long term. Thus, both mental and somatic health of patients (i.e. the children/adolescents, and the parents under treatment), must be included.

Measurement
The direct effect of MHC can be measured with different outcome measures. One can assess improvements in disease-specific impairments, such as the degree of anxiety (for anxious patients), degree of hyperactivity (for ADHD patients), or the number of psychoses (for schizophrenics). One can also use more general outcomes, like the effect on the health related quality of life (HRQOL). The HRQOL is an indicator of the severity of illness and impairment, given by the individuals’ subjective perception and experiences (Bouwmans et al., 2014). For comparison reasons among MHC treatments, more general outcomes are recommended. In appendix 9 frequently used indicators of the HRQOL are discussed.

To measure HRQOL, questionnaires must be used. One can use condition-specific metrics, or generic metrics. The advantage of disease specific metrics is that these are more sensitive for detection and quantification of small changes in health. On the other hand, generic measures are better equipped than disease specific metrics to compare the effects on (mental) health of different treatments with each other across different mental health disorders. For economic evaluations generic metrics are more suited. See appendix 9 for the often used generic metrics, and their suitability to measure mental health problems.

Data availability
To be able to measure the direct effects of care, indicators that measure the health performance of the MHC treatments offered, must be set and used. A possible rich source of data to assess the direct benefits of healthcare treatments, useful for economic evaluations of MHC treatments, can be the Routine Outcome Monitoring (ROM) database. This is still in its infancy however. As of 2010, MHC providers are obliged to conduct a pre and after measure of their patients’ mental health status. This year (2014) they must report this for 50% of their patients (“Bestuurlijk Akkoord Toekomst GGZ 2013-2014”, 2014). More information on the purpose of ROM, the performance indicators used, and the current shortcomings can be found in appendix 9.

Monetization
In CBAs the gain in health must be monetized, to be able to add up the gain in health to the benefits. How much society values health can be directly inferred from the willingness to pay (WTP) thresholds, which would be the most accurate method (see appendix 9 for other methods). Thresholds refer to the level of costs and effects an intervention must achieve to be acceptable for society (Eichler et al., 2004) This is given form in a ratio between some currency to some health gain measure, e.g. €/QALY. Due to the lack of one health outcome measure for all diseases, comparability of the ratios keeps difficult. Other often used outcome measures are the DALY (used by the WHO) or the Life Years Gained (LYG). Furthermore, there are qualitative methodology issues (see appendix 9). Last, there is the problem of translating the different values of health given by individuals to the societal value of health. In appendix 9 these aspects of monetization are explained.
With the monetization of health, ethical aspects play an important role. Most respondents did feel it is inevitable to look at health this way, because of the budgetary cuts and the large amount of ineffective care currently offered. However, this was also a very sensitive subject, since looking at (mental)healthcare in this manner touches an ethical aspect. Respondent: “But you understand I have serious moral ethical and societal questions with the constant translation of health interventions into monetary terms? I object this.” Another respondent: “We have an obligation to help the children if we have the possibility. Especially if effectiveness studies show that it pays off to a certain extent, it would be highly unethical to do nothing.” All respondents said money can never be the only criterion. “Money is only one aspect of the discussion. There is more, up to the feeling that anti-social behaviour is the own choice of the young, and a metabolic illness is something that happens to you. There is a social perception of fairness. One is more willing to spend money on the metabolic illness than on anti-social behaviour.” The respondents made it very clear to “bring in the soft side of numbers”. We will never be able to express the feelings of child into monetary terms, and thus we need to present the limitations of the numbers, especially when there is a negative net balance.

The direct health benefits on the short term (initiation of treatment – 23) are identical to the health benefits on the long term (24 - death). However, whether the gain in health still continues to exist on the long term is another question. Then, we would have to know the effectiveness of treatment at the long term, but very little studies include such a long time horizon. It must be recognized, that the amount of the direct benefits might diminish at a later age, and the direct effect might even stop to exist due to relapse or recurrence. Of mental health disorders, depression is among others associated with high rates of relapse and recurrence during a patients’ life years. It has been found that 50 to 85% of individuals who have an episode of depression will experience a recurrent episode during their lifetime (Melfi et al., 1998). However, 50% of these will experience this within two years of the initial episode, which makes it somewhat more attainable to include for a decrease of direct effects on this relative short term. A research into the costs of relapse of schizophrenia found that the costs of readmission in hospitals within two years of discharge approached $2 billion, approximately € 1,5 billion (i.e. milliard in Dutch terms). The loss of efficacy of antipsychotics accounted for roughly 60 percent of the rehospitalisation costs, and the noncompliance of the antipsychotics for roughly 40 percent (Weiden & Olfson, 1995). Thus, we might apply moderate rates to these health effects on the long term to account for relapse and recurrence.
5.2.2 Indirect benefits
The main indirect benefits found are saved costs related to health care service use and non-health care service use, the benefits of improved education and the subsequent increase of labour participation, and saved costs of intangible effects that contribute to QoL, such as health gains for informal carers, increased social participation and less disruption of society. The indirect benefits defined for the patient and parents/informal carers, separated from the rest of society, also contains benefits for the rest of society. The placement of these items for the three groups distinguished could be debated.

Existing economic evaluations include less often indirect cost items of mental illnesses (which could be saved costs) and indirect benefit items of MHC. And thus, the economic evidence that these items can truly generate these benefits is less clear. Especially the indirect items at the long term are often neglected, because of the short term horizon taken in most studies. Cost-of-illness studies and economic evaluations on MHC illnesses that include indirect costs can be used to assess what effects mental illnesses can have on sectors outside the health care, such as on the labour market. These indirect costs may be lowered, and can be considered saved costs, if effective MHC treatments are offered. As explained in chapter 3.6, the saved costs items are regarded as indirect benefits in CBAs. Furthermore, in the categorisation I apply, there might be short term indirect benefits (initiation of treatment -23 years old), as well as long term indirect benefits (24 years old - death). Former research has found that mental disorders in young people (12-24) tend to persist into adulthood (Costello, Foley & Angold, 2006). For example, research on adolescents with externalising behavioural problems showed that this group experiences multiple social and health impairments far into their adult life, that not only negatively affect them, but also their families and society (Colman et al., 2009). Thus, effective treatment of children/adolescents may not only produce societal benefits on the short term, but also on the long term.

The indirect benefits on the short term can work through on the long term, at least if one’s mental illness stays averted, but there may also be additional indirect benefits that only occur on the long term. For overview reasons and to avoid doubling, the short and long term indirect benefit items are discussed together in appendix 10. Furthermore, since the economic evidence on these indirect benefits are scare, more emphasis is placed on reviewing the relationship of CAMH care and the possible indirect benefit items. Measurement and data availability issues of these items is put second place.

Not included in the framework are the comorbidity costs: If investments are aimed at recognizing mental health illnesses early, comorbid disorders can be prevented or the severity of the illness may be lowered. This means costs of comorbid disorders may be lowered, such as lower health care service costs. Since this was only found in one article (Kessler & Greenberg, 2002), and is only attainable with treatments aimed at early detection this is left out of the framework. (See appendix 10).
Measurement
As may be noticed, measurement methods and data availability of the indirect benefits are scarcely addressed in the framework (see appendix 10). A full discussion of each item was found to be unattainable within this thesis’ boundaries. However, the measurement methods of some saved costs items on the long term are identical to those of the related cost items on the short term. Such as the (saved) costs of health care service use and non-health care service use. Also, the measurement of any saved costs of labour participation is in accordance to that of the costs of lost labour participation addressed in chapter 5.1.2. Further, the QoL items included must be related to how much society values an increase in quality of life, identical to the discussion about the valuation of an increase in health (related quality of life).

To be able to include the effect of CAMH care on the possible indirect benefits listed, this would require that more outcome measures of MHC treatments should be included. Proponents of rehabilitation programs argue less focus needs to be on the reduction of the specific mental health problems (e.g. decrease of psychoses) and more focus needs to be on the young’s functioning in society (Gezondheidsraad, 2014). The outcome measure used should thus not only reflect one’s (mental) health (i.e. direct benefit), but their total wellbeing, including their degree of participation. However, we have to be aware of not placing a too high burden on the patients, their parents, and health care providers by measuring too much, as was emphasized by some respondents. We should assess which effects can be derived out of national databases. This assessment has not been made for the indirect benefit items in this thesis. But the Central Office for statistics (i.e. CBS) contains many data on for example criminality, substance abuse, and education participation.
6. Discussion

The first part of the research question addressed in this thesis: What are possible costs and benefits of treatment of child and adolescent mental health disorders? This thesis has listed the cost and benefit items found in the literature that might be associated with CAMH care treatment, complemented by the conducted interviews. This is an important step before we should move towards the measurement of the costs and benefits, because if we overlook an important item in the CBA, we might wrongly conclude that CAMH care generates a positive or negative balance on the welfare of society (Pomp, Schoemaker & Polder, 2014). It has been found that treatment of children and adolescents with mental health problems or disorders does not only result in costs of the mental health care services used and a gain in mental health, as may be the narrow vision of policy makers on which they base their budget allocation decisions. Moreover, children’s somatic health may improve. Beside these effects concerning the health care sector, there are many cost and benefit items outside the health care sector. The main items are related to the economic costs of education, employment and criminality, and the intangible costs not related to health, such as the ability to participate socially, a feeling of social inclusion and the amount of leisure time. These cost and benefit items are not only incurred by the child/adolescent under treatment. Also society as a whole may benefit for example from an increase in children’s/adolescents’ (future) productivity, a reduction in criminality, and a lower use of health care services on the long term. The literature also identifies parents (as patients and non-patients) as important actors; they incur both economic costs and gains, and may improve in their mental and somatic health. Thus, taking the societal perspective in CBAs is important to gain insight in the total costs and benefits associated with CAMH care.

When looking at the time of occurrence concerning costs and benefits, it is found that most costs are likely to occur in the short term, and most benefits in the long term. It has been demonstrated that the largest cost-benefit ratios of early childhood intervention programs were observed in research with long term follow up, since this allowed measurement of effects at older ages which offset the costs on the short term (Karoly et al., 2005). In addition, Jacobsen, Mulick & Green (1998) showed with their long term CBA that the long term monetary savings for families and society concerning interventions for children with autism and PDD-NOS (pervasive development disorder - not otherwise specified) made up for the costs on the short term. Thus, the long term horizon is of crucial importance, because if the authors did not take these long term effects into account this would result in a negative balance. However, most economic evaluations ignore the costs and benefits on the long term, since these do not yet occur in the relative short time horizon taken in most studies. Attempts of SCBA in CAMH care with a long time horizon, have only selectively included some cost and benefit items on the long term (Cohen, 1998; Scott et al. 2001), and may therefore give an underestimation of the true costs and benefits. Moreover, also the studies with a short time horizon use a selective set of the cost and benefit items found. This prevents a reliable estimation of the value of CAMH care, thus troubles good decision making.

The most researched items included in existing research are obviously the gain in mental health, and increasingly the effects on labour participation (of adults). Under researched items are the effects on education, criminality, substance abuse, and health care service use, which can be expected to be associated with high cost savings as suggested by COI studies. Reasons why former economic evaluations have selectively included some cost and benefits items and focused
mainly on the effects in the short term, mostly has to do with methodological and practical problems. I have therefore addressed some of the most important measurement and data availability issues. This relates to the second part of the research question addressed: What valuation difficulties do we face in the execution of full societal cost-benefit analyses in the future? The main difficulties found are related to the benefit items. First, the ground principle of CBAs, i.e. the monetisation of all effects, is also the one that is very problematic. Especially how to value health and other intangible effects, which is troubled by individual differences. In addition, there is discussion about the appropriate health outcome measure to value health. Currently QALYs are often used, but this outcome measure would not be sensitive enough to capture one’s mental health. Regarding the non-health intangible aspects, the ability to participate in everyday activities is an important determinant of a child’s quality of life (King, 2003). The activities can be related to education, recreation and leisure participation, but we lack methods to incorporate these effects on children’s participation. Second, there is the difficulty of obtaining objective data. In the Netherlands a move towards systematic registration of the effects of care is aimed for with ROM, but this data is still scarce, and different measures and measurement tools are used among care providers, which troubles its usability. Furthermore, the main focus in ROM and other research is on the gains in health (which is understandable), and not on the other effects previously stated. Especially data on the long term effects are lacking. Long term follow-up studies may be used instead, but these are also rare. Besides, inclusion of long term effects is troubled by a lack of proven causality between treatment and future effects. Because of these methodological and practical problems that problematize the execution of CBAs in the health care sector, it is observed that CEAs and CUAs were favoured between 1986 and 1996 (Anell & Norrinder, 2000). CEAs or CUAs are recommended to answer the question how to allocate the resources within the mental health care sector. In which specific intervention do we have to invest, to receive the greatest benefit for the money invested? (McCrone, 2007). But this question is preceded by the broader question ‘does it pay to invest in CAMH care at all’, or could we be better off investing our money in other sectors? This could be best answered with CBAs.

The results of this thesis can be considered a first start of moving towards the execution of full SCBAs. An inventory of the complete list of cost and benefit items related to CAMH care has not been done before, and thus contributes to the existing knowledge. Especially the inclusion of benefit items is currently lacking in economic evaluations, and this thesis can provide reasons for researchers to include more items relevant for their research group. The determination of the items can be seen as the preceding step of any economic evaluations. However, the list of items may not be complete because of the non-exhaustive literature review and the few interviews conducted in this thesis. Not all researches that could contain relevant items have been consulted, and the eight respondents questioned do not represent the total workforce. Regarding the interview data, the objectivity may have been lowered by the translation of the answers to the English language even though this was done as accurate as possible. Also the interpretation of the interview data may have been subject to some subjectivity, since I was the only reviewer. Further, as addressed, no respondents employed at a municipality or other governmental body were interviewed, who might could add insights from a different perspective. In addition the credibility of the items differ per item; some are more supported by the literature than others. Further research could complement, and strengthen the reliability of the list of items I arrived at. Second, other categorisations than the one adopted in this thesis may be possible. For example,
one may place the possible saved cost items, regarded in this thesis as benefits, under costs. This is to correspond with the measurement of the net costs/benefits (as addressed in chapter 3.6). I should also note that the indirect benefit items of the two actors distinguished from the rest of society (i.e. child/adolescent and parents/informal carers) could also contain benefits for the rest of society. For example, a higher productivity would also benefit society by a higher gross domestic product. Third, the project alternative proposed in this thesis is very minimally elaborated, i.e. ‘an investment in youth care’. How this is given shape and what policy measures are taken precisely, can result in a shift of costs/benefits between actors which should be made visible in the distribution effect. For example, when more competition is introduced in the MHC sector, this might result in a shift of costs from patients/tax payers to health care providers/health insurers. If the distribution effects do not completely cancel each other out, it can result in a negative or positive net balance for society which should be included as an additional cost/benefit item.

It is important to notice that this study states theoretical possible cost/benefit items related to CAMH care. Whether or not costs/benefits are actually made, and to what extent, depends on several factors (see chapter 3.7). The effectiveness of the intervention is an important determinant. However, the effectiveness of interventions is often still unknown. In the Netherlands we try to move towards evidence based practice, which means only those interventions are offered that are proven to be effective. The Dutch Youth Institute (NYI) has set up a database for effective interventions for youth, which consist of several levels of accreditation. Currently, little over 200 interventions are included. However, only a few of these interventions accredited the level of ‘probably effective’ and ‘established effective’ (“Effective youth interventions”, 2012). Thus, more effectiveness studies are necessary to assign a realistic amount of costs and benefits to the CAMH care intervention under research. Further, the relevance of the items depends on the CAMH care intervention and disorder under research. Research on specific disorders and interventions may lead to a selection of these items, and may comprise additional items. This research may also be extended to youth social service care, provided to children and adolescents with pedagogic, social and development problems. Then as well, other cost and benefit items may be added, whereas other items may be less relevant, such as a psychiatrist consult. Since it will be very cumbersome to measure and value all the related costs and benefits, researchers should first roughly estimate the values of the items after which to include the one’s with the expected largest value for their research group. Some items are naturally associated with higher cost/benefits than others (e.g. the transportation costs will shrink into significance compared to the direct cost of lost productivity). In addition ‘care’ services, in contrast to cure interventions, may be related with little benefits, since these are provided to children with long term problems difficult to cure.

