

CHILD AND ADOLESCENT MENTAL HEALTH SERVICES PAYMENT SYSTEM PROJECT

FINAL REPORT

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- A. A Guide to Choosing Needs-Based Groupings in Child and Adolescent Mental Health Services to Inform Payment Systems
- B. Project Governance
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1. Purpose of document

This is the final report of the Child and Adolescent Mental Health Services (CAMHS) Payment System Project, which ran from October 2011 until 30th April 2015. Its purpose is to share the findings of the Project Group, including the first attempt to define a classification of children, young people and families seeking mental health support, and the opportunities and challenges this presents. Recommendations of further work to facilitate implementation are offered.

Such a classification can be used to support a currency-based approach to contracting between commissioners and providers of services to improve the mental health and wellbeing of children and young people. The work reported can therefore be viewed as a first step in the development pathway towards an information and payment system.

2. Acknowledgments

We want to thank former members of the Project Group for their contributions, while recognising that they may not endorse the proposals contained in this report. Former members include Mary Ann Doyle, Davide de Francesco, Andy Fugard, Katy Hopkins, Melanie Jones, Rebecca Kyrke-Smith, Gordana Milavić, Deirdre Moroney and Ruth Sweeting.

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3a. Misconceptions we wish to avoid

Misconception 1: Groupings are based on diagnoses

The groupings set out in this report are a first attempt at categorising service users in terms of their ‘needs for advice or help’. ‘Need for advice or help’ is defined as the identified approach to advice or help collaboratively agreed via a process of shared decision making between service provider and service user. It includes **both** judgement of the appropriateness of interventions offered **and** the informed choices of children, young people and their carers regarding the approach to advice or help that is best for them, **within** the parameters and scope of the commissioned service. For example, a young person may choose to tackle behaviours suggestive of obsessive-compulsive disorder (OCD), e.g. excessive hand washing, on their own, and so may collaboratively agree with their clinician to receive self-management advice. In this case, the grouping ‘Getting Advice: Signposting and Self-management Advice’ would be chosen, and not ‘Getting Help: OCD (Guided by NICE Guideline 31)’.

The names of some of the groupings refer to National Institute for Health and Care Excellence (NICE) clinical guidelines because these guidelines are taken as best clinical practice nationally available. Many of these guidelines refer to diagnostic categories and hence there is danger the groupings will be seen as diagnostic. This is not the intention. Membership of a grouping does not necessarily imply a diagnosis, but rather is taken to imply that treatment drawing on these NICE guidelines might best meet the needs of individuals in this grouping (e.g. see worked examples in Appendix A).

Misconception 2: Complexity, contextual and EET factors have been disregarded

When we embarked on this project we thought it highly likely that complexity factors, contextual problems and education/employment/training (EET) difficulties would impact on resource use and outcomes. This was also a clear steer from our consultation with clinicians across the country. After widespread consultation we included the following complexity factors in the Current View tool to try to capture this aspect: Looked after child; Young carer status; Learning disability; Serious physical health issues (including chronic fatigue); Pervasive Developmental Disorders (Autism/Asperger’s); Neurological issues (e.g. Tics or Tourette’s); Current protection plan; Deemed “child in need” of social service input; Refugee or asylum seeker; Experience of war, torture or trafficking; Experience of abuse or neglect; Parental health issues; Contact with Youth Justice System; Living in financial difficulty. We also included sections for rating the impact of EET attendance or attainment difficulties, and problems in relation to the following contexts: Home; School, work or training; Community; Service engagement.

However, we have been unable to find any clear empirical evidence for relationships between complexity/EET/contextual factors and need for resources (Appendix E: Section 6.1), once grouping membership was taken into account. This is not for want of looking. It is possible that our data were not of sufficient quality for us to detect such a relationship. It is also important to note that complexity and context may be important in many other ways that are relevant to clinical practice and service planning, quite apart from the prediction of resource use. It was not within the remit of our project to examine all ways in which such factors may be important. Our result simply means that we found no strong evidence that the presence or absence of complexity/EET/contextual factors predict differences in resource use between children in the same grouping. We are committed to an evidence based approach and so could not find a way to build these factors into our proposed groupings in any coherent way. Further research in this area is recommended.