After the list of items is completed and the relevant items are determined, the measurement difficulties should be overcome to also enable the inclusion of these items in the economic evaluation. This thesis has partly addressed measurement and data availability aspects, but this is not completed yet for every item. Especially in the discussion of the indirect items very few measurement methods are discussed, as well as data availability issues. This is, because the evidence of the effects CAMH care can have on the indirect benefit items stated is scarce. Thus, in this thesis, the focus lay on establishing any theoretical evidence on the existence of the relationship between MHC care and these items. The incorporation of these effects can be
ground for further research. However, the blank boxes in the framework may already be largely filled based on existing research which is not reviewed in this thesis. Thus, this limitation calls for further efforts to fill in the gaps of the established framework. Especially more information is necessary on sources of existing data, or collection methods to obtain the required (intangible) data – keeping in mind not to place a too high burden on professionals and patients with endless questionnaires. Second, to help solve the difficulties related to appropriate measurement methods and tools of the intangible effects, and their monetary valuation (which is currently lacking the most) further research is necessary. Because we are not (yet) able to express all effects into monetary terms, and thus cannot be included in the net balance we have to refer back to this when there is a negative net balance; this means bring in the soft sides of the numbers. As to overcome the lack of data, more effort of health care providers to register data (e.g. with ROM) is called for. We might also expect from patients who are capable, to cooperate in questionnaires if MHC treatment is made accessible to them at no or low cost. Also, to improve the consistency in the outcome measures and measurement tools used, more cooperation is required between providers. The general government and municipalities can play a supporting role in this, by for example providing subsidies for research on the most appropriate outcome measures and tools.

For realistic estimations of costs and benefits of an intervention, researchers could distinguish for children who achieve normal functioning, moderate gains, or few gains, and attribute different effects to these groups, as done by Jacobsen et al. (1998). It might also be recommended to use conservative numbers when attributing benefits to an intervention, despite its proven effectiveness. This is, because we might wonder if children are ever able to obtain the level of cognitive abilities needed to participate in this knowledge based society and the associated welfare, despite the resources invested in them. For example, the average labour wage used to estimate the saved costs on labour participation holds a principal of equality. This means the averages are established out of all career levels and occupations. But the average may not apply to the (severe) mentally ill, even after treatment, because they might never attain the level of a CEO (included in the average). Instead, 80% of the average wage may be attributed. We should also be aware of double counting; the categorisation and definitions used in this thesis may allow some costs to be included in more than one item, depending on the costs prices used. E.g. if one measures health care service costs with DBC tariffs, and criminality costs based on CBS cost data, both include juvenile justice costs.

If the difficulties surrounding CBAs can be overcome and full SCBAs are attainable, these can be a helpful information source for policy makers to make socially worthwhile resource allocation decisions. However, research has shown that the use of economic evaluations in health care is limited, especially at the local level (Eddama & Coast, 2008). The local level can be defined as the bodies or actors within health care organisations or the health care providers, but it may also apply to the municipalities, becoming the responsible parties for youth care. Eddama & Coast (2008) found that obstacles of the use of economic evaluations in health care are linked to three factors. (1) Institutional and political: The most severe barrier was found to be the inflexibility of the budgets. For example, even though economic evaluations may show it is more effective on the long term to spend money on out-patient treatment than on in-patient treatment, in practice this is not always possible because of resource and budget constraints. Especially in CBAs where health is monetised, many interventions will end up to be beneficial if gains in health are achieved which are highly valued. This would imply an uncontrolled growth in health
care expenditures, for which we simply do not have the (monetary) resources. Jacobsen, Mulick & Green (1998) state that the resource constraint may in practice lead to non-optimal provision of treatment, e.g. forced early termination, or reduction in treatment intensity. In light of limited resources, we might decide to invest in the children who are most likely to respond the most to a specific treatment, but this requires more research on the predictions of treatment responsiveness. Another institutional and political obstacle found by Eddama & Coast (2008) was the requirement to follow national policies, which might not be in line with the results of economic evaluations. For example, even though some forms of GP care are not proven (cost) effective, government dictates this should be made available to every citizen.

The second factor that prevents the use of economic evaluations is (2) cultural related: In practice, people value effectiveness over costs, and value the individual over society. Thus money does not always overrule our humanity, even though the net balance of an intervention is negative. In developed countries it would even be perceived unethical to not invest in children who appear to create more costs than benefits. Furthermore, there is often a lack of time to make thoughtful decisions that allow the use of economic evaluations. The last factors are related to (3) methodology, associated with the economic evaluation itself: Decision makers feel studies are poorly conducted, e.g. non-realistic assumptions are taken. One helpful development to improve the reliability of economic evaluations may be the developed CHEERS (Consolidated Health Economic Evaluation Reporting Standards) statement (Husereau et al., 2013). This is a checklist for researchers on how to report their economic evaluations, set up by prominent (health economic) researchers. Wide use of this guide should lead to more consistent and transparent reporting of health economic evaluations, which should facilitate interpretation and comparison for researchers and thus lead to improved quality of economic evaluations. Further Eddama & Coast found there is a lack of relevant economic evaluations for the type of decisions decision makers face, among which is the societal perspective taken which might not always be seen as applicable on the local level. That is why a distribution effect should always be included in CBAs to account for other perspectives (Pomp, Schoemaker & Polder, 2014), which should make the evaluations also valuable for local decision makers. The article of Eddama & Coast (2008) thus addresses important prerequisites for the use of economic evaluations, and researchers and decision makers might work more closely together to improve the usefulness of economic evaluations.

In conclusion, there is still a long way to go to be able to conduct full societal economic evaluations with a long term horizon and to increase their usefulness. In light of the current difficulties faced when conducting CBAs, the resulting net balance will be surrounded by rough estimations and (non-realistic?) assumptions and thus must be put in perspective. This thesis may help to improve the reliability of the results, by identifying primarily the theoretical possible cost and benefit items that could be related to CAMH care. This step precedes any CBA, since before we can measure anything we need to know which costs and benefits should be included to prevent an underestimation of the costs and/or benefits. In the end SCBAs can be helpful to show if the resources currently spend on CAMH care are spent socially worthwhile. Even though some perceive the reduction of (mental) health care into monetary gains as unethical, we have to set priorities with the limited resources given. These choices we make could better be supported with numbers.
References

Online rapports and website


Cost Benefit Analyses in the Field of Child and Adolescent Mental Health Care
Cost Benefit Analyses in the Field of Child and Adolescent Mental Health Care


**Literature**


Bouwmans & Van Roijen (2013). *TiC-P Volwassenen.Vragenlijst over zorggebruik en productiviteitsverliezen bij psychische aandoeningen*. Erasmus University Rotterdam, iMTA.


Cost Benefit Analyses in the Field of Child and Adolescent Mental Health Care


Cost Benefit Analyses in the Field of Child and Adolescent Mental Health Care


APPENDIX 1
Steps cost-benefit analysis

De acht stappen van een MKBA *:

1. Probleemanalyse
2. Nulalternatief (kosten en baten bij gelijkblijvend beleid)
3. Omschrijven maatregel
4. Bepalen kosten van maatregel ten opzichte van trendsenario
5. Bepalen baten van maatregel ten opzichte van trendsenario
6. Presenteren overzicht kosten en baten maatregel (saldo, maar ook overzicht wie betaalt en wie ontvangt, en verdelingseffecten)
7. Varianten en onzekerheidsanalyses (o.a. gevoeligheid voor aannamen, PM posten)
8. Presenteren en interpreteren geheel

* Faber & Mulders splitsen het kwantificeren van effecten en het monetariseren in twee aparte stappen. Net als in de CPB/PBL leidraad (waarover meer in hoofdstuk 3) hebben we ze hier samengenomen.

Source: Pomp, Schoemaker & Polder, 2014
Based on Faber & Mulders, 2012

Source: Romijn & Renes, 2013
Cost Benefit Analyses in the Field of Child and Adolescent Mental Health Care

Source: Ecorys & Verwey-Jonker Instituut, 2008
APPENDIX 2
Possible project alternative

The relative share of four groups of families (combinations of problems and use of youth care), broken down into the life years of the child

Source: SCP, 2013
(Based on CBS/SCP (OJO 2011))

The figure above shows the use of the former second line care (i.e. MHC and hospital care) for children between 0 – 17 years old. The red bar indicates the amount of children with severe problems, and who are in care. The purple bar indicates the amount of children with no severe problems, but who are nevertheless in care. The yellow bar indicates the amount of children with severe problems, but who are not receiving care. This figure suggests there is both a form of over treatment, as well as under treatment. Since the group who is under treated is larger, and mental health disorders are associated with extremely high costs for society (measured with COI studies), the possible project alternative suggested to solve the high costs of (youth) care on the long term is to invest in CAMH care; lower the access of services for children who are in need of care.

General investments in CAMH care can be given shape with several policy measures, such as:
- Include more CAMH care in the basic health care insurance, such as prevention treatments. In the Netherlands, GP-care, including the MHC offered by the GP and POH-GGZ, is already included in the basic health care insurance.
- Lower the own risk that needs to be paid by patients. In 2014, patients need to pay the first €360 of the costs they made themselves, even though they are insured. This applies for GB- and specialized-MHC, and for some medicines.
- Lower the own contribution patients need to make. For example, parents currently need to contribute to out-patient MHC facilities, and an own contribution on medicines can be required. The own contribution on psychological care and e-health patients needed to make in 2013 are abolished in 2014.
- Increase the personal budget (PGB) which patients can apply for to buy in their own care.
- Increase the healthcare benefit (in Dutch ‘zorgtoeslag’) patients receive.

To avoid a further increase of provision of care to children who are not in need of CAMH care, we must carefully look at the causes of the phenomenon of over and under treatment. I refer to the rapport of the SCP (2013) for reasons children and adolescents who are in need of MHC are currently not in care. Investments can be focused on tackling these specific problems.

However, an investments means extra expenditures for the government, which must be compensated with other measures such as:
- Increase of taxes
- Decrease spending in other areas of health
  - E.g. exclude other services from the basic health insurance, such as household services, or increase the patients’ contributions of general hospital care.
- Decrease spending in other sectors
  - E.g. cut back on development aid, or military spending.

Next to the effects of CAMH on the welfare of society, the policy measures proposed to create the system that enables this care also generate effects, such as:
- Increase of taxes is a form of collective financing, which can affect the participation rate (more tax, lowers the motivation to work). If the marginal costs of public funds, such as the costs associated with a restrain to participate, need to be included in a CBA is still debated. See Pomp, Schoemaker & Polder (2014).
- The (temporary) negative effects of an investment in CAMH care on the budgets available for the Ministry of Healthcare, provinces and the responsible municipalities, are important information for their policy. These effects must be made visible in the distribution effect. This is also called the ‘budget impact’. However, if on the long term the benefits outweigh the costs, these costs are not important from the societal perspective.
- Besides the effects CAMH care generates for the patients and other citizens of society, the policy measures taken to supply this care can also have effects, which must be included in the costs and benefits to measure the total impact of a project alternative on society. Since the aim of this thesis was not to conduct a CBAs, and thus no policy alternative was worked out, the effects of any policy measures on the costs and benefits are not included. For example, if the taxes are raised to finance an investment in CAMH care, the spendable income of individuals decreases. Also income dependent contributions may be introduced, or GP-care can be taken out of the basic health care insurance. Such decisions affect the welfare of individuals, and may affect the supply and demand of care and non-care products which can have consequences for the economy.
APPENDIX 3
Total budget and number of clients in youth health care which are transitioned to the municipalities in 2015

2015 Totaalbudget en cliënten jeugdwet naar gemeenten

Totaal budget € 3.868 mln.

Gesloten jeugdzorg (jeugdzorg plus)
Gefinancierd vanuit het Rijk

1.240 cliënten
€ 134 miljoen
€ 55.800,- gemiddeld per cliënt

Jeugdbescherming, jeugdreclassering
Gefinancierd vanuit de provincies

66.500 cliënten
€ 361 miljoen
€ 5.800,- gemiddeld per cliënt

Jeugd & Opvoedhulp
Gefinancierd vanuit de provincies

71.300 cliënten
€ 1.234 miljoen
€ 17.300,- gemiddeld per cliënt

AWBZ-zorg voor jeugd
Gefinancierd vanuit de awbz *

80.500 cliënten
€ 1.151 miljoen
€ 14.300,- gemiddeld per cliënt

Jeugd geestelijke gezondheidszorg (j-gaz)
Gefinancierd vanuit de zorgverzekeringenwet

267.500 cliënten
€ 988 miljoen
€ 3.700,- gemiddeld per cliënt

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APPENDIX 4
Changes in the mental health care system in 2015

Veranderingen Geestelijke Gezondheidszorg 2015

Curatieve GGZ
Gefinancierd via Zorgverzekeringswet (Zvw)

Jeugd GGZ
Gefinancierd via Jeugdwet

Langdurige GGZ
Gefinancierd via WLZ
Langdurige GGZ met recht op verblijf, Geen vergoeding van behandeling buiten de instelling

Patiënten met minder dan 3 jaar verblijf

Source: Website NZA, see http://www.nza.nl/zorgonderwerpen/zorgonderwerpen/langdurige-geestelijke-gezondheidszorg/Uitgelicht/
APPENDIX 5

Direct costs inside health care

In the literature, different terms are used to account for the direct costs inside health care. Some refer to ‘direct costs’, which reflect the payments made to treat the mental disorders (DuPont et al. 1996), and others use the term ‘health costs’ (Pelham, Foster & Robb, 2007). But in all economic evaluations and cost-of-illness studies this cost factor represents the costs incurred in the health and mental health care system. (McCrone et al., 2008; McCrone & Knapp, 2007; Pelham, Foster & Robb, 2007; Greenberg & Birnbaum, 2005; Greenberg et al., 1999; DuPont et al. 1996; Souetre et al., 1994; Rice, Kelman & Miller, 1991; Stevens, 2014; Dimond & Hyde, 1999; Edwards et al., 2007; NZa, 2014). Thus it is generally accepted to include also non-MHC costs, since MH disorders and/or treatment also affect the use of general health care. More than half of the youth receiving MHC, also receive somatic health care (“Jeugdwet memorie van toelichting”, 2013). As mentioned, the general health care services are included under the direct costs to be consistent with practice, and previous research.

The cost outcomes that can be distinguished in these studies are:
- Emergency –department, and surgery
- In-patient care general health care (hospital care)
- Out- patient general health care
- Primary care /routine) physician contact (such as GP visits)
- Research costs
  ▪ Federal expenditures for medical and health services research
- Diagnostic and laboratory tests
- Costs of MHC institutions
  o In-patient MH care (i.e. hospitalization)
  o Out-patient MH care (e.g. therapy)
    ▪ Personnel cost physicians, including reimbursed travel time and travel expenses
    ▪ Costs for the employer (social contributions and taxes)
    ▪ Overhead costs (e.g. costs additional staff, administration costs, telephone costs, material costs etc.)
    ▪ Cost of capital (i.e. interest, depreciation and rental costs)
- Community Mental Health teams
- Pharmacological treatment
  ▪ Medication costs
  ▪ Medication prescription/service/visits
  ▪ Medical claims due to accidents
- Implementation costs of MHC programs/treatments (non-recurrent costs)
  ▪ E.g. registration, set-up costs/management costs, telephone calls, and training costs of program leaders/professional (including materials, training course fee, and time at training, travel time to training and mileage costs to attend training for professional)
- Social care services – as a supplement to or result of MHC treatment/program
  - E.g. Foster care, home visits, counselling
- Opportunity costs (costs of foregone investments in other activities)
  - E.g. of staff involved, and of accommodation used.

As stated, the reporting of the direct costs differs in almost each economic evaluations or cost-of-illness studies of MHC disorders. They distinguish different cost categories, they differ in the detail of these, and use different terms. This might result in some overlap of costs between these items, because the definitions/terminology used may overlap. Further, to be clear, travel costs (time and transportation) are only included under direct costs inside health care under the assumption that these costs are fully compensated to the professional, and thus part of the personnel costs that are incurred inside the health care sector. If there are any non-reimbursed travel costs incurred by the professional himself, these would fall under the direct costs outside health care (see chapter 5.1.2).