Misconception 3: The algorithm should be used to automatically group service users

Assignment to a grouping should not be determined solely by the algorithm based on the ratings of a completed Current View tool. The algorithm merely provides a suggestion, which may be one of the considerations that enters into the shared decision making process for choosing a grouping (Appendix A).

We have included full details of the algorithm for transparency (Appendix C) and suggest people explore and use it as a starting point for decision making.

3b. Executive summary

3.1 Background

The direction of mental health payment system development highlights the importance of ‘currencies’ as an information building block to assist with commissioning and contracting (Monitor and NHS England 2014a). Currencies can be considered as classifications that aim to group together periods of care, advice or help with broadly similar resource use, in a manner that is meaningful to practitioners and compatible with need (NHS England Pricing Team 2015). They offer greater transparency by supporting commissioners and providers in gaining a better understanding of their service users and care package costs (Department of Health 2008a; Busse and Quentin 2011). The current data reporting and block contract arrangements in child and adolescent mental health services (CAMHS) are felt to offer limited information on these dimensions. Once currencies are adequately developed and applied in practice, recommendations for linking them to payment may be issued. In acute physical health care, national currencies have been used for reimbursement since 2003, and it was recently estimated that these payment arrangements cover two-thirds of services provided to patients (PwC 2012).

In October 2011, the Department of Health appointed a consortium of providers, commissioners and academics to develop currencies for CAMHS. National sponsorship of the project transferred to NHS England in April 2014 and it concluded in April 2015. An overview of its objectives, methods, deliverables and findings is presented below.

What motivated the Project Group to the challenge of defining currencies was the belief that they may contribute towards improving and supporting youth wellbeing by better informing service development and commissioning decisions. It was felt that the availability of data at a local level on the ‘needs for advice or help’¹ of service users, coupled with high quality information on interventions and outcomes, would play a valuable role in assessing the state of provision, prioritising areas for action and monitoring the effects of changes (JCPMH 2013; Murphy and Fonagy 2013; Data and Standards Task and Finish Group 2015).

3.2 Objectives

A central objective was to develop needs-based currencies for children, young people and their families.

Criteria for currencies include

- clinical meaningfulness
- ability to identify instances or periods of care (or advice/help) of similar resource use, reflecting service user need and
- reliability of identification (NHS England Pricing Team 2014).

Other objectives included developing an algorithm to assist with currency assignment, relating currencies to outcomes monitoring and care packages, and supporting the development of the CAMHS national data set.²

3.3 Development process

In order to take into account different perspectives on needs for advice or help and to compensate for the limitations of individual data sources our approach included

- a review of National Institute for Health and Care Excellence (NICE) clinical guidelines,
- analysis of CAMH service data sets, using several different methods,
- consultation with clinicians, commissioners, service users and other stakeholders and
- a governance structure that enabled input from an Advisory Group and NHS England.

A large segment of the project from 2012–2014 involved recruiting, training and working with twenty CAMH services (‘pilot sites’) across the country on the collection, submission and quality improvement of data. This ‘data collection pilot’ generated a bespoke data set for subsequent analysis and apprised us of a need for substantial initial and refresher training to improve the reliability of completion of new data collection

¹ We use the term ‘need for advice or help’ as a conceptualisation of need that invites consideration of the appropriateness or cost-effectiveness of interventions that may be offered, as well as service users’ informed preferences (Marshall 1994; Culyer 2007). Specifically, this refers to the identified approach to advice or help collaboratively agreed via a process of shared decision making between service provider and service user, within the parameters and scope of the commissioned service.

² At the time of writing, this is planned to be introduced as part of the Mental Health Services Data Set (HSCIC 2015a).

tools.

Each information source had advantages and disadvantages. For example, the NICE guidelines reviewed contained recommendations of care packages that took into account considerations of effectiveness and cost-effectiveness where possible to do so (NICE 2008a). However, it was judged that they were only partially relevant to service users with multiple co-occurring problems. In contrast, although the activities reported in CAMHS data sets reflected current practice rather than necessarily 'best practice', service data sets provided valuable information on resource use for a wider range of 'real-world' cases, including those with comorbidity.