In chapter 5.1.1 the possible cost item that was raised by one respondent was addressed. That is, the costs of negative side effects of medication prescribed, as part of the treatment. In addition to the costs items found in the literature, the costs of negative side effects of medication prescribed might be further researched if these are relevant to include. This can be a realistic cost item. Costs of negative side effects are related to additional health care service use. Negative side effects can be for example a higher risk on somatic diseases, due to a higher cholesterol level or a gain in weight etcetera. A gain in weight is a frequent side-effect of the anti-psychotics Risperdal (Risperidon), Dipiperon (Pipamperon), Orap (Pimozide) and the anti-depressant Seroxat (Paroxetine) which can be prescribed for people with autism (Ramesar, 2006; Hoekstra et al. 2010). And almost all anti-depressants, mainly prescribed for people with depressive disorders, report a gain in weight. Also, it has been proven that SSRI’s (form of anti-depressants) prescribed under the age of 18 years, increase the risk on suicidality. In table 1 the amount of psycho pharmaceuticals that were prescribed to youth under the age of 21 in the year 2012 in the Netherlands is represented.

Daily, 200 people need to be hospitalized due to the side-effects of medication. This number has increased fivefold in the last ten years. This has been linked to the trend in our society to condemn every ‘normal problem’ into a medical problem; medicalization. The health organization in the Netherlands, recently reported on the growing number of youth diagnosed with ADHD, which is accompanied with a growing use of medication, especially methylphenidate (Ritalin) (Gezondheidsraad, 2014).
Increased use of pharmaceutics leads to higher costs which must not be underestimated. Prescription of pharmaceutics is a frequent (part of) treatment in the MHC. Also since the change of relapse after the stop of among others anti-psychotics is high, maintenance treatment is sometimes given, which means medication is prescribed for some years. Also the drugs may lose their effectiveness over time, suggesting the start of pharmaceutics again. This can lead to considerable long term financial costs, next to the side effects of drugs. In a research by Greenberg et al. (1999) they estimated the economic burden of anxiety disorders in 1990 in the U.S., and estimated the yearly costs of prescribed pharmaceutics for anxiety at approximately $760 million dollars, based on the year 1990.

**Measurement and data availability**

To measure the direct costs of CAMH care treatments two types of information are required. That is the quantity of the behaviour or outcome that creates the costs (e.g. the number of children visiting a psychiatrist), and the per-unit costs of that behaviour or outcome (e.g. the hourly wage of the psychiatrist) (Pelham, Foster & Robb, 2007). This is not only needed to measure the costs inside the health care sector, but also to measure the (saved) costs in other sectors (e.g. in the education system). The most important criteria for the choice of the volume measurement and the valuation method are the representativeness of the data, the generalizability of the data, the impact on the total and incremental costs and the availability of the data (see Hakkaart-van Roijen et al., 2011; page 21 -22).

The valuation of the direct costs inside the health care sector will be the most accurate compared to the other cost categories, since there is a direct relationship between the amount of care provided and the costs, and there are many data available because health care professionals are obliged to register all activities. One of the possible data sources the cost manual refers to, to measure the amount of health care used, is the DBC system.

**DBC system**

The DBC system was introduced in 2005 in hospitals, but only recently mandatory in the MHC sector in 2013. The DBC system contains activities related to pre-intake, diagnosis, treatment, support, nursing, indirect time, crisis interventions, in-patient care, daytime activities and other activities. For a detailed overview I refer to the ‘Spelregels DBC-registratie ggz - 2014’ by the

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**Table 1. Most used psycho pharmaceuticals by youth until 21 years old in 2012 in the Netherlands**

<table>
<thead>
<tr>
<th>Rank</th>
<th>Pharmacutic</th>
<th>Application</th>
<th>Users</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Methylfenidaat</td>
<td>ADHD</td>
<td>130.000</td>
<td>750.000</td>
</tr>
<tr>
<td>2.</td>
<td>Risperidon</td>
<td>Antipsychotic</td>
<td>15.500</td>
<td>90.000</td>
</tr>
<tr>
<td>3.</td>
<td>Diazepam</td>
<td>benzodiazepine</td>
<td>15.000</td>
<td>21.500</td>
</tr>
<tr>
<td>4.</td>
<td>Oxazepam</td>
<td>benzodiazepine</td>
<td>9.200</td>
<td>15.700</td>
</tr>
<tr>
<td>5.</td>
<td>Atomoxetine</td>
<td>ADHD</td>
<td>5.300</td>
<td>36.500</td>
</tr>
<tr>
<td>6.</td>
<td>Temazepam</td>
<td>benzodiazepine</td>
<td>5.300</td>
<td>8.800</td>
</tr>
<tr>
<td>7.</td>
<td>Fluoxetine</td>
<td>Ant depressive</td>
<td>4.000</td>
<td>18.300</td>
</tr>
<tr>
<td>8.</td>
<td>Pipamperon</td>
<td>Antipsychotic</td>
<td>4.000</td>
<td>14.250</td>
</tr>
<tr>
<td>9.</td>
<td>Citalopram</td>
<td>Ant depressive</td>
<td>4.000</td>
<td>18.000</td>
</tr>
<tr>
<td>10.</td>
<td>Quetiapine</td>
<td>Antipsychotic</td>
<td>3.500</td>
<td>17.900</td>
</tr>
</tbody>
</table>

Source: SFK, 2013

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Cost Benefit Analyses in the Field of Child and Adolescent Mental Health Care
NZa (2013). Specific cost indicators which are not incorporated in the DBC system are care after a patient dies (e.g. closing a file), public MHC (i.e. care not based on a specific demand of care), collective care (e.g. education of young people on psychiatric complaints) and forensic MHC (FMHC, i.e. care for criminal suspects and offenders; care imposed by the juvenile justice system is incorporated in the DBC system). So we have to collect this additional data to get a reliable image of the total amount of health care used, if we use the DBC system as a data source. However, the DBC data is not publicly available. To get access to this data, health care providers must be willing to cooperate. GGZNl, the branch organization of MHC providers, do has excess to the DBC data of their affiliated members.

The DBC system could thus be used to assess the quantity of MHC used to a certain extent, but it is important to note that the DBC remuneration tariffs are not recommended as a cost valuation method for economic evaluations (Plomp, Schoemaker & Polder, 2014). The tariffs should represent the true cost prices, but this might not be the case. One reason is that for the so-called performance DBCs, there is no fixed remuneration tariff. These tariffs are established out of negotiation between the insurers and the MHC provider, and are thus not only based on the true cost price. Also, the tariffs can include elements of macro budgeting and income policy. Further, the tariffs are based on the average costs, but there might be a high standard deviation due to differences in the patient population. With the transition it is intended to provide CAMH care only to the more severe patients, which will lower the standard deviation, and with the proposed project alternative it is intended to lower the access to CAMH care, which will increase the standard deviation. A high standard deviation is not necessarily problematic, if there is a right balance of children and adolescents with severe and minor problems in care. Last, the actual cost prices can differ among providers, depending on for example the allocation method the organizations use and their organisation structure (Tan, 2009; Plomp, Schoemaker & Polder, 2014; Hakkaart-van Roijen et al., 2011).

One respondents also raised the issue of the accuracy of the DBC tariffs. “If a patient is referred to MHC by a psychologist, for medication from a psychiatrist, only the medication prescription is given. While at the CAMH care institutions a new DBC is opened in which several care activities are included and thus comes with a similar price level.”

Related to this, there was also critique on the DBC as the remuneration system by one respondent, an psychiatrist. “Parents do not feel they have to be in treatment. What you could do as a psychiatrist then is, you could take a little bit more time for the consult and ask the parents to join their child. Then you can educate them on the medication, and how this fits in to the whole picture. But I cannot claim these costs at the insurer, though it would be a much better treatment. For CAMH care it is of continuous importance that the parents participate.”

Last, one respondent addressed not all mental health care provided is reflected in the DBC registration. Besides the care provided by a POH-MHC, there are sometimes also MHC-professionals active in the social district teams, as a result of the changes in the youth healthcare system. Whether this is the case differs per region. “Those (social district teams) are remunerated on a different base and is not visible in the DBC system. So it could be that we have less insight into the production of a social district team”. (This form of MHC is represented by the cost item of ‘Community Mental health team’ (mentioned by McCrone & Knapp, 2007).
Questionnaires

One can also measure the care volume of patients with questionnaires. Bouwmans et al. (2012) developed a questionnaire to measure the care consumption of children in need of intensive youth care and their parents, and is specifically fit for economic evaluations of system therapy interventions for youth. Questionnaires can be a helpful source to measure the care consumption, and relevant costs. The direct costs can then be calculated with the questionnaire responses and the reference prices included in their manual. This questionnaire also measures the productivity loss of the parents, possibly due to their child’s need of care (see chapter 5.2). Other useful questionnaires to measure the direct costs are the Tic-P questionnaires. One is set up for adults with psychiatric problems, and measures the consumption of care and their productivity loss (Bouwmans & Hakkaart Van Roijen, 2013). This questionnaire is adjusted for a survey among young people with AD/HD, and measures their consumption of care, and their time lost on school and other activities. This questionnaire has again been adjusted to be able to measure these aspects for youth with psychiatric problems for a more broader application, the Tic-P for children (Bouwmans, Schawo & Hakkaart-Van Roijen, 2012). These questionnaires contain questions like: “Has your child been admitted to an institution inside the health care in the past three months?” (translated from Dutch). See appendix 13 for a part of the Tic-P questionnaire suited for youth with psychiatric problems.

Even more valuable are questionnaires with several follow ups to generate large data bases, that help to research long term effects. In the Netherlands long term studies are rare. The TRAILS studies provide probably the richest source of data. TRAILS stands for Tracking Adolescents' Individual Lives Survey, and is “an ongoing, multidisciplinary research on the psychological, social and physical development of children towards adulthood” (www.trails.nl). In this database, data of nearly 2900 people are registered, since their tenth year.

Reference prices

To acquire the per-unit costs, own cost-research is always favoured above existing cost prices (i.e. registrations of health care providers, the NZa remunerations, market prices, national registrations, literature and reference prices). Especially when the cost items are a large part of the total costs. However, own cost-research is very time consuming. For economic evaluations conducted to contribute to decision-making on national level, reference prices are preferred. Reference prices are the average cost prices of activities, such as the screening of a patient. These prices are established on the basis of a large, diverse patient population. However reference prices do not account for differences among patients and care intensity.

Reference prices can be used to measure the personnel costs of the professionals contacted by children and adolescents, with mental health illnesses, and their parents. Due to guidelines established in CLAs (collective labour agreements), there will be relatively little salary differences on the national level within professions, thus the average will be a good representation of the true salary costs. Research on the remuneration tariffs established by the NZa showed that the personnel costs account for almost 80% of the total expenditures on MHC (NZa, 2014), see figure 1.
In the cost manual of Hakkaart-van Roijen et al. (2011) they included reference prices for the hourly wages of mental and general health care professionals contacted, and also for other care units, such as an in-patient care day (see chapter 9). The reference prices in the manual are updated for the price level of 2009. These prices can be used in economic evaluations, when updated for the current price level. These prices are already indexed for the price level of 2010, in the manual “Vragenlijst Intensieve Jeugdzorg” by Bouwmans et al. (2012) (see table 1, page 13/14). The reference prices that are included in this manual are based on a list of all possible health care workers and organizations a child in need of intensive youth care and his/her parents can make an appeal to (see page 11 and 19 for the list). In the Netherlands a visitation of a psychologist requires a contribution of the patient of €10, which is included in the reference price of a psychologists in the cost manual. When one wants to represent the distribution effect, these costs needs to be excluded to portrait the cost for the government agencies (or tax payer) of the subsidized health care sector.

Figure 1. Cost components of tariffs GB MHC
Source NZa, 2014
APPENDIX 6

Direct costs outside the health care sector

In the manual for cost research (Hakkaart-van Roijen et al., 2011) they distinguish three forms of direct costs outside health care. These are travel expenses, time costs and other costs (see chapter 5, page 66 -72).

- Travel costs are the transportation costs, which depends on the transport system, the travel distance and the frequency.
- The time costs represent the time lost due to treatment, which can be divided into time loss for the patient and for the informal caregivers. A distinction can be made between time directly invested in treatment (direct costs) and the effect on ones’ time allocation and productivity (indirect cost) (Gold, 1996). According to the cost manual the valuation of the direct and indirect time costs is identical, so they do not make this distinction. I will include indirect time costs under this heading as well for the discussion of the valuation. The authors do however, distinguish several forms of time costs, which must be valued differently. These are lost leisure time, lost time of paid work and lost time of unpaid work.
- Other costs the authors come up with are costs of special nutrition, vitamins on prescription, facility adjustment in the house, buying new clothes due to a weight loss as result of heavy treatments, day care, and transport costs of door to door delivery of pharmaceuticals.

I will now assess if these costs are also raised in the literature, and if possible other costs are raised in the literature and by respondents. Especially the ‘other costs’ raised in the cost manual may not be relevant for mental health care.

Studies that analyse (the cost-effectiveness of) mental health programs, can be used to assess if the literature includes direct costs outside health care. Behavioural family interventions (BFIs), to assist children with mental health problems, are one of the most extensively evaluated interventions (Sanders & Turner, 2005). Dretzke et al. (2005) analysed the (cost-) effectiveness of parent training/education programmes for treatment of children with a conduct disorder. Among others, they reviewed previous economic/cost evaluations on parent programmes. Seven studies were found to be relevant (see chapter 5, page 57). I looked at whether these studies also included costs of treatment which can be considered direct costs outside health care, next to the operation costs of treatment (direct costs inside health care).

The direct costs items outside health care found in these studies are:

- Travel time for the client
- Mileage (transportation costs) for the client
- Parking expenses for the client
- Treatment time for the client
- Time spend on treatment-related ‘homework’ exercises for the client
- Crèche/babysitting costs for the client
- Time costs for volunteered personnel
- Treatment fees for the client
- Telephone calls made by clients to the professionals or program director
- Psychological costs
Not one study include all these costs, but again a selection is made in each study. To be clear, only the treatment time, travel time and transportation costs of the patients and informal carers are included here, since I assume the time and travel costs for the health care professionals are remunerated and are thus included in the personnel costs inside the health care sector. Further notice that any own contributions to the medical costs that are required of the patient are categorised under the direct costs outside the health care sector (Hakkaart-van Roijen et al., 2011). These own contributions are part of the total cost price of the (medical) treatment and should be added up to the remuneration tariffs received from the health insurer to reflect the total societal cost of treatment (Aos et al. 2004). Also for the distribution effect, own contributions of patients should be made visible, even though these are not relevant from the societal perspective.

Some studies use the category ‘opportunity costs’ (Siegert & Yates, 1980; Dimond & Hyde, 1999). These cost represent the loss of potential gain if invested in other activities. Dimond & Hyde use this term to refer to the loss of earnings, loss of leisure time and loss of un-paid work time (such as child care incurred as a result of attending sessions). Siegert & Yates do not define this term so clearly. Instead the authors combine the opportunity and ‘client costs’ to refer to the time and other costs. So, I did not use the term opportunity cost, but instead reported these costs separately.

In conclusion, travel and time costs, as distinguished in the cost manual, are included in these economic/cost evaluations of MHC programs. Other costs that are raised, are the costs of day care, telephone calls, treatment fees, and psychological costs. As regard to the ‘other costs’ that are raised in the cost manual, only the day care costs are thus found in the literature. The ‘other cost’ example of buying new cloths due to a weight loss, could however be conceivable in children with anorexia nervosa. A gain in weight might also be experienced, due to other eating disorders (bulimia) or as result of side effects of medicines (e.g. anti-depressants). One additional cost that was raised by one respondent are the costs of staying overnight in a hotel, if treatment is far away.

**Psychological costs**

With psychological cost of treatment, as distinguished by Dimond & Hyde (1999), they mean costs associated with the stigma of attending a program. The authors call this disbenefits of treatment. Dretzke et al. (2005) also raise “distress/loss of self-esteem for clients unable to attend a programme” as a disbenefit of treatment (page 13), but they do not explain this, nor refer to the source they attained this from.

The psychological costs of treatment must not be overlooked. Dutch research showed that about one quarter of people with a severe psychiatric disorder experience discrimination with finding or maintaining a paid job (GZH, 2014). Also, this research shows that because they are afraid to be rejected, a quarter of the people with a severe psychiatric disorder and two third of people with schizophrenia do not even apply for a job. Another research shows that young people with a mental disease are granted a lower level of work capabilities by the insurance doctor than youth with a somatic impairment (GZH, 2014). Thus an increase in diagnosing and treating people with a mental disorder, might lead to costs outside health care, such as social security costs for the state and a decrease of quality of life (QoL) for the patient because it is harder to find a job.
One respondent addressed the psychological costs of treatment, for which he also brought a solution to lower the costs. “Early treatment can have consequences. Labels can work disruptive. But there are also models developed to offer psychiatric care, which are evidence based, but which do not come on as very psychiatric. (...) At the moment interventions are created that are somewhat fun, and have a low medical feeling, but which do have a clearly preventive character. ” With these forms of interventions, we could thus possibly avoid any negative consequences of early treatment. However, the problem with these preventive psychiatric interventions is, as the respondent went on, that in the Netherlands these cannot be financed, since health insurers first need a person to be diagnosed with a DSM disorder. The insurers are not willing to pay if there is no evidence of any benefits of these kind of treatments. Thus, the current MHC system does not stimulate early or preventive treatments.

**Time costs for children/adolescents, parents and informal caregivers.**

We must distinguish between time loss for the patient and the informal caregiver(s), because these are valued differently. In CAMH care the patient is often not only (1) the child or adolescent, but also (2) the parent(s). If the child/adolescent is in treatment, this might come at the expense of education hours (education costs). School absence can lead to remedial teaching hours (hours spend by teachers to brush up the students’ learning disabilities) and/or a loss of school performance. It can also come at the expense of his/her leisure activities (e.g. sport activities, play dates with friends). This can be, because treatment is given outside school hours, or when the loss of education time requires them to catch up on their homework, or even need additional education hours outside normal school hours. Adolescents might also experience a productivity loss when they have a part-time job, or would like to have a part-time job but are hindered by their treatment. In the Netherlands 57% of the school-going youth (15-25 years old) had a part-time job, of at least one hour in the week (Korvorst, 2013). Treatment might result in a time loss on paid work, or treatment might influence whether or not it is even possible for the youth to attain a part-time job.

If the parent(s) are (also) in treatment, they too may experience a productivity loss if they are employed. If they catch up the time taken off work, treatment comes at the expense of their leisure time. Treatment may also come directly at the expense of their leisure time, if treatment is scheduled during out of office hours. Also the time for unpaid work activities, such as household chores and child care, might diminish. Parents will still incur (some of) these costs when treatment is not specifically aimed at them. Especially with young children, the parents need to enable treatment by driving them to the location, wait in the waiting room or attend treatment, filling in questionnaires etcetera. In general, parents’ QoL might diminish because they have to adjust their personal life for their child’s treatment. In a study of Greenberg et al. (1999), in which they assess the costs to society of anxiety disorders in adults, the authors divide the loss of productivity costs into at-work-productivity and absenteeism costs. Strictly taken, a loss of direct time only consists of absence costs, whereas a loss of indirect time can also exists of inefficiency costs. Inefficiency costs are costs related to reductions in at-work productivity, because a parent might be less focused on work after he returns from treatment. These costs are also referred to as ‘presenteeism’ (Greenberg & Birnbaum, 2005). It should be assessed if the absence and inefficiency costs increase due to treatment, because these costs also exists without treatment (Greenberg et al., 1999).
Next to being part of the treatment, parents are also informal caregivers, for example medication aid may be required. Next to the parents, there might be other informal caregivers. These might be brothers, sisters, grandparents, other family members, friends and neighbours. They might need to babysit the child with the mental disorder when the parents must visit the professional, or babysit its brothers and/or sisters. Regarding the costs of informal care, one interview respondent mentioned that time spend on informal care might not necessarily be seen as costs for everyone. For example, the grandfather or grandmother who is with retirement might feel like he or she is still of value, and it might take them out of isolation. This will increase their QoL.

**Measurement and data availability**

The cost manual describes thoroughly the costing methods that exist for the travel and time costs (see chapter 5) for the different parties involved. I will not repeat those methods here, but discuss some important aspects.

**Travel costs**

Travel costs can be measured by including questions on this subject in questionnaires. However, the question is if we have to measure these costs in detail, since the travel costs are small relative to the total costs. An interview respondent replied that using a questionnaires to measure these costs, would be like using a sledgehammer to crack a nut. Besides, 5 of the 8 interview respondents raised the issue of the burden of questionnaires on clients and professionals, and said we need to minimize the amount of questions and questionnaires. Averages distances to treatment facilities, and rough estimates of the mode of transport can be used (per bicycle, car or public transport, inclusive cabs). For the valuation, average price per kilometres for car and public transport are recommended. These are included in the costs manual.

**Time costs – leisure time**

More important are the time costs. The cost manual recommends no monetary value should be given for leisure time, since the authors state this loss is usually already reflected in the valuation of the QoL of the individuals affected. Measuring leisure time of children/adolescents against some average hourly wage, is indeed not relevant since most are unemployed. If we follow this recommendation - thus assume leisure time is reflected in one’s valuation of health state - some QoL measure has to be included as a cost item to account for this leisure time cost. In addition, the QoL measure can include for any unpleasant perceptions of treatment. This can be the case, if children dread going to a psychiatrist, given as an example by one of the respondents. Besides, “A child would rather spend his time with its Lego, than at the psychiatrist”. This loss of leisure time and unpleasant experience due to treatment will only be relevant when treatment is offered.

On the long term, leisure time costs may still occur. This is because MHC treatment may increase labour participation, which comes at the expense of leisure time. This loss of leisure time is not always completely offset by the increase in compensation, partly because of the income dependable taxes and subsidies. It is debated whether or not individuals account for this redistribution of income in their decision to work one additional hour or not. QoL may be lost, if the individual does not account for this and the additional wage does not compensate the leisure time lost (see for a further elaboration Pomp, Schoemaker & Polder (2014), page 83-84 in which they debate whether or not lost leisure is already represented in the valuation of one’s health state).
**Time costs – paid and unpaid work patients**

Production loss of paid and unpaid work do must be expressed in monetary terms, for which a distinction must be made between the patient and informal caregivers, since different valuation methods must be used (see cost manual). In the cost manual, the valuation methods for the production loss of paid and unpaid work of both these parties is aimed at adult patients. The methods are not useful for children and elderly who are not producing at market earnings or imputed value of housekeeping services (Rice et al., 1991). To value the lost time on education, relevant for children/adolescents, we might use remedial teaching hours as an indicator of the costs, or number of class repeating’s.

As mentioned, no distinction is maid in direct and indirect time loss in the cost manual, since the methods to value the direct and indirect time lost are identical. Thus I will include for both losses in this chapter. However, we should be aware that in the literature productivity loss of having a mental illness (in our case; as a result of receiving treatment) are often scaled under indirect costs. Greenberg et al. (1999) explicitly refer to this loss of productivity with ‘indirect workplace costs’. The production loss of the parents (and adult children and adolescents on the long term) can be measured with the valuation methods described in the manual, in which they account for both absenteeism and presenteïse costs. As addressed in chapter 5.1.2, the main valuation methods are the HCM and the FCM. The discussion on the most appropriate one is not settled yet.

To measure the amount of time lost on paid and unpaid work, questionnaires can be used. As mentioned, the Questionnaire Intensive Youthcare by Bouwmans et al. (2012) includes a part on the productivity loss for parents of children in need of intensive care, in which questions are included to enable measurement of both absenteeism and presenteïse costs. This is also known as the Short Form Health and Labour Questionnaire (SF-HLQ). Other questionnaires to measure productivity loss and/or gain are the Productivity and Disease Questionnaire (PRODISQ) and the Productivity Costs Questionnaire (PCQ) (Hakkaart-van Roijen et al., 2011). Further, existing research, such as CEAs which use Randomized Control Trials, can be used. This method gives the most objective representation of the causal relationship of MHC on labour effects (Pomp, Schoemaker & Polder, 2014), and lowers the risk of subjective use of existing data.

**Time costs – paid and unpaid work informal caregivers**

The costs manual states that, where important, the time costs borne by the informal caregivers must be valued in an economic evaluation. Parents are, next to patients, also important informal caregivers of mentally ill children. They do not only incur productivity costs because they are involved themselves in treatment, but because they need to enable treatment of their child (such as driving them and filling in questionnaires). The informal care offered by parents should thus definitely be included in economic evaluations on CAMH care.
Other costs
Regarding the other costs, it is recommended to make a rough estimation of these costs, and then assess whether or not it is worth to register these costs, to be able to include them. Regarding the day care costs, only the cost difference that arise because of a change in the amount of child care use must be included: Some MHC programmes may include day care service, which may diminish the use of publicly funded child care, that would otherwise have been used by parents (Aos, 2004).
APPENDIX 7

Indirect costs inside the health care sector

Indirect costs inside health care are determined by medical costs that occur during gained life years. These costs can be divided into related and non-related costs. For example, a 70 year old man with depression is successfully treated, and lives 10 years longer because suicide is prevented. Related costs are for example, pharmaceutical costs of the anti-depressants he needs to take during these 10 additional years. Non-related costs are for example the costs of a hip-replacement he needs to undergo when he is 75 years because he fell down the stairs. These surgery costs are not related to the treatment for his depression, but would have not been made if he did not receive treatment for his depression, because he would have been dead by then.

As stated in chapter 5.1.3, the inclusion of the medical costs during gained life years is still a topic of debate. Regarding economic evaluations on MHC interventions for children and adolescents, I have not found one that include any medical costs, related or non-related, that occur during gained life years. This might be, because these costs are only relevant for life-prolonging treatments, and MHC treatment are not specifically aimed at prolonging life. Also, only one respondent mentioned the medical costs spend during gained life years. Initially he did not perceive these costs as important. “It doesn’t seem such an issue with AD/HD, because you will not die from this”. Also, these costs should be discounted to such an extent, that there would be little left. But later he did recognize that for disorders related to suicide it is important, since suicide can occur in adolescence (i.e. on the short term). “Then the discount is also less, and the period thereafter in which you might make indirect medical costs is longer.” Research has also shown that the life expectancy of people with mental disorders is significantly shorter than the general population (Piatt, Munetz & Ritter, 2010). This can vary between 9 and 32 years shorter, as previously mentioned (Piatt, Munetz & Ritter, 2010; Scott & Happell, 2011). Thus, (successful) mental health treatments might also be regarded as life-prolonging treatments, and are therefore accompanied with medical costs in gained life years. Especially treatments for severe mental disorders which are accompanied with high suicide rates.

Measurement and data availability

In the cost research manual (Hakkaart van Roijen et al, 2011) the authors recommend to measure the related medical costs during gained life years with the same method as the direct costs inside health care. To measure the non-related costs, the RIVM developed a toolkit named PAID, Practical Application to Include future Disease costs. PAID measures the costs per person (not patient), specified to age, sex and time to death. These costs differ per disease and these three variables. See the cost research manual page 80-84, and the website of PAID, www.bmg.eur.nl/personal/vanbaal/paid.htm, for more information. Also, in the article by Van Baal et al (2011), the article elaborates on different approaches on how to include costs in life years gained, and conclude with the right method in their opinion to avoid double counting the costs of related diseases.
APPENDIX 8

Indirect costs outside the health care sector

As discussed in chapter 5.1.2, there can be indirect time costs of lost productivity of the parents of the mentally ill children or of adult children and adolescents at the long term. These (indirect) time costs are already discussed in appendix 6, because the valuation methods are identical. Next to these costs there can be other indirect costs. These are related to contacts made by the youths and their parents to non-care organizations, due to treatment.

In the rapport of Bouwmans et al. (2012) the authors included a list of organizations outside health care that could be contacted (page 11/12 and 19). Relevant organizations are:
- Forms of day care (babysitter, nanny, day care centre etc.)
- Contacts with community centre and church
- And contacts with juridical and judicial organizations (child protective services, police, ‘Halt’ (Dutch organisation which prevents and combats juvenile crime), lawyer, court, rehabilitation, juvenile justice institute).

NOTE: In the cost manual of Hakkaart-van Roijen (2011) they place day care costs under direct costs outside health care. This is debatable. One might distinguish between direct day care cost (i.e. use of day care during treatment) and indirect day care costs (i.e. change in appeal to day care because of positive effects of treatment which makes day care less necessary). I have already accounted for day care in the direct cost outside the health care sector.

Other relevant examples of costs given in the cost manual are:
- The use of special education
- And support costs for reintegration into working life, and guidance of the (former) patient during work.

One respondent raised there is a desire to involve the education system more with the MHC treatment programs. This would mean not only the use of special education services may rise, but CAMH care may also place a higher burden on schools providing regular education services. For example, the time costs of the teacher may rise.

In a study of Aos et al. (2004) they analysed the benefits and costs of prevention and early intervention programs for youth for the state of Washington (in the U.S.) (see figure 2 for an example of the costs and benefits of one form of program). They constructed a benefit-cost model to estimate the value of several programs, which they examined on criminal outcomes, teen pregnancy outcomes, child abuse and neglect outcomes, education outcomes and substance abuse outcomes. Reviewing the technical appendix of this article I found the authors included some of the same indirect costs items (relevant for CAMH care) mentioned above; namely special education and the criminal justice costs (see page 37 for the resource costs they included related to seven types of crimes).
Measurement and data availability
Measurement methods for indirect services used are described in the cost manual. Further, in the technical appendix of the study of Aos et al. (2004) they thoroughly describe how they measured the effects of programs, and how they quantified these effects. Thus, these rapports can be consulted. In short; identical to the measurement of the health care services, the costs of services outside the health care sector can be measured by multiplying the volume by the cost price per unit. The amount of service contacts made, can be retrieved with questionnaires. The Tic-P questionnaires, and the questionnaire for intensive youth care of Bouwmans et al. (2012) also asks respondent on their services use of organizations outside the health care sector. Example: “How many conversations did your child have with the police in the last three months?” (translated from Dutch). Data on service use might also be retrieved The volume data can be multiplied by the corresponding reference prices. In the rapport of Bouwmans et al. (2012) and the cost manual reference prices are included for contacts made with organizations outside the health care sector.

<table>
<thead>
<tr>
<th>Summary of Benefits and Costs (2003 Dollars)</th>
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<td>Estimates as of September 17, 2004</td>
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<table>
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<th>Costs</th>
<th>Benefits per Dollar of Cost</th>
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Figure 2. Summary of benefits and costs pre-kindergarten education programs
Source: Aos et al., 2004
APPENDIX 9

Direct benefits

As stated, the direct benefits are the effects on (mental) health and well-being for the person under treatment solely. Patients are not only the children and adolescents, but often also the parents of the mentally ill child, who’s health should be included in the direct benefits. Further, not only the mental but also the somatic health can be effected with MHC treatment, and we thus have to account for both. Below some further elaboration is given on the relationship between mental and somatic health.

Some mental health disorders, such as schizophrenia (King & Nazareth, 1996), eating disorders (Johnson, Spitzer & Williams, 2001) and depression (Strine et al., 2004) are associated with physical impairments. Figure 3 shows the health burden of several health illnesses. We can see that mental disorders creates the highest burden in young people (12-24 years). We can also state that the burden of mental disorders precedes the burden of somatic illnesses experienced an older age. According to Liesbeth de Vries (Congres ‘Jeugdhulp, kip met de gouden eieren’, 12 June 2014) a better mental health can to a certain extent contribute to the prevention of these physical conditions. She relates the development of somatic illnesses partly to an unhealthy lifestyle, often observed in people with mental health disorders. “Cancer is caused for 50% due to bad luck of cell division, and for the other 50% caused due to external factors, such as an unhealthy lifestyle.” Unhealthy lifestyles, such as little exercising and overweight, increase the risk of cardiovascular diseases. And in the Netherlands cardiovascular diseases goes hand in hand with cancer. Further, high rates of smoking and alcohol abuse, observed in people with mental disorders, increase the risk of tobacco related cancers (Carney et al., 2004). This research by Carney et al. (2004) also shows that people with mental disorders, especially mood problems like clinical depression and bipolar disorder, were more likely to develop cancer at a younger age, and had more brain and respiratory tumours. The high prevalence of poor physical health and unhealthy life style behaviours in individuals with severe mental health illnesses (SMIs) has been supported by the research of Scott & Happell (2011) who summarized evidence of this matter of recent research on the physical health of individuals with SMIs. They found that people with SMI had twice as more illnesses such as obesity, diabetes, cardiovascular diseases and respiratory diseases as the general population, and were almost eight times more infected by HIV. Unhealthy lifestyle behaviours that were observed by individuals with SMIs were low physical activity, poor diet, smoking, alcohol and substance abuse, and risky sexual behaviour.
Measurement and data availability
As stated, general outcomes are recommended to capture one’s health related quality of life (HRQOL). Frequently used indicators of the HRQOL are the amount of quality adjusted life years (QALYs) gained or the disability adjusted life years (DALYs) lost. The World Health Organization (WHO) measures the impact of illness on QoL in DALYs. The DALY was developed in the first report on the global burden of disease (GBD) by the WHO in 1990. (“About the Global Burden of Disease (GBD) project”, n.d.) One DALY can be seen as one lost year of healthy life. It is the sum of the Years of Life Lost (YLL) and the Years lost due to disability (YLD). When we add up all individual DALYs of one population we get the burden of disease of that population. It represents the gap between the current health status and an ideal health situation. In contrast to the WHO the NICE guideline (i.e. the National Institute for Health and Care Excellence in England) specified that health assessments should be based on an incremental cost per QALY. The QALY measures the number of life years gained with treatment, adjusted for the quality of the health status. Both the QALY and DALY measure the lost years of full health in comparison with some ideal health status. But QALYs represents a gain which should be maximized, and DALYs represent a loss which should be minimized.