3.4 Proposed draft groupings, algorithm and incorporation of outcomes

Following data analysis and stakeholder engagement nineteen needs-based groupings, aimed at covering the full range of CAMHS provision, were developed and are summarised in Figure 3.1. They are structured under three 'super groupings': 'Getting Advice', 'Getting Help' and 'Getting More Help'. The grouping names are intended to be sensitive to young people's preference for a language that focusses on support available rather than the severity of difficulties. The groupings do not necessarily require or imply any particular diagnosis. We developed an algorithm, which uses ratings from a completed 'Current View' tool to suggest a grouping for a service user. The Current View tool, an earlier deliverable from the project, is a clinician-rated one page form for collecting data on provisional problems, complexity factors, contextual problems, and education/employment/training (EET) difficulties (CAMHS EBPU 2012; Jones et al. 2013).

The proposed draft groupings were recently published but have not yet been piloted (CAMHS Payment System Project Group 2015). At the current time the algorithm has been applied to the project data set to provide a rough estimate of relative grouping sizes (Table 3.1, Figure 3.2) and their distributions of resource use (Figure 3.3). In practice we feel that grouping assignment should not be driven solely by the algorithm; it algorithm merely provides a first suggestion regarding which grouping may be appropriate for a child or young person at a particular time. We propose the choice of grouping for a child, young person and family should result from shared decision making and clinical judgement (CAMHS EBPU et al. 2014), supported by the descriptions of the groupings (Appendix A) and the algorithm's suggestion.

Two considerations underpin the draft groupings. The first relates to their ability to differentiate groups of service users with regard to average resource use³ (see Figure 3.3). The second is built on our understanding of how evidence-based guidance may be applied in CAMHS. We designed the classification to provide flexibility for choice of whether a grouping guided by a single NICE clinical guideline could be appropriate. Groupings ADH, AUT, BEH, BIP, DEP, GAP, OCD, PTS, SHA, SOC, EAT, PBP and PSY are intended for cases where it is felt that care packages guided by specific NICE guidelines may be beneficial. Groupings BEM, EMO, DNC and DSI cater for cases where it is felt that a care package guided by a specific NICE guideline would not be sufficient. Advice offered in the Getting Advice groupings (NEU and ADV) may be guided by the relevant parts of any NICE guidelines.

From the outset the Project Group have been committed to the aspiration to ensure that any payment system incentivises positive impact and outcomes for those accessing services. However, we are also very alive to the complexities and challenges in this area (see e.g. Fleming et al. 2014; Wolpert et al. 2014; Macdonald and Fugard 2015). Measuring outcomes in the services that are being paid for is very important and we recognise that further work should be carried out to improve data completeness and better understand variation. An overriding principle needs to be that indicators of outcomes are openly agreed between service users and providers and commissioners. We are not yet at a stage where we can recommend any one outcome measure or indicator that can be safely used. If an indicator is going to be used that is not of clinical relevance or used for performance comparison purposes then the cost, burden and possible adverse effects should be assessed at the outset.

Returning to the criteria of currencies noted above, we make the following assessment of the groupings in their current draft form:

Clinical meaningfulness. Input from clinicians was taken into account throughout the project and we feel the

³ Resource use is distinct from 'need for advice or help', since current practice patterns may vary in person-centeredness and cost-effectiveness. However, when interpreted carefully, resource use may serve as an indicator of need.

groupings have clinical face validity as a consequence. One unexpected finding from data analysis was the absence of clear associations between the complexity, contextual and EET factors (as measured by the Current View tool) and resource use, once grouping membership was taken into account. This formed the basis of our decision to introduce no further division of groupings by any of these factors. We believe, however, that these factors should be monitored and thus remain part of the Current View form, to enable further investigation in the future.