![Disease burden across age](image)

**Figure 3. Disease burden across age**
Source: McGorry (n.d.), 'Early intervention in psychiatry’ [Powerpoint]
As mentioned, questionnaires must be used to measure HRQOL, and it is recommended to use generic metrics in these questionnaires for economic evaluations. Two often used generic preference-based measures (GPBMs), which are based on the health preferences of the patients, are the EQ-5D (EuroQol five dimension scale) and the SF-6d (Short Form) health surveys. The EQ-5D is a scale with five health dimensions – mobility, self-care, usual activities, anxiety/depression, and pain/discomfort – on which patients rate the severity of their condition. The SF-6d has followed up the frequently used SF-36, and is preference-based, and thus can be used for economic evaluations. However, the 6d variant is less rich and sensitive than the SF-36, because it focuses on seven out of the eight domains in the SF-36. Very limited evidence is yet available to assess the sensitivity of the SF-6d for all health aspects (Longworth et al., 2014). To enhance comparability of interventions, the NICE prefers the use of one GPBM and recommends the EQ-5D. This metric is also the most widely used GPBM internationally for economic evaluations (Longworth et al., 2014).

However, research shows that the outcomes in (cost) effectiveness research differ if the EQ-5D or the SF-36 is used (Brazier et al., 2004). Also both metrics have been criticized for being insensitive or failing to capture important aspects of health (Longworth et al., 2014), and more importantly doubts are raised whether these GPBMs are suitable for patients with mental health problems (Papaioannou, Brazier & Parry, 2011). Thus we cannot jump to conclusions when assessing the direct benefit of treatment, without carefully assessing the quality of the measures used.

**Data availability**

The development of performance indicators in the field of MHC is relatively young in the Netherlands. In 2006, the first ‘Basic set of Performance Indicators for MHC and Addiction Care’ was set up for the purpose of accountability (Nuijen, Veerbeek & Van Wijngaarden, 2012). More insight into the quality of care, and comparability of care institutions was wanted. In this context, MHC institutions had to start collecting data periodically about the effect of mental health care with Routine Outcome Monitoring (ROM). This data can serve the purpose of external reporting, it can benefit the patients’ treatment, or scientific research. As of 2010, MHC providers are obliged to conduct a pre and after measure of their patients’ mental health status. This year (2014) they must report this for 50% of their patients (“Bestuurlijk Akkoord Toekomst GGZ 2013-2014”, 2014). One of the goals of ROM is gaining insight into the effectiveness of treatments. ROM can become an important source of data to measure the effectiveness, but currently MHC providers are still trying to meet the percentage norm. A 100% is never attainable, since some patients are incapable of filling out questionnaires or just do not want to. However, as an interview respondent replied, the government or municipalities might oblige patients who are capable, to cooperate in questionnaires, if MHC treatment is made accessible at no or low cost to them. Another reason the ROM target is not reached, was addressed by one of the respondents. That is, the direct advantage of the data collection is not directly visible for the patients and professionals and these people are thus less committed to increase their registration efforts.
Even if we are increasingly registering effectiveness data, a shortcoming of the ROM is the lack of comparability of the ROM data between providers. Questionnaires are taken at different moments, from different population groups, in different age categories. Also different questionnaires are often used with the same patient group (Feltz-Cornelis, Volker & Heer, 2010). To increase the synergy of ROM data, the foundation that benchmarks MHC institutions (i.e. Stichting Benchmark GGZ (SBG)) defined a minimal required data set to be able to benchmark the MHC institutions, of which participation is obligatory for the institutions. The SBG foundation requires information on the effect of treatment, specifically on the patients’ complaints and symptoms, their functioning and their QoL, and in the field of CAMH care also on parental stress. Furthermore, the SBG selected different measurement tools which they classified as appropriate to measure the defined aspects (“SBG Minimale Dataset”, 2014). But again, in practice a range of tools are still often used. An inventory on QoL measurement tools used by providers showed that a large amount of instruments are used which are still in their pilot phase, and show no sign of standardization (Significant, 2014). One of these QoL measures is the MHC thermometer, which measures the client satisfaction. Respondent: “For adults, this is the CQI (Consumer Quality Index), and for children we do not have this yet. For them we use a MHC client thermometer. This says something about the extent of satisfaction of the care you received, and to what extent you are well informed.”

The reason there is little synergy may be because there is little cooperation among the different youth health care providers, such as social care, physical disability care and mental health care organizations. Respondent: “Yes, every provider uses his own effects measures and every provider says ‘in the way we do it, it is applicable for everyone’”. The respondent added there are also technical issues of applying one measurement system, because not all the different systems currently used by the providers are able to communicate with each other. But, the respondent further added that, in these turbulent times, providers start to see each other less as competitors and more as each other complements. And new initiatives are set up to solve the problems of the non-comparable care outcomes. For example, a municipality in the region Drenthe will only buy-in care from organizations who commit to the programme ‘Meetbaar beter’. They require from the organizations to measure and deliver certain effect-measures for certain interventions. Also within the MHC sector, more synergy is trying to be arranged. A lot of discussion has taken place on what should be measured in the ROM and how, according to one of the interview respondents. With a project among all the institutions connected to GGZ Nl they defined their standard of what data, and how this data will be measured at the affiliated MHC organizations.

Two respondents also criticized ROM on the simplification of the situation. “It is a four point scale, in which not enough nuances can be given. The use of parents questionnaires on an individual level often does not reflect the situation well enough. Think about the inadequacy of multiple choice questions.” Sometimes, out of the conversations with the professional it seems the situation improved, but this is not reflected in the ROM questionnaires. However, there is another way of documenting. Instruments exists in which the professionals fill in the questionnaires, out of the conversation held with the patients. “During therapy, we will talk about the quality of the treatments, but this is not structurally documented. (..) If we use questionnaires, we conduct clinical interviews. These are unstructured, or compiled semi-structured interviews. (..) Out of the answers of the patient you will take the elements to score.
We (the professionals) must interpret the answers and link them to the symptoms. Later this adds up to the diagnose.” This instruments might be more often used to solve for the simplification of the multiple choice questionnaires, and the time consuming open interviews.

In conclusion, even though the effect measurement is still in its infancy, the ROM data could become a rich source of data to assess the direct benefits of healthcare treatments, useful for economic evaluations of MHC treatments. However synergy is necessary, whether achieved top-down or bottom-up (Van der Feltz-Cornelis, Volker & De Heer, 2010).

Monetization
According to the RVZ (2006) there are four ways to establish a maximum value for a gain in health. First, this can be done by reviewing what value is utilized in the health care sectors of other countries, based on their allocation decisions. The second method is based on the amount society is able to pay on health; the leading factor is then the budget constraint. Third, values applied in other sectors can be used as reference. For example, environmental or road safety decisions inherently are based on how much we value life. Another source can be the health insurance sector. Also values used in other forms of care, such as somatic care, can be used as reference. Last, how much society values health can be directly inferred from the willingness to pay (WTP) thresholds. This method would be the most accurate. Thresholds refer to the level of costs and effects an intervention must achieve to be acceptable for society (Eichler et al., 2004). Thresholds can be hard or soft, and explicit or implicit. Hard thresholds imply that as soon as the intervention/drug costs more than the threshold, it is not made available for patients, where the WTP threshold is the sole decision criterion, whereas soft thresholds often exist of an upper and lower boundary value and give room for other considerations. Explicit thresholds mean that some governing body has formally set a threshold, whereas implicit thresholds are more informally derived from former decision making (Eichler et al., 2004).

Ideally, the thresholds are based on the opinion of all members in society, to attain the societal value of health. How much value the public appoints to a certain health status, could be measured with valuations scales ranging from 0 (representing death) tot 1 (full health). Existing methods are the Visual Analogue Scale (VAS). This is a Category Rating (CR) scale. The VAS has been extensively used in the valuation of health-related quality of life (HRQL). However the VAS does not involves a notion of sacrifice; it does not require the respondent to make some sort of choice between health states which would be more realistic. Measures that do requires this are the time-trade off (TTO) and Standard Gamble (SG) (see Gudex, Dolan & Williams, 1996). Thresholds can also be based on past decision making in health care, mainly depending on the budget available, or on the estimates of individual authors or institutions, and on the CE applied in non-health care sectors. In the article of Eichler et al. (2004) the authors review the cost effectiveness literature on $/health outcome thresholds, and found that the values differ per country and per way these are derived.

In the U.K. the preferred outcome measure are QALYs. They are the first country which set an explicit threshold, at approximately £20.000 to £30.000 (i.e. €25.380 to € 38.000) If the new treatment or drug has a cost per QALY of less than £20.000 then the QALYs gained by implementing this treatment or drug has a positive net health benefit the government assumes (Epstein, 2014). (The access to treatment is not denied if it does not stay below the set threshold,
but a patient might have to contribute to the costs themselves). In the Netherlands no threshold is set. In the article of Hoa Le et al. (2013) they calculate the burden of ADHD for the Dutch society, in which they include monetized QALYs. The authors value one QALY at €50.000, which is the average of €80.000, based on the Dutch guideline of Insurance Act for disabled persons (i.e. WAO), and €20.000, based on the budget that was available for Cholesterol patients in the Netherlands. These estimates differ largely from those in the U.K.

In the article of Pinto-Prades, Loomes & Brey (2009) the feasibility of estimating a monetary value for a QALY was researched. The authors raise serious doubt, whether it is possible to derive one reliable and reasonable value for a gain in health. The authors based their results on the WTP ratios attached to health gains (measured in QALYs) as given by the Spanish population under survey. Variability in the monetary values were attributed to ordering effects (starting with questions that proposed a lower health gain resulted in lower WTP), to the insensitivity of WTP to the duration of the period of payment (paying for treatment in 12 months, or 24 months), and to the inverse relationship of WTP and health gain (the higher the magnitude of the health gain, the lower the WTP). Also, how to translate the individual WTP ratios to the societal WTP ratio is something that needs to be resolved when conducting societal economic evaluations, since individuals value health differently. Four key issues that need to be addressed when translating the WTP ratios can be found in the article of Smith & Richardson (2005).

Thus establishing a monetary value for a gain in health is very difficult. To be able to move toward CBAs, first consensus should be reached over the appropriate outcome measure, that is also sensitive to mental health. Next, the qualitative methodology issues to measure the monetary value of health must be resolved. And last, the correct translation of individual values of health to the societal value of health should be made.

**Care versus cure**

I should note that regarding ‘care’, there are even more obstacles to overcome. To recall, care is given to persons with relative non-curable diseases, mostly to elderly and physically disabled persons, but some mentally ill patients also fall under the care sector such as severe schizophrenics. Well researched metrics for care are not established yet, also there are no monetary values established for the outcome measures used in these questionnaires (See Pomp, Schoemaker & Polder (2014), page 76/77). Regarding QALYs, and the underlying questionnaires to measure these, these are not suited to measure the value of care, since QALYs measure a change in health which is (often) not or less visible in persons in care.
APPENDIX 10

Indirect benefits

For overview reasons and to avoid doubling, the short and long term indirect benefit items are discussed together. The short term items included in this review are based on (cost-of-illness) studies and economic evaluations on MHC illnesses or problems specifically aimed at infants, children, adolescents, and/or young adults (up to the age of 24): Dimond & Hyde, 1999; Scott et al., 2001; Aos et al., 2004; Dretzke et al., 2005; Romeo, Knapp & Scott et al. 2006; Pelham, Foster & Robb, 2007; Suhrcke, Pillas & Selai, 2008; Knapp, McDaid & Parsonage (eds), 2011; Olesen et al., 2012; Hoa Le et al., 2013. These cost items could be possibly saved cost items, i.e. indirect benefit items, when effective treatments are offered.

The indirect benefits of the short term obviously can work through on the long term, if one’s MHC illness stays averted. There may also be new indirect benefit items, that will only occur at the long term. Follow-up studies after treatment are necessary to assess if there are benefits of treatment in adulthood. However few exist, and if there are then most have conducted the follow-up study over a relative short time period. No life-time effectiveness studies exist. We can however review studies of adults with mental health illness, and cohort studies of children/adolescents with mental health illness into their adult life, to see which costs are associated with mental health disorders in adulthood and might be diminished with effective treatments. These items are surrounded with more insecurities, since less evidence is found that CAMH care actually avoids the costs associated with mental illnesses in adults. Based on the following literature I found the items that are raised as additional long term items: Kessler & Greenberg, 2002; Knapp et al., 2002; Sobocki et al., 2007; McCrone et al., 2008; Layard, 2008; Smith & Smith, 2010; Kawakami et al., 2012; Bouwmans et al, 2014; Forti et al., 2014. I will also account for cost items that are mentioned in evaluated studies, but were not necessarily included because of measurement issues.

For a more grounded assessment that these costs items are indeed related to CAMH problems and MHC treatments could save these costs, studies on the relationship between MHC illnesses and cost items outside the health care sector are additionally searched for. Measurement and data availability issues of these items is put second place.

To recall, the actors that are distinguished are the child/adolescents, their parents and other informal carers, and the rest of society. From the perspective of society, any individual effects are not important, but this can be helpful to account for any negative distribution effects.
- **Child/adolescent**
  - Education
    - Performance
    - Attendance
    - Years of education completed
  - Economic participation
    - Employment rate
    - Productivity
    - Income level
  - Social participation
    - Voluntary work
    - Informal care
    - (Sport) clubs
  - Quality of life aspects
    - Relationships
    - Social inclusion

**Education costs**
Poels-Ribberink et al. (2011) reported on the study success of Dutch students (following higher professional education or scientific education) with a disability based on data of 2010. Among others students with a mental disability were included, namely the mental conditions AD/HD, autism, and depression and anxiety. The authors found that 68 to 69 percent of students actually experienced limitations during their study because of their health condition. Students with the mental health conditions AD/HD, and depression and anxiety experienced problems more than average. It was also observed that students with a disability devoted more time to their study and less time to paid employment, but also have more delay in their study program and obtain less credits. First-year students with a disability also drop out of school more early than other first-year students, and are more represented among the group of students studying longer than the study program. (Poels-Ribberink et al., 2011).

In a cohort study in 2012 of Van den Broek, Muskens & Winkels (2013) they reported that students with a disability had lower grades, are more often behind on the study program and more often leave college early without a degree. The authors estimated that the chance of dropout without a degree are twice as large for students with a disability. Especially for students with autism, AD/HD and a mental illness (incl. eating disorders) the chance of dropout is larger. Research in the U.S. on school drop-outs of adolescents with a mental health disorder showed that 3.53 million U.S. citizens in the age of 15 to 54 (based on the 1990 U.S. population) did not completed high school and 4.29 million did not completed college, because of prior psychiatric disorders as defined in the DSM III-R (Kessler et al., 1995). Also 14.2 % of the individuals who dropped out of high school, 5 % of the group who did not enter college in the first place, and 4,7% of the group who dropped out from college had a history of psychiatric disorder.

De Boer et al. (2013) researched the relationship between the degree of social participation and health (including mental health) based on the Dutch population, and also looked into the degree of school absence. In the school year 2011/2012 there were almost 85,000 reports of absence.
without a valid reason, such as illness. 9% of these cases had to do with holiday, and the other 81% signals skipping-school behaviour. Long term school absence is a predictor for premature dropout of school. No numbers are available to what (mental) health problems premature school dropouts are related to, but young with conduct problems and disorders are at a higher risk (i.e. they possess risk factors such impulsiveness and lack of self-control, insensitivity for authority, skipping school, delinquent behaviour and having wrong friends. Also young with emotional problems (such as depression) who default for long periods are at a higher risk of early school dropout, but this group is less visible since they do not cause any disturbance (De Boer et al., 2013).

So it seems that mental health illnesses negatively impact children’s and adolescents’ school performances (test scores), incur higher absenteeism rates, lower number of education years completed and have a higher chance of repeating classes. The negative impact a mental health disorder can have on education, also negatively affects their personal development and the chance of employment, since cognitive abilities are important determinants of socioeconomic success (Heckman, 2008).

**Economic costs**
The positive effects of MHC treatment on the educational achievements can work through in the adult child’s labour participation, relevant at the long term. Psychiatric disorders are found to affect both the employment rate and the income level as researched by Ettner, Frank & Kessler (1997).

**Employment rate and productivity**
Study by Bouwmans et al. (2014) supports the impact health related quality of life (HRQOL) can have on productivity losses in patients with depression and/or anxiety. Bouwmans et al. (2014) assessed the added explanatory power of HRQOL and disease severity on absenteeism and presenteeism of people suffering from depression and/or anxiety disorders. They showed that disease severity, and HRQOL were associated with different types of productivity losses, such as presenteeism, short-term and long term absence from work. They also found that HRQOL and age were significantly associated with the duration of absenteeism; the duration of long term absence increased with age. Thus by improving the HRQOL, and intervening more early, the associated costs of productivity losses might be diminished. There are treatments for depression who are proven to significantly improve the HRQOL (Sobocki et al., 2007).

In the article of Kessler & Greenberg (2002) the authors make clear that not only the work performance costs, in terms of sickness absence and work cutback days must be included, but also the ‘opportunity costs’, i.e. excess unemployment and underemployment. These are costs incurred, because the mentally ill are unable to work at all because of their illness, or because there is no work fitted for their situation. It has been found that people with severe mental health conditions are 6-7 times more likely to be unemployed than people with no mental health condition. Those with a mild to moderate condition are 2-3 times more likely to be unemployed (Forti et al., 2014). In the research of Sobocki et al. (2007) on the economic burden of depression in Sweden from 1997 to 2005, they also included productivity losses due to early retirement, measured by pensions paid, and premature death (suicides).
Income level
Not only the employment rate, but also the income level at the long term can be affected by mental health illnesses. Study shows that early-onset mental health disorders have a negative impact on the employment rate and income level of these individuals (Kawakami et al., 2012). These authors assessed the associations of early-onset mental disorders with adult household income (combined income of all members of a household) in respondents aged 18 to 64. They found that early onset mental disorders are associated with significantly reduced household income in high and upper-middle income countries. This was due to their low personal earnings (higher unemployment rate, and lower salary levels among the employed) and due to their spouse earnings (lower rate of marriage, and higher unemployment rate and lower salary levels of employed spouses).

The article of Kawakami et al. (2012) also refers to four longitudinal epidemiological studies. The first found that emotional problems before the age of 17, led to 20% less household income among adults between the age of 25 and 53. Another study found that recurrent depression with individuals aged 16 to 21 had a lower income than their peers when they were in the life-age of 21-25, and another study concluded that mental disorders at ages 18 to 25 predicted low workforce participation and low income at age 30. The last study referred to by the authors, found that psychological problems by age 16 predicted a reduction in household income of 28% at the age of 50 (Kawakami et al., 2012; page 229).

A long term study on the effects of childhood psychological conditions on education, income, work and marriage was conducted in the U.S. (Smith & Smith, 2010). The authors based their analyses on children who were under the age of 16 and experienced psychological problems in 1968, and assessed their situation forty years later in 2005, when the respondents were between 25 and 53 years old. They found that the children completed less years of schooling, and earned 20% less adult family income (partly due to seven fewer weeks worked per year), with less family household assets of approximately €14500 (based on 2005 figures). The authors included marriage, since this is an important pathway which affects the economic prospects. They found that the probability to get married was 11% lower for children who experienced psychological problems in their childhood. If they did get married, the income of one’s spouse is lower. And is has been found that individuals with psychological problems during childhood do not share equally in the economic and non-economic benefits associated with marriage (Smith & Smith, 2010).

(Social) participation
Six out of the eight respondents mentioned participation as the most important indirect benefit. “Children who are able to participate in society, at least contribute more than the ones who are not able to.” In the childhood/adolescent (i.e. short term), the direct living environment consist of school, family and sometimes work. Especially the ability to go to school, and get a degree were deemed important for a child, since this also partly determines their future employment opportunities. Other forms of participation deemed important were having a (part time) job, ability to make friends, be invited to parties, join sport clubs etcetera.
In the rapport of De Boer et al. (2013) (see above) they looked at several forms of participation in different stages of life. Primarily forms of social participation are incorporated that has a positive effect on the society as a whole. These are activities related to schooling, labour, informal care and voluntary work. The authors divided life in three stages: children and adolescents (0-25 years), adults (15-65 years) and elderly (55 -75 years, and 75+). Table 2 below shows the percentage of children and adolescents participating in the different societal areas, related to their perceived mental health (which is combination of feeling calm and relaxed, and depressed and down). We see that the degree of participation is lower for people with less good mental on all activities, except for informal care (young with less good mental health performs more informal care activities than the group with a good mental health. The difference in participation between the young in good and less good mental health is the largest regarding voluntary work, followed by the participation in employment. We also see that children with lower mental health are less active in (sport) clubs and follow less full-time primary and secondary education.

<table>
<thead>
<tr>
<th></th>
<th>Education 6-15 years</th>
<th>Education 16-24 years</th>
<th>Employment 16-24 years</th>
<th>Informal care 16-24 years</th>
<th>Voluntary work 16-24 years</th>
<th>Member of a club 16-24 years</th>
<th>Member of a sport club 16-24 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good Mental health</td>
<td>96</td>
<td>62</td>
<td>73</td>
<td>7</td>
<td>35</td>
<td>38</td>
<td>46</td>
</tr>
<tr>
<td>Less good Mental health</td>
<td>91</td>
<td>61</td>
<td>64</td>
<td>11</td>
<td>24</td>
<td>32</td>
<td>31</td>
</tr>
</tbody>
</table>

Table 2. Percentage of children and adolescents in good and less good mental health who participates in education, employment, informal care, voluntary work and (sport) club in 2007. (Based on De Boer et al., 2013; table 2.3)

A recent rapport of the Gezondheidsraad (2014) on the degree of participation of young people (aged 16 to 30) with severe and mild psychological problems in education and the labour market, describe the limited scientific literature on interventions that helps to improve their participation in society. Most interventions include the rehabilitation approach, for example IRB, aimed at participation on different societal areas, and IPS, aimed at finding paid work. Other well researched interventions are ‘Guided Learning’ applied in the education sector, and SRH aimed at empowerment, and improving one’s strengths to stimulate behaviour that helps rehabilitation. Research into the effectiveness of IRB and IPS show these interventions are effective for adults, but this is not yet researched for young.
Quality of life
Besides the HRQoL, that accounts for one’s mental and somatic health, a more holistic approach to quality of life (QoL) includes other aspects (non-health related) as well. In Canada, the Quality of Life Research Unit connected to the University of Toronto developed a Quality of life model that is being used in research projects (“The Quality of Life Model”, n.d.). They define QoL as “the degree to which a person enjoys the important possibilities of his or her life.” Their framework consists of three life domains, which each consist of three subdomains, see figure 4. In the article of Zekovic & Renwick, (2003), the authors discuss three models specific to children’s QoL, they also discuss the instruments that can be used to measure children’s’ and adolescents QoL. For more information on these instruments, I will refer to this article and to other publications on the website of the Quality of Life Research Unit (http://sites.utoronto.ca/qol/).

I have already accounted for the physical aspect of one’s QoL and for participation in different domains. Under this heading the other aspects of QoL are accounted for, namely that of social relationships and overall feeling of happiness. Children with conduct disorders and anti-social behaviour have been related with relationship difficulties with parents, other family members and peers. This negatively impacts their social inclusion. These are both important aspects of feeling belonged, which partly determines one’s QoL. One respondent argued that the emotional feeling of belonging, is even more important than actual participation: “For example a child with autism might not actually have more friends, but can have the feeling he does better socially, which would automatically be seen in his performance at school and complement of his education.” All interview respondents raised the broader implication of care; the effect on the overall QoL. This was perceived as very important. “Does the decrease in symptoms contribute to the overall wellbeing of the child and to the child’s ability to develop himself optimally, conform his life stage. If we succeed in this, then this predicts its mental health in the future again.” Some parent education training programmes focus specifically on building interpersonal relationships between the child and the family (Dimond & Hyde, 1999).
<table>
<thead>
<tr>
<th>being</th>
<th>who one is</th>
</tr>
</thead>
</table>
| Physical Being | physical health  
|            | personal hygiene  
|            | nutrition  
|            | exercise  
|            | grooming and clothing  
|            | general physical appearance  
| Psychological Being | psychological health and adjustment  
|            | cognitions  
|            | feelings  
|            | self-esteem, self-concept and self-control  
| Spiritual Being | personal standards of conduct  
|            | spiritual beliefs  

<table>
<thead>
<tr>
<th>belonging</th>
<th>connections with one's environments</th>
</tr>
</thead>
</table>
| Physical Belonging | home  
|            | workplace/school  
|            | neighbourhood  
|            | community  
|            | intimate others  
|            | family  
| Social Belonging | friends  
|            | co-workers  
|            | neighbourhood and community  
|            | adequate income  
|            | health and social services  
| Community Belonging | employment  
|            | educational programs  
|            | recreational programs  
|            | community events and activities  

<table>
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<tr>
<th>becoming</th>
<th>achieving personal goals, hopes, and aspirations</th>
</tr>
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</table>
| Practical Becoming | domestic activities  
|            | paid work  
|            | school or volunteer activities  
|            | seeing to health or social needs.  
| Leisure Becoming | A. activities that promote relaxation and stress reduction  
| Growth Becoming | activities that promote the maintenance or improvement of knowledge and skills  
|            | adapting to change.  

Figure 4 Conceptual Framework of the Quality of Life  
Source: “The Quality of Life Model” (n.d.). From the Quality of Life Research Unit, University of Toronto
At the long term, relationships with possible future partners and own children are relevant for a person’s QoL. In the research of Scott et al. (2001) the authors included relationship costs of domestic violence and divorce (only the public legal costs of divorce). The authors argue that individuals with conduct disorder in their childhood/adolescence continue to have violent relationships with partners in adulthood, and have few friends. ‘They do not participate in mainstream society and remain socially excluded’ (page 1). Another long term study by Colman et al. (2009) researched the effects of conduct problems in adolescents, aged 13 and 15, into adulthood at the ages of 36, 43 and 53. These authors found that, regarding the outcome relationships, the group with severe externalising behaviour experienced more problems than the group with no problems in relationships with their spouse, children and friends. They also were more likely to become teenage parents, and more likely to divorce in adulthood, and they stated to be unhappy with their family life in adulthood. The authors also looked at the impact of conduct problems on the adult children on a more general measure of suffering. ‘On a composite measure of global adversity throughout adulthood that included mental health, family life and relationships, and educational and economic problems, those with severe externalising behaviour scored significantly higher on the global adversity measure (40.1% in top quarter), as did those with mild externalising behaviour (28.3%), compared with those with no externalising behaviour (17.0%)’ (Colman et al.,2009; page 1). Thus, not only at the short term aspects that determine an individuals’ quality of life are negatively impacted by mental disorders, but also at the long term this can have serious consequences.

- **Parents/informal carers**
  - Economic costs
    - Productivity
    - Home damage
  - Quality of life
    - E.g. amount of stress, and leisure time
  - (Mental) health (as non-patient)

At the short term, when the child is in his childhood and adolescence years, the informal carers and specifically parents, may also positively benefit from MHC treatment. The possible benefits associated with treatment on the short term are identical to the items at the long term, but there may be less saved costs associated with these. Because, when the children reach the age of twenty-one, parents are no longer financially accountable, nor have the obligation to support their children financially, and their children often have moved out by then. This means the parents may incur less economic costs. However, parents may still feel the need to help their children, worry about them and spend time to help them. Whether the benefits work through on the long term depends again among others on the effectiveness of the treatment and the parent-child relationship.

**Economic costs**

The time loss of parents on paid and unpaid work, previously addressed as a possible cost item during treatment (see chapter 5.1.2/appendix 6), would be eliminated when treatment enables participation of the parents and informal carers again. Moreover, there might be a gain in productivity in paid and unpaid work compared to the situation before treatment, when treatment is effective. Romeo, Knapp & Scott (2006) measured the economic costs of severe anti-social
behaviour in children and found that parents needed to spend almost 8 hours per week more on daily household tasks because of their child’s behaviour and some parents had to take days off work, mainly because their child was sent home from school. The authors included three categories of activities: ‘extra time taken to prepare meals, extra time spent shopping and extra time spent household cleaning because of the child’s behaviour’. In the article of Romeo, Knapp & Scott (2006) the authors also included costs of additional home repairs and found that extra house repairs due to the child’s destructiveness were made. Overall, this article showed that the greatest cost burden was borne by the family.

The respondents frequently addressed the negative effect mentally ill children can have on the parents and other family members. A psychiatrist for children explained they often anecdotally hear the family issues in their office: “In the beginning during conversations the things a parent must leave because of their child and treatment are addressed; taking free of work, mothers who stop working, parents who do not make that career step, or has to call in sick because they cannot keep up. If the family is back on track, they can function again. (..) Brothers and sisters are also better capable to live their own life. I once had a sister who got depressed, was afraid to take home friends, and performed worse at school. This is all very crucial at such a young age for their chances later, such as the chance of a better education and the contribution to society”.

Quality of life and (mental) health
The time loss of leisure time that parents might experience during treatment of their child, previously addressed as a cost item, might diminish after treatment. There will be a benefit if the time costs before and during treatment are lower than the time costs after treatment for the rest of one’s life). The valuation of leisure time activities, such as ability to stay in contact with friends, join a sport club or go to dinner with the spouse, are reflected in the parents’ overall quality of life. Parents with mentally ill children can also experience other intangible costs of for example suffering and stress. Further, the (mental) health of parents may be positively impacted due to MHC treatment of their child, even if parents are not in treatment themselves. Research on the impact of behavioural and emotional problems in young children with a pervasive development disorder (PDD) on parent outcome showed that these problems are significantly correlated with parents mental health, parent stress and family functioning, with the exception of father stress. (Herring et al., 2006). Angold et al.(1998) showed that children (aged 9, 11 and 13) with psychiatric disorders led to substantial levels of parental burden. The authors measured the parental burden with the Child and Adolescent Burden Assessment (CABA), which asks parents “about twenty potential perceived burdens- that is, problems or difficulties in their own lives that they perceived as being caused or exacerbated by their child’s psychiatric symptoms. The following areas were covered: expenses and financial difficulties, problems in relationships with family or social network members, restrictions on activities, and decreased feelings of well-being and competence” (page 76).The results show that, excluded for other factors, 10,7% of all parents perceived at least one burden. The most common were effects on personal well-being, stigma, and restrictions on personal activities. “In addition, some parents reported that their children's problems had substantial negative effects on their family and social relationships” (page 79). A higher burden was perceived, when the child’s psychosocial and functional impairment was higher, and when tics were present. Further, a lower burden was perceived in parents of children with depression or anxiety disorders, than of children with other disorders. The article also shows that the use of mental health services by the child largely depends on the
burden experienced by the parent(s). In conclusion, as informal carers and non-patients, the (mental) health and QoL of parents may improve because of MHC treatment of their child.

- **Other members in society**
  - Substance abuse of alcohol, tobacco and drugs
  - Suicide costs
  - Life expectancy costs
  - Criminality costs (including safety)
  - Disruption of society costs (related to non-criminal activities)
    - E.g. effect on class members and teachers
  - Health care service costs
  - Special (and regular) education service costs
  - Other service costs (outside health care)
  - Comorbidity costs
  - Opportunity costs
  - *Distribution effect*: Social welfare payments paid and income tax received

**Substance abuse of alcohol, tobacco and drugs.**
Childhood psychiatric disorders affect both the likelihood and the age of onset of substance use disorders (Costello, Foley & Angold, 2006). The relationship between mental health disorders and substance abuse also works the other way around. Substance abuse is a major risk factor of developing mental disorders. ‘The use of alcohol, tobacco, and other drugs is correlated with psychopathology, especially attention-deficit hyperactivity disorder, psychoses, mood disorders, and anxiety disorders. The reasons for the correlations are unclear: substance use can cause the psychopathology or vice versa, or both could be caused by other factors’ (Patel et al., 2007; page 1306). From the perspective of society, costs can include the costs of the health care services used, the public costs on the detection of illegal drug plantations, imports, and distribution, criminality costs, and lost productivity of substance abusers who are unable to participate. (On the other hand, the foregone tax on alcohol and tobacco would be a lost profit). However, there can also be costs for the child/adolescent. These can be related to the negative impact this has on their health, their relationships, and the personal costs of the substances. Thus, this item could also be placed as a cost item for the patient. A detailed discussion of the associated costs with substance abuse is excluded from this research.