Ability to identify periods of similar resource use. The average number of appointments differs between the groupings broadly in line with theoretical expectations. Groupings within the Getting More Help super group tend to have the highest average resource use. Service users allocated by the algorithm to Getting Advice tend to have the lowest average resource use. However there is arguably more variation within the groupings than between them (Figure 3.3), i.e. groupings are not internally homogenous with respect to resource use. These conclusions do not change if we operationalize resource use via an estimate of the relative cost of each appointment, taking into account the appointments' durations and the type and number of clinical staff present (instead of taking simply the number of appointments; see Appendix E for details). One factor that is important to consider in this respect is the considerable variation between services, consistent with the findings of similar studies in Australia and New Zealand (Buckingham et al. 1998; Gaines et al. 2003). We suggest that the relationship between grouping and resource use be investigated further in a sample of children and young people who have been assigned to groups on the basis of shared decisions, rather than solely on the basis of our algorithmic decision rule.

Reliability of identification. The classification algorithm we developed makes a single suggestion for group membership of a child or young person at a given time, based on the clinician's ratings of the Current View form. We were unable, within this project, to investigate the agreement of the algorithmic allocation with allocations based on shared treatment decisions. Although we intend the classification algorithm to be an aid to consistent classification, we believe that a new project piloting the groupings is needed to validate the groupings and assess the reliability of group assignment.

3.5 Conclusions

This project delivers a 'first draft' classification that aims to group together children, young people and their families seeking mental health support according to their needs for advice or help. It endeavours to be compatible with current practice and to align with on-going efforts to implement shared decision making and evidence-based interventions, including the routine use of outcomes indicators (CAMHS EBPU et al. 2014; Law and Wolpert 2014; NICE 2015a).

Given the nascent state of the groupings the Project Group are in favour of a programme of work to test and refine them, and we offer recommendations below. Several of these areas would undoubtedly be supported by stronger IT infrastructure, specifically with regard to the collection of better resource use data and the development of systems to feed back information from currencies and outcomes in a way that can usefully inform clinical decision making. This may include more detailed and complete data from statutory and voluntary services that not only captures direct but also indirect work, and the staffing costs related to those activities.⁴ The upcoming introduction of the Mental Health Services Data Set (MHSDS) will provide a helpful foundation (HSCIC 2015a). It is likely to do this through enabling the national collation of data from community CAMHS for the first time, as well as providing concomitant standards to ensure IT systems are developed to allow collection of the base data. In the longer term, an integrated or linked data set that includes the contribution of as many entities as possible (e.g. CAMH services, social care, voluntary sector organisations, schools) would inform the development of the classification in a direction that might offer better support to multi-agency commissioning and provision.

In conclusion, we feel that the outputs of this project offer promising prospects. Following testing and refinement, they may serve to inform commissioning, service management and research. Experience has shown that analyses afforded by this sort of classification work are unlikely to provide the answers to questions of efficiency or appropriateness, but may facilitate the asking of questions and discussion (Smith et al. 1998; Duncan and Holliday 2014). We therefore recognise there are risks of overly simplistic

⁴ We define direct activities as those involving direct contact with the child, young person and/or family and indirect activities as those related to a specific case (named child), but not involving direct contact with the child, young person and/or family (e.g. consultation or case discussion with another professional).

application. This particularly applies to any use with respect to contracts and pricing, where research on the acute sector alerts us to both intended and unintended consequences of payment system reform (Allen 2009; Cots et al. 2011).

3.6 Recommendations

We consider it would be useful for future efforts in piloting and research to address:

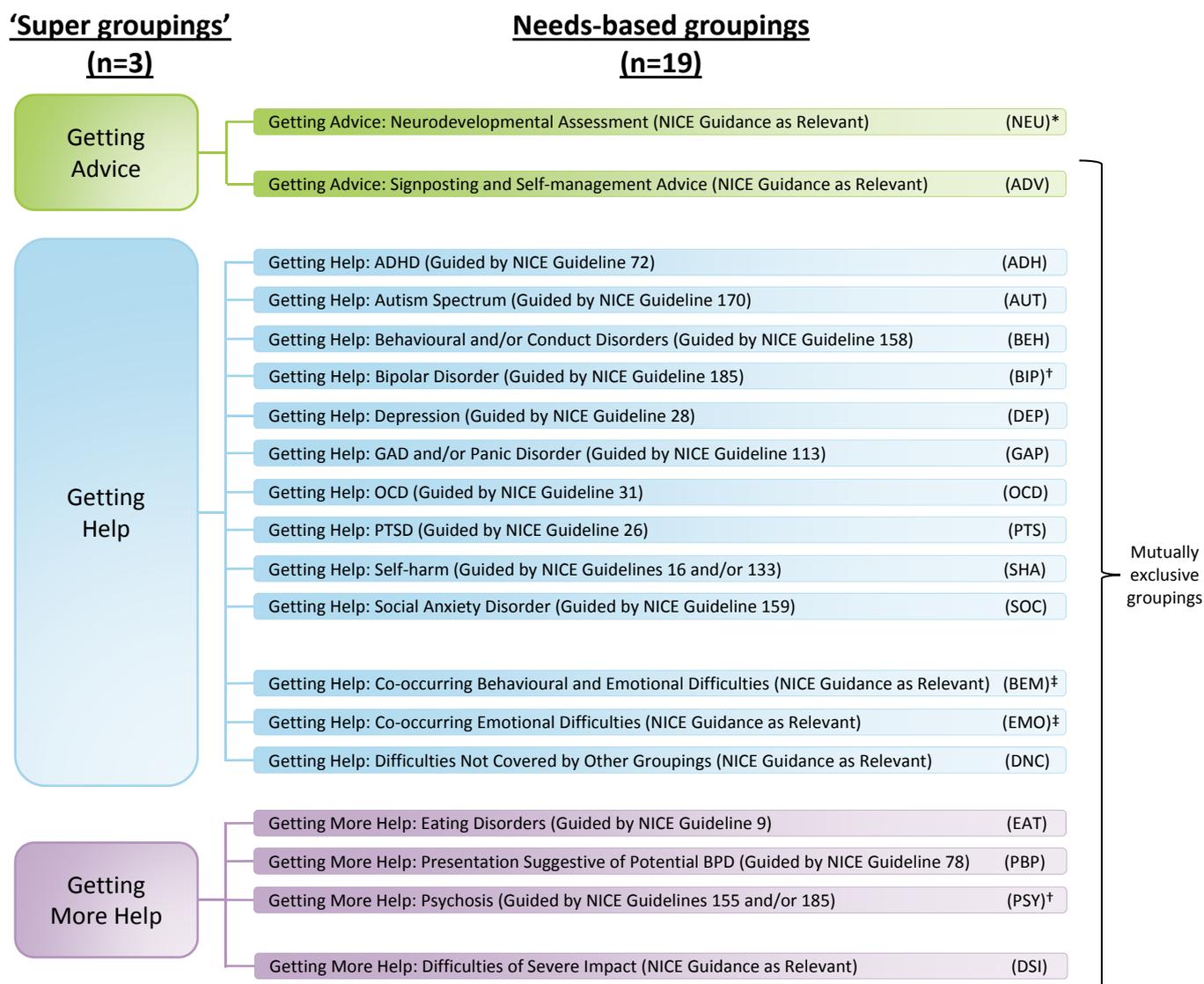
- 1) Validation and refinement of the classification:
 - a. Comprehensiveness: do the groupings represent the needs of the full range of children, young people and families seen in CAMHS? Particular areas to consider are inpatient provision and the potential inclusion of a 'Getting Risk Support' grouping
 - b. Clinical meaningfulness and utility: do groupings provide accurate descriptions of types of children, young people and families seen in CAMHS, and the treatment, advice or support that they need?
 - c. Relationship to resource use: can the relationship between grouping and resource use found in this project be replicated in new data, where group assignment will have been made on the basis of shared decisions and clinical judgement, rather than Current View ratings alone?
- 2) Reliability of assignment to the groupings:
 - a. Are clinicians consistent in the way they assign service users to groupings?
 - b. What training and refresher training is required to achieve acceptable reliability?
- 3) Further investigation into complexity and contextual factors (e.g. as defined on the Current View tool) and their association with resource use
- 4) Acceptability to service users and clinicians of the groupings and proposed process of assignment
- 5) Currency unit development (constructing episode-based units for use in contracts):
 - a. Groupings within the Getting Advice and Getting Help 'super groupings': Can these be operationalized as 'quantum-based' currency units? What would be the optimal 'grouping review points' (e.g. expressed as a number of appointments) to recommend for each?
 - b. Groupings within the Getting More Help 'super grouping': Can these be operationalized as 'time-based' currency units? Is a year a useful time frame for these currencies?
- 6) Outcomes incorporated into practice:
 - a. Combining information from outcomes measurement with measures of the quality of clinical processes and patient experiences to explore how these data might be used as part of performance monitoring or payment systems without introducing too many perverse incentives
- 7) IT infrastructure development
 - a. Funding or incentivisation for more comprehensive data collection and use to inform clinical and commissioning decision making
- 8) Costing the packages of care that are being delivered