**Suicide related costs**
In the Netherlands the most often cause of death in young adults is suicide (Hoogenboezem, 2011). An American study estimated that of the people who died from suicide, about half was suffering from a psychiatric disorder (NJI, 2009). Also, numbers of the Belgian population shows that 50% of the group that died from a mental health disorder, is caused by suicide (another important factor is alcohol poisoning) (“Sterfte door psychische en neurologische aandoeningen”, 2014).

There are several cost items that are related to fatal suicide and non-fatal attempts of suicide, often also called ‘mortality costs’. The first is the lost productivity of paid and unpaid work, and
of family responsibilities (e.g. taking care of your children or elders) due to premature death. Second, there are the direct costs of services used, such as the police, funeral services and health care use. Non-fatal suicide attempts can result in high A&E attendance and medical or surgical care, and in longer term psychiatric inpatient and outpatient care. This is because some individuals try to hurt themselves again. Study on service use and costs of self-harm patients in the U.K. showed that 70% of the costs were related to psychiatric care (of which was 1% for prescribed drugs) (Sinclair, 2010). Even despite the high service costs of failed suicide attempts, there are economic benefits from delaying complete suicides, related to a reduction of lost productive life years (Knapp, McDaid & Parsonage, 2011). Last, there are the intangible costs of pain and grief for the relatives, and the premature loss of life for the individual (Knapp & McDaid, 2009). In addition, there can be trauma costs if suicide is committed in public places. For example, the trauma costs of an engine driver if suicide is committed at the railway.

However, not all studies include all costs. Most studies focus on the lost productivity for society due to premature death. These costs can be measured by the number of suicides associated with the mental health disorder times the expected value of the individuals future earnings in the age of 18 to 64 (DuPont et al., 1996; Greenberg et al., 1999; Rice, Kelman & Miller, 1992). Future earnings can be measured against labour wage, which holds the assumption that people will be working and productive during their expected lifetime. This would be true if treatment positively affects one’s labour participation. Many of the persons who are not in the labour force, as well as the one’s within the labour force perform household services (Rice, Kelman & Miller, 1992). This can be valued against replacement costs of household work. The estimation of saved costs of lost productivity due to suicides is troubled by the difficulty to draw the causal relationship between the number of (attempted) suicides and the mental health disorder. Some cost-of-illness studies of depression and anxiety disorders, take a conservative estimate of 10% (Greenberg et al., 1999); i.e. 10% of the suicides are related to depression or anxiety. However, in the research of Sobocki et al. (2007) they assumed that 57% of the suicides were due to depression. So this can differ quite extensively.

Treatments specifically aimed at reducing the amount of suicides, may help to reduce the associated costs. Prince et al. 2007 modelled the effects of interventions aimed at prevention of suicides in China. The authors based the amount of saved costs only on the saved productive life years. They predicted the intervention would avert 10% of the suicides at a intervention coverage of 50%. With this coverage rate 580,000 productive life years would be saved. They valued this on the basis of GDP per head, which resulted in U.S. dollars of $1 billion per year. In this research, it was assumed that 14.6% of the total number of suicides is associated with depression. With this assumption, the MHC treatment saves $146 million per year on productive life years based on the Chinese population (Prince et al., 2007). The other two costs items related to suicide are not included in this study. If included, this might result in higher saved costs each year.

**Life expectancy**

On the long term, children’s and adolescents’ life expectancy may increase due to a better health. People with severe mental disorders live approximately 9 to 30 years shorter as stated in the rapport of Scott & Happell (2011), which roughly corresponds with the estimation of Piatt, Munetz & Ritter (2010) who state people live between 13,5 and 32 years shorter. Premature
Costs are partly due to the effect poor mental health has on the individual’s life style and somatic health, discussed above. For society, a longer life expectancy means more productivity. The years of life that might be gained due to MHC can be valued at the expected value of future productivity in the gained life years, which is identical to the measurement of the life years saved of suicide.

**Criminality related costs**

Some mental health disorders are strongly connected to antisocial behaviour activities which can result in criminality costs. Respondent: “(...) children with behavioural problems also cause all forms of societal damage. Besides the fact they cannot contribute to society, they are even contra productive. Think about vandalism, disruption of the order etcetera”. Criminality costs include among others the costs of the police and fire department, juvenile justice system, and material and immaterial damage costs, including costs borne by victims (See the heading ‘measurement and data availability’ for a more complete picture of all related costs (included by Drost et al., 2014). It has been proven that mental health disorders (some more than others) are related to substantial criminality costs. Research by Scott et al. (2001) based on 1998 data, shows that in children with anti-social behaviour the criminality costs are the highest of the public services used that were included in the study (see figure 5). The authors even excluded for undetected and unregistered crime (which is several times more common than detected crime).

As a possible indirect benefit of CAMH care can be the reduction of these criminality costs. Some family and parenting interventions have shown to be effective in reducing the time of incarceration; which thus saves costs (Patel et al., 2007). Reducing criminal activities not only decreases costs, but also increase the safety in society which is an intangible benefit valued by citizens.

![Figure 5. Financial costs of social exclusion: Long term follow-up of anti-social children (adapted from Scott et al., 2001)](source: McDaid et al., 2010)
**Disruptive effect in society:**
Children and adolescents suffering from mental health disorders, especially externalizing disorders, can disrupt the live of other members in society as well, besides that of their parents and direct family members. Examples of disruptive behaviour are bullying, misbehaving in the classroom and noise disturbances. Dretzke et al. (2005) explained very well how effective treatment of mental health illnesses (one more than the other) can have a positive effect on the QoL of other people (besides the child and parent(s)) as well. ‘CD and other types of behaviour problems such as ODD cause considerable disruption and trauma to siblings and parents, peers at school (who may be victims of their bullying and whose learning may be affected by disruption in the classroom) and the members of the wider community (who may be victims of acts of vandalism, violence and burglary). As the disorder persists into adulthood in a high proportion of cases, a single child with CD can have a detrimental effect on the QoL of a very large number of other people’ (page 71). However, since there are no measurement to takes these wider ranging effects into account, the authors did not include them.

**Health care service and other service use**
The appeal, and with that the costs, to the non-psychiatric and psychiatric care services included in the direct costs inside health care (see chapter 5.1.1) might diminish at the long term, when more children are free off or experience less impairment of their mental health problems in their adulthood. The costs of the appeal to the services included in the indirect costs outside the health care sector (see chapter 5.1.3) must also be measured, since these too may diminish. Such as criminal justice services and special education. Not only the appeal of the adult children, both also of their family members, future partners and informal carers  affected by the mentally ill must be included.

In a long term follow-up study of children and adolescents (below the age of 17) who suffered from depression (MDD), or from depression with comorbid conduct disorder (CD-MDD) the authors looked into the amount of service use and costs into their adulthood (25 to 43 years of age) (Knapp et al., 2002). The services included are related to the categories of criminal justice services, general health care services, and mental health care services. The authors found that both groups of children are responsible for high service utilisation rates and costs. The group with comorbid conduct disorder led to significantly higher costs for general and psychiatric in-patient care, and to higher criminal justice services use and costs. Compared to the general population, the MDD group had similar levels of outpatient and criminal justice service use, but higher in-patient care use, while the CD-MDD group used significantly more of all of the services.

Economic evaluation studies do recognize a greater use of health and non-health services is observed in adults, diagnosed with a MHC disorder in their childhood/adolescence. In the follow-up study of children with anti-social behaviour into their adulthood of Scott et al. (2001) (previously mentioned), the authors compared the cumulative costs of public services used. However, because of a lack of cost data, the authors were unable to include the costs of social service use, voluntary organisation and primary health care. Other authors do not include for the saved health care costs, likely associated with MHC, at all. Dretzke et al. (2005) argue that these cost savings are ‘likely to be in the long term and likely to be proportionally small compared with the cost savings that fall on other sectors within society, such as the criminal justice sector’
(page 61). However, the authors do state that this exclusion results in a conservative estimate of the true costs. This can for example be concluded from figure 6, which represents the lifetime rates of health care service utilization in Great Britain for children with a conduct disorder (CD) and for children without any mental health disorder. It shows that children with a CD have a higher service use rate.

<table>
<thead>
<tr>
<th>Services</th>
<th>Children with CD (%)</th>
<th>Children with no mental health disorder (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any GP contact</td>
<td>45</td>
<td>35</td>
</tr>
<tr>
<td>Any A&amp;E visit</td>
<td>27</td>
<td>17</td>
</tr>
<tr>
<td>Any inpatient stay</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>Any outpatient visit or day patient stay</td>
<td>27</td>
<td>18</td>
</tr>
</tbody>
</table>

**Figure 6. Use of services for any reason over a 12-month period**  
CD= conduct disorder  
A&E= accident & emergency  
Retrieved from Dretzke et al. 2005

Thus whether the amount of service costs could actually diminish after MHC, is not clear yet, because this has not been researched yet. This may be especially questionable for the less curable mental health disorders, such as schizophrenia, is questionable. These disorders are often controlled for with pharmaceutical maintenance treatment. Leucht et al. (2012) researched the effects of antipsychotics on the risk on relapse in patients with schizophrenia. They found that antipsychotic maintenance treatment substantially reduces relapse risk for up to two years of follow-up. This can save associated costs of relapse such as hospitalization, however maintenance treatment also leads to a higher distribution of pharmaceutics over extend time periods. Thus whether an investment in MHC results in the long term in a reduction of health care services depends on the curability of the disorder (risks of relapse and recurrence) and if the appeal to health care service is long lasting.

Last, whether or not there is a decrease in the amount of health care services used on the long term also depends on the fact if the enlarged risk of somatic illnesses related to individuals with (severe) mental illnesses (discussed before) is averted with MHC treatment in childhood or adolescence.

**Opportunity costs**
As there may be opportunity costs, there may also be saved opportunity costs, i.e. an indirect benefit of MHC care. If any measures are taken that lowers the burden of some actors in society, this saved money can be spend on other things. However, the net balance of society will not change if the measures taken places a higher burden on other actors in society and completely offsets the gain of the other group. Thus, this would be only relevant for the distribution effect. However, if we are able to break the vicious cycle of families in need of care, the total investment society currently has to make can be lowered. This money can then be invested in other sectors or target groups. One respondent mentioned 'breaking the vicious circle' as a possible long term benefit. “The problem family is a vicious circle, that is passed on from
generation to generation. If we know how to break this there are more productivity and lower health care costs in the future.” The respondent did comment this is like looking into a crystal ball. We can use statistics to measure how many would families would be helped, by looking at the percentage of recidivism and percentage of families who are helped.

Costs of comorbidity
Kessler & Greenberg (2002) states that in COI studies, the costs of comorbidity must be excluded. For example, when assessing the burden of anxiety, any costs related to comorbid depression, or to alcohol and drug abuse in individuals must be deducted from these costs. When we would assess the cost and benefits of a MHC treatment exclusively aimed at the reduction of anxiety, the costs and benefits not related to anxiety must be not included. Further, some research suggest that anxiety disorders are temporally prior to the onset of other mental health disorders (Kessler & Greenberg, 2002). This means that early treatment of anxiety disorders in children might lower the risk of the onset of comorbid disorders – or lower the severity of the comorbid disorder and the associated costs – which would then also be a benefit of MHC treatment. However, some argue that comorbidity does not reflect multiple diseases but our inability to set a single diagnosis that accounts for all symptoms (First, 2005). The high comorbidity rates with some disorders might indicate that our classification of mental disorders is imprecise, which can trouble a beneficial allocation of our MHC treatment resources. Kessler & Greenberg state that it is impossible to single out the costs of comorbid disorders with the currently available data.

Social welfare payments and income tax
The social welfare payments paid by the state are a cost for the state/taxpayer, but a gain for the receiver. This is thus technically a distribution effect, which has no influence on the societal benefit. This cash flow merely represent a transfer from purchasing power from one group (taxpayers) to another group (recipients) (SCMH, 2003). The same applies to the income tax; the income tax received is a benefit for the state and a cost for the payer. CAMH care can change the distribution of state benefits and tax. When CAMH care is offered, parents may be more productive and thus pay more income tax. Former unemployed parents might be able to work again, and be less reliant on the state benefits. On the long term, the adult children cured from their mental disorder may also result in more productive citizens, which lowers the state benefits and increases the income tax. This comes at the expense of the parents and adult children, and cancel each other out. These should thus not be included in the societal net balance. In the study of Romeo, Knapp & Scott (2006) they did included the state benefits granted to the parents of mentally ill children, and these were not necessarily related to the child’s behaviour problems, which might thus be questioned. However, there may be administration costs associated with the change in the appeal to social welfare payments. These are costs of processing a change in public assistance needs.

The social welfare payments and income tax should be included in the distribution effect (Hakkaart-Van Roijen et al., 2011; Pomp, Schoemaker & Polder, 2014). How we should measure these effects is still not solved for. I refer to chapter 8.4 of the cost guideline of Hakkaart-Van Roijen et al., 2011, and chapter 6 of the CBA manual of Pomp, Schoemaker & Polder (2014) for a discussion on this subject.
Measurement and data availability

Only measurement and data availability aspects for education, criminality, labour participation and the intangible effect on QoL are shortly addressed, because of time constraints.

Education

For the valuation of saved costs in the education sector (and in the context of security and justice), cost prices related to these two sectors are given in the Dutch manual on inter-sectorial costs and benefits of (preventive) interventions by Drost et al. (2014). Although this manual only focusses on the indirect costs and benefits of (preventive) interventions for mental disorders outside the health care sector, this rapport provides rich information on the classification, identification and valuation of especially these two sectors. Other sectors that are shortly discussed are ‘employment and social security’ and ‘household and leisure time’, and the hard-to-quantify effects on the individual level, such as relationship effects.

The list of cost prices, based on Dutch numbers for the year 2012, given for the education sector, contains the following main categories which are further subdivided (see page 36 and 37): Repeating a class, change of education level and refusal of admission, premature dropout and exemption of compulsory education, special education, school attendance officer, monitoring of education at private institutions, transport costs of special education, and the student specific financing (i.e. ‘Rugzakje’, which is abolished since the first of August 2014 and replaced with the act of ‘compatible education’ (i.e. Passend onderwijs); thus this specific cost price is no longer applicable).

What is not included in this list is the amount of absence at school, due to illness or skipping school behaviour. Schools register and report absence already more thoroughly, but to what extent this behaviour is related to a mental health problems and disorders is not clear (De Boer et al., 2013). The school performances, number of education years and years repeated are registered and can be possibly obtained at schools and from school rapports. However to what extent these numbers improve because of treatment, is more difficult to draw. Then also other personal information would be wanted, such as the circumstances of the youth. To be able to assess if skipping school behaviour diminishes because of treatment, we need to have more knowledge on the reasons of skipping school behaviour.

Criminality

Cost prices in the field of security and justice are also given in the manual of Drost et al. (2014) for the following main categories (see page 43-47 for the further refinements): Immaterial damage, lost productivity of victims, police and HALT-punishments, judicial assistance, legal cases, appeal to forensic services, appeal to forensic psychiatric services, incarceration, payment fines and transactions, rehabilitation of adults and youth. Indirect costs factors in this sector that were not quantifiable are: Illegal income (which costs the government money in the form of tax on income and on capital, and in the form of punishments of these illegal facts), other punishments than fines and incarceration, loss of employment and properties of the perpetrator, and advice and reporting point child abuse (i.e. Advies en Meldpunt Kindermishandeling, AMK)
**Employment**
How the costs of lost productivity - related to inability to work, more absent at work or less productive at work (presenteîsmé costs) - can be measured and valued are already discussed in chapter 5.1.2 and in the corresponding appendix 6.

**Quality of Life**
It is recommended by the foundation that benchmarks MHC institutions (i.e. Stichting Benchmark GGZ, SBG) to measure the effect on QoL in ROM (see appendix 9). However, in daily practice, QoL is not included in the standard. Instead less general outcomes are included. An interview respondent replied that only for research purposes other measures are sometimes added, such as the QoL scale, to calculate QALYs for example. The QoL scale-measure asks about how much burden a patient experiences of their problems in their daily life. For example, how it goes at school. A practical consideration of the reason these more elusive metrics are not automatically included in ROM was addressed by two respondents. First, because of the burden of questionnaires on parents and professionals. Also, it is difficult to include ROM in the daily routine, like one respondent said “It has not been integrated with us all yet”. Additionally we can only say so little about the decrease of symptoms, which should be the first priority now.
APPENDIX 11

Interview protocol

Datum: 24 juni 2014

Interviewprotocol

Inleiding

- Bedanken voor ontvangst
- Duur interview
  Benadrukken dat je hier niet overheen gaat, dus af en toe ook op je horloge zult kijken
- Voorstellen van mezelf
  Scriptie is laatste onderdeel Master O&MC aan de RuG, daarvoor bachelor Bdk gedaan.
- Doel van het onderzoek uitleggen
  Ik ben geïnteresseerd in welke kosten en baten posten er zijn bij het behandelen van mentale
  problemen bij jeugd. Inzicht in de kosten van jeugd-ggz is al wel redelijk accuraat, maar inzicht
  in de baten van jeugd-ggz ontbreekt nog deels. Na mij zullen andere studenten onderzoeken hoe hoog de kosten en de baten zijn voor specifieke
  behandelingen voor een bepaalde mentale stoornis, zodat we daadwerkelijk de kosten en baten
  tegen elkaar af kunnen zetten. Maar voor we kunnen meten moeten we eerst weten welke posten
  we meenemen in deze kosten-baten analyses, welke ik in kaart wil brengen.
- Doel van de interviews uitleggen
  Doelstelling interviews is het bevestigen of ontkrachten, en aanvullen van de literatuur die ik zelf
  gevonden heb over de kosten en baten posten van jeugd-ggz en over het wetenschappelijk
  bewijs van de relatie van deze posten met jeugd-ggz.
- Waarom je deze persoon wilt interviewen
  Benadrukken van zijn expertise en waardevolle kennis
- Vertrouwelijkheid data
  Scriptie wordt binnen de RuG digitaal gearchiveerd. Deze zijn vrij toegankelijk voor studenten
  aan de RuG. Uw naam zal niet worden genoemd in de scriptie.
- Toestemming vragen om het gesprek op te nemen
- Aangeven hoe breed je mag denken. Out of the box denken wordt gewaardeerd.
Inleidende vragen
Achtergrond van de respondent en zijn identiteit om zijn/haar subjectiviteit vast te leggen en verhaal beter interpreteren.

1. Opleiding
2. Huidige functie(s)
3. Bij onderzoekers: expertise onderzoek  
   Eerst eigen onderzoek op internet, als niet volledig dan navragen/controleren.

1. Ik heb begrepen dat u werkt voor .. en onderzoek doet naar/zich bezig houdt met ..  
   Klopt dit?

Openingsvragen
1. Heeft u zich al vaker met kosten en/of baten van jeugdhulpverlening bezig gehouden?
   - Waar hield u zich mee bezig?
   - Waar liep u tegen aan?

Kernvragen
Ik had u al even een korte uitleg gestuurd via de mail over de indeling in directe en indirecte kosten en baten.

Directe kosten
Kosten van het behandelen van geestelijke gezondheidsproblemen.

Indirecte kosten
Kosten die volgen uit het behandelen van geestelijke gezondheidsproblemen.

 Dit kunnen kosten zijn binnen de gezondheidssector (bv. het uurloon van een psychiater), maar ook binnen andere sectoren (bv. arbeidssector; ouders die absent zijn op werk doordat zij mee moeten naar de behandelafspraken van hun kind).

Directe baten
Gezondheidswinst, zowel mentale als fysieke, door behandeling van een geestelijk gezondheidsprobleem.

Indirecte baten
Opbrengsten van behandeling op andere gebieden dan gezondheid (bv. betere leerprestaties op school).

Heeft u hier nog vragen over?

2. Waar denkt u aan bij directe kosten van het behandelen van geestelijke gezondheidsproblemen?
   - Zowel binnen de gezondheidszorg (uurloon behandelaar), als buiten de gezondheidszorg (bv. reiskosten)
   - Verschillende perspectieven: het kind, de ouders, vrienden, (informele) hulpverleners, de belastingbetalers, gemeentes/overheid
Als u nu breder kijkt, vanuit een ander perspectief, zijn er dan nog meer dingen die bij u opkomen?
   - Denkt u dat we een volledig beeld hebben van de totale directe kosten van jeugd-ggz?
   - Weerspiegelen de vastgestelde kostprijzen de werkelijke kosten?
   - Waar zouden we nog meer gedetailleerder cijfers over moeten hebben?
3. Wat kunnen volgens u indirecte kosten zijn van het behandelen van geestelijke gezondheidsproblemen?
   - Zowel binnen de gezondheidszorg (additionele kosten in gewonnen levensjaren, negatieve bijwerkingen medicijnen die leiden tot zorgkosten), als buiten de gezondheidszorg (ouders absent op werk door behandelaarspraak kind)Perspectief kind
   - Verschillende perspectieven: het kind, de ouders, vrienden/sociaal netwerk, (informele) hulpverleners, de belastingbetaler, gemeentes/overheid

4. Wat zijn volgens u directe baten van behandeling van geestelijke gezondheidsproblemen?
   - Bent u bekend met uitkomstmaten waarin we gezondheid kunnen meten?
   - Welke effectmaat voor toename in geestelijke gezondheid vindt u het meest geschikt? QALY / DALY / # disability days
   - Hoe meten we dit?

5. Aan welke indirecte baten denkt u bij behandeling van geestelijke gezondheidsproblemen bij jeugd op de korte termijn?
   - Verschillende perspectieven: het kind, de ouders, vrienden/sociaal netwerk, (informele) hulpverleners, de belastingbetaler, gemeentes/overheid

6. Aan welke indirecte baten denkt u bij behandeling van geestelijke gezondheidsproblemen bij jeugd op de lange termijn?
   - Verschillende perspectieven: het kind, de ouders, vrienden/sociaal netwerk, (informele) hulpverleners, de belastingbetaler, gemeentes/overheid Perspectief kind

7. Hoe kijkt u aan tegen het meenemen van alle deze posten in economische evaluaties?
   - Is dit zinvol/haalbaar?
   - Welke posten vindt u het meest relevant om mee te nemen, en welke niet?
     (Welke posten zijn meest belangrijk voor respondent → rangorde lijst)

8. Wat zouden we dan nog moeten registreren/monitoren wat nu nog niet geregistreerd wordt, om te meten of deze kosten en baten ook gerealiseerd worden?
   - Is alles te meten en uit te drukken in geld?

9. Welke moeilijkheden voorziet u in het uitvoeren van KBAs in de toekomst?
   - Welke problemen moeten we nog beantwoorden/oplossen?
   - Wat zijn de eerstvolgende stappen die we hiervoor moeten zetten?
   - Welke moeilijkheden komen we hierbij tegen?
Afsluitende vragen

10. Wat vindt u van deze manier waarop naar de zorg wordt gekeken? Daarmee bedoel ik de zorg vanuit *geld oogmerk* te bekijken.

11. *In hoeverre zou een KBA kunnen en moeten bijdragen aan de vraag of we moeten investeren in jeugd-ggz of niet?*
   - Als de kosten hoger zijn dan de baten is het dan redelijk om te bezuinigen op jeugd-ggz in deze zware economische tijden?

12. *Tot slot, waar moeten we nog meer naar kijken om te beslissen of we wel of niet gaan investeren in jeugd-ggz?*
   - Zijn er nog andere factoren dan die niet aan de orde komen in een KBA die van belang zijn om mee te nemen in de beslissing of we investeren in jeugd-ggz? In welke interventie en doelgroep problematiek dan precies?

13. *Zijn er nog andere dingen die u mij wilt meegeven?*

Afsluiten
Bedankt voor uw tijd. Ik ga deze informatie verwerken in mijn stuk. Mag ik nog contact met u opnemen als ik nog vragen naderhand heb? Kan dit via de email of telefoon?
Wilt u het rapport ontvangen?

Extra vragen

1. *Wat vind u van de transitie van jeugd hulpverlening naar de gemeentes?*
   - Gemeentes genoeg kennis over de verschillende kwaliteiten van de bestaande jeugdhulpverleners en welke zij moeten inschakelen?

2. *Hoe denkt u dat de bijkomende bezuinigingen de sector zullen raken?*
   - Minder kinderen doorgestuurd naar gespecialiseerde jeugdzorg?
APPENDIX 12

Topic list – send to interview respondents beforehand

Informatie vooraf – interview vooronderzoek kosten-baten analyse

In mijn scriptie ga ik op zoek naar alle mogelijke kosten- en batenposten van het behandelen van geestelijke gezondheidsproblemen bij kinderen en adolescenten. In de literatuur ben ik al wat posten tegengekomen, maar ik zou ook graag van U willen weten aan welke kostenposten u denkt bij het behandelen van geestelijke gezondheidsproblemen en met name aan welke opbrengstposten.

In mijn onderzoek neem ik alle jeugd-ggz behandelingen mee en alle soorten geestelijke gezondheidsproblemen, om een uitgebreide lijst op te stellen met mogelijke kosten en baten van jeugd-ggz. Of de kosten en baten daadwerkelijk gegenereerd worden valt buiten mijn onderzoek. Hiervoor zijn effectiviteitsstudies nodig, die ook toespitsen op een specifieke interventie en specifieke mentale stoornis.

Voor u geldt dus dat u alle posten kunt noemen waar u aan denkt; inbegrepen het hele aanbod van interventies en alle mentale stoornissen. Beperkt u zich vooral ook niet tot de korte termijn, maar denk aan effecten op de termijn vanaf het moment dat een kind in zorg is tot aan zijn/haar dood.

De kosten en baten worden in de literatuur ingedeeld in direct en indirect. Hieronder vindt u een uitleg van deze termen.

Terminologie:

**Kosten-baten analyse**

De kosten en baten van een interventie, uitgedrukt in monetaire eenheden, worden tegen elkaar afgezet. Als de baten de kosten overstijgen is de interventie voordelig.

**Directe kosten**

Kosten van het behandelen van geestelijke gezondheidsproblemen.

**Indirecte kosten**

Kosten die volgen uit het behandelen van geestelijke gezondheidsproblemen.

Dit kunnen kosten zijn binnen de gezondheidssector (bv. het uurloon van een psychiater), maar ook binnen andere sectoren (bv. arbeidssector; ouders die absent zijn op werk doordat zij mee moeten naar de behandelafspraken van hun kind).

**Directe baten**

Gezondheidswinst, zowel mentale als fysieke, door behandeling van een geestelijk gezondheidsprobleem.

**Indirecte baten**

Opbrengsten van behandeling op andere gebieden dan gezondheid (bv. betere leerprestaties op school).

Aan de hand van bovenstaande indeling zou ik het gesprek ook willen voeren. De belangrijkste topics die aan de orde komen zijn dus als volgt:

1. Directe kosten van behandeling
2. Indirecte kosten van behandeling
3. Directe baten van behandeling
4. Indirecte baten van behandeling

U kunt dit vanuit verschillende perspectieven bekijken, wat ik dan ook aanmoedig. Ik schrijf mijn onderzoek vanuit een maatschappelijk perspectief, wat inhoudt dat ik de kosten en baten van alle betrokkenen die geraakt worden door de behandeling meeneem. Voorbeelden van betrokkenen kunnen zijn het kind, de ouders, vrienden, (informele) hulpverleners, de belastingbetaler, gemeentes/overheid etcetera.
APPENDIX 13

Selective set of questions included in the Tic-P Questionnaire suited for children with psychiatric problems

Vragenlijst

over de gezondheid van uw kind

in de afgelopen 3 maanden

Onderzoekers noemen deze vragenlijst de TiC-P kinderen.
Vraag 16. Hoeveel afspraken had uw kind in de afgelopen 3 maanden met een diëtist?

☐ Geen enkele afspraak
☐ ...... afspraken

Vraag 17. Hoeveel afspraken had uw kind in de afgelopen 3 maanden met een homeopaat? Of met een acupuncturist? Tel alle afspraken van uw kind met deze zorgverleners bij elkaar op.

☐ Geen enkele afspraak
☐ ...... afspraken

Vraag 18. Hoeveel afspraken had uw kind in de afgelopen 3 maanden bij het RIAGG? Of bij een andere instelling van de GGZ? Tel al deze afspraken van uw kind bij elkaar op.

☐ Geen enkele afspraak
☐ ...... afspraken

Vraag 19. Hoeveel afspraken had uw kind in de afgelopen 3 maanden met een psychiater, psycholoog of psychotherapeut? Het gaat om een psychiater, psycholoog of psychotherapeut met een eigen praktijk. Tel alle afspraken van uw kind met deze zorgverleners bij elkaar op.

☐ Geen enkele afspraak
☐ ...... afspraken

Vraag 20. Heeft uw kind in de afgelopen 3 maanden medicijnen gebruikt?

☐ Nee
☐ Ja

☐ Nee  
☐ Ja

Heeft u “Ja” aangekruist? Beantwoord dan vraag 41. Ga anders verder met vraag 42.

Vraag 41. Hoeveel dagen heeft uw kind hierdoor op school gemist? Tel alle hele en halve dagen in de afgelopen 3 maanden bij elkaar op. In totaal ongeveer …… dagen in de afgelopen 3 maanden


☐ Nee  
☐ Ja

Heeft u “Ja” aangekruist? Beantwoord dan vraag 43. De volgende vragen gaan over dingen die uw kind in de afgelopen 3 maanden gemist heeft door ziekte. Of doordat uw kind naar een dokter moest. Misschien heeft uw kind hierdoor lessen op school gemist. Of bijvoorbeeld voetbaltraining, zwemles of muziekles.

Vraag 43. Hoeveel keer heeft uw kind hierdoor een training of les gemist? Tel alle keren in de afgelopen 3 maanden bij elkaar op. In totaal ongeveer …… keer in de afgelopen 3 maanden
APPENDIX 14

Meetings and conferences attended during the writing of this thesis

• Conference ‘Jeugd in Onderzoek: Wat werkt voor de jeugd’ - 10 March 2014 at Nieuwegein
  This national conference focused on research on the effectiveness of youth health care, and how to improve the effectiveness of this care.

• Meeting with Controllers of Child and Adolescent Psychiatric institutions (EKJP) - 16 April 2014 at Ede
  This meeting was part of the internship I did at Accare, during which I helped with the benchmark between seven large child and adolescent psychiatric institutions. This meeting was scheduled with the controllers of these institutions. During this meeting I presented the plans and approach we would take for the benchmark, after which our proposals were discussed.

• Meeting Benchmark - 24 April 2014 at Utrecht
  The intent of this meeting was to gather input for the benchmark of the institutions on several aspects of care, such as the amount of time spend on different activities registered in the DBC of patients. Beforehand we had set up propositions, which were discussed.

• Symposium ‘Jeugdhulp, kip met de gouden eieren’ - 12 June 2014 at Stadskanaal
  The central questions addressed during this symposium were how to improve youth health care, make it less expensive and organize the sector better.

• Meeting Accare and GGZNL - 20 June 2014 at Assen
  This meeting was organized to exchange information between and coordinate the efforts made by Accare and GGZ Nederland (the branch organization of MHC), concerning the research on CBAs and benchmarks for the youth health care sector that both organizations engage in.

• Expert meeting - 25 June 2014 at Groningen
  This meeting was organized by C4Youth and the City of Groningen to set a collective, multi-annual research agenda for the care for youth with experts in the field, among which were researchers, health care providers, practitioners, the social field, and municipalities.

• Presentation of the Master thesis of Norma Schaede at GGZ NL - 14 July 2014 at Amersfoort
  This presentation was provided by a Master student who conducted a CBAs in cooperation with GGZ NL. I attended this presentation to gain information on how they conducted their research.

• Presentation Ministry of Security and Justice, - 9 September 2014 at Den Haag
  The Ministry of Security and Justice had invited my supervisor to give a presentation on why CEAs where necessary, and the approach, experiences and difficulties she faced. The Ministry was also interested in SCBAs, thus I was given the opportunity to come along and present my preliminary results of this thesis.