3.7 Principles for implementation of groupings as currently defined

We believe that application of the following principles will assist with implementation of the needs-based groupings:

- 1) *A grouping should be chosen by a process of shared decision making.* This includes **both** judgement of the appropriateness of interventions offered **and** the informed choices of children, young people and their carers regarding the approach to advice or help that is best for them at a given time, **within** the parameters and scope of the commissioned service.
- 2) *The algorithm is only a guide.* The Current View tool and algorithm serve as a guide for grouping but are not intended to be the sole determinant of grouping membership. The algorithm merely provides a suggestion, which may be one of the considerations that enters into the shared decision making process for choosing a grouping.
- 3) *Outcome measurement is crucial.* It is vital to agree indicators of outcomes to monitor progress and whether the advice or help selected continues to be the most appropriate for a child, young person or family's needs to help them meet their chosen goals. If this does not seem to be so, discuss with the service user the appropriateness of a change in the approach or specific form of advice or help, which may or may not lead to a choice of a different grouping.

Figure 3.1 Overview of the draft needs-based groupings



Notes: * A child can be in the grouping 'Getting Advice: Neurodevelopmental Assessment (NICE Guidance as Relevant)' (NEU) at the same time as being in one of the other groupings. Apart from NEU all other groupings are mutually exclusive.

[†] If extremes of mood or bipolar disorder have moderate impact on functioning (at individual or family level) and/or distress consider grouping 'Getting Help: Bipolar Disorder (Guided by NICE Guideline 185)' (BIP); if they have severe impact consider grouping 'Getting More Help: Psychosis (Guided by NICE Guidelines 155 and/or 185)' (PSY).

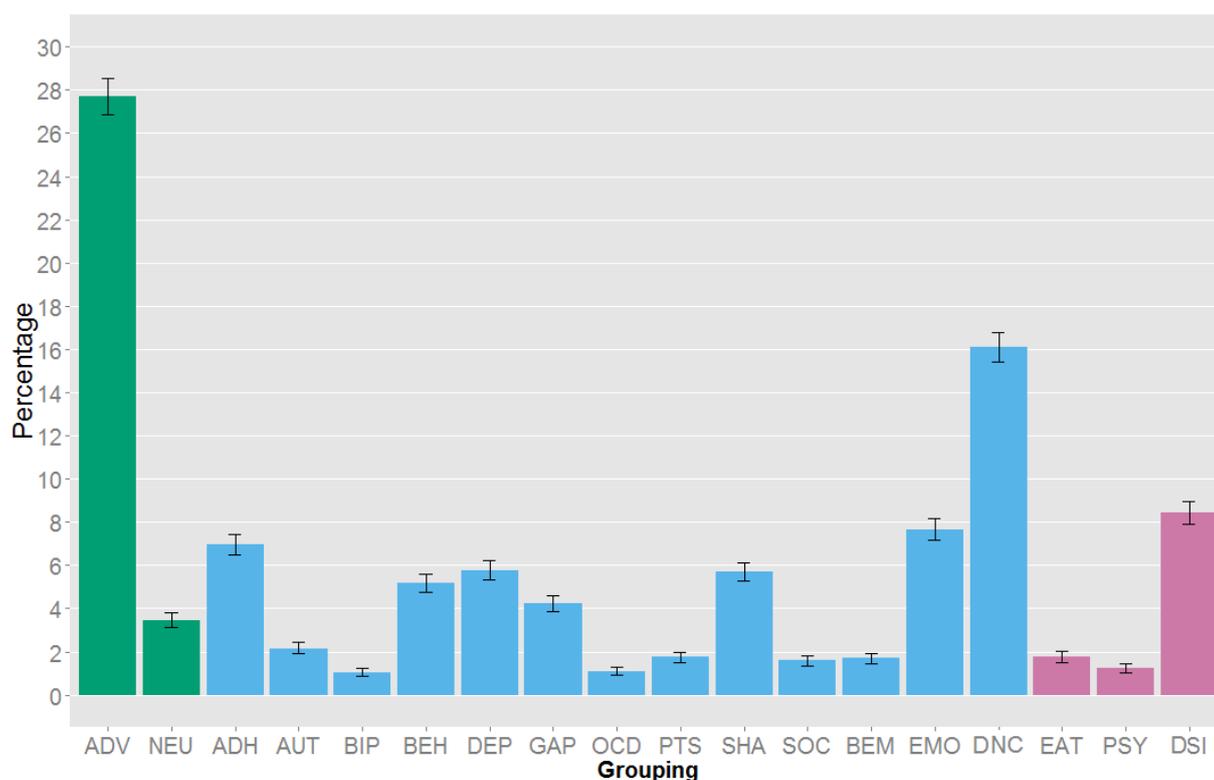
[‡] Behavioural difficulties include Conduct Disorder and Oppositional Defiant Disorder. Emotional difficulties include Depression/low mood (Depression), Panics (Panic Disorder), Anxious generally (Generalized anxiety), Compelled to do or think things (OCD), Anxious in social situations (Social anxiety/phobia), Anxious away from caregivers (Separation anxiety), Avoids going out (Agoraphobia), and Avoids specific things (Specific phobia).

Table 3.1 Estimated percentages of grouping membership

Grouping name	Short label	Estimated percentage of CAMHS users
Getting Advice: Signposting and Self-management Advice (NICE Guidance as Relevant)	ADV	27.70 %
Getting Advice: Neurodevelopmental Assessment (NICE Guidance as Relevant)*	NEU	3.47 %
Getting Help: ADHD (Guided by NICE Guideline 72)	ADH	6.96 %
Getting Help: Autism Spectrum (Guided by NICE Guideline 170)	AUT	2.16 %
Getting Help: Bipolar Disorder (Guided by NICE Guideline 185)	BIP	1.03 %
Getting Help: Behavioural and/or Conduct Disorders (Guided by NICE Guideline 158)	BEH	5.18 %
Getting Help: Depression (Guided by NICE Guideline 28)	DEP	5.76 %
Getting Help: GAD and/or Panic Disorder (Guided by NICE Guideline 113)	GAP	4.22 %
Getting Help: OCD (Guided by NICE Guideline 31)	OCD	1.11 %
Getting Help: PTSD (Guided by NICE Guideline 26)	PTS	1.74 %
Getting Help: Self-harm (Guided by NICE Guidelines 16 and/or 133)	SHA	5.68 %
Getting Help: Social Anxiety Disorder (Guided by NICE Guideline 159)	SOC	1.59 %
Getting Help: Co-occurring Behavioural and Emotional Difficulties (NICE Guidance as Relevant)	BEM	1.69 %
Getting Help: Co-occurring Emotional Difficulties (NICE Guidance as Relevant)	EMO	7.65 %
Getting Help: Difficulties Not Covered by Other Groupings (NICE Guidance as Relevant)	DNC	16.08 %
Getting More Help: Eating Disorders (Guided by NICE Guideline 9)	EAT	1.76 %
Getting More Help: Psychosis (Guided by NICE Guidelines 155 and/or 185)	PSY	1.24 %
Getting More Help: Difficulties of Severe Impact (NICE Guidance as Relevant)	DSI	8.43 %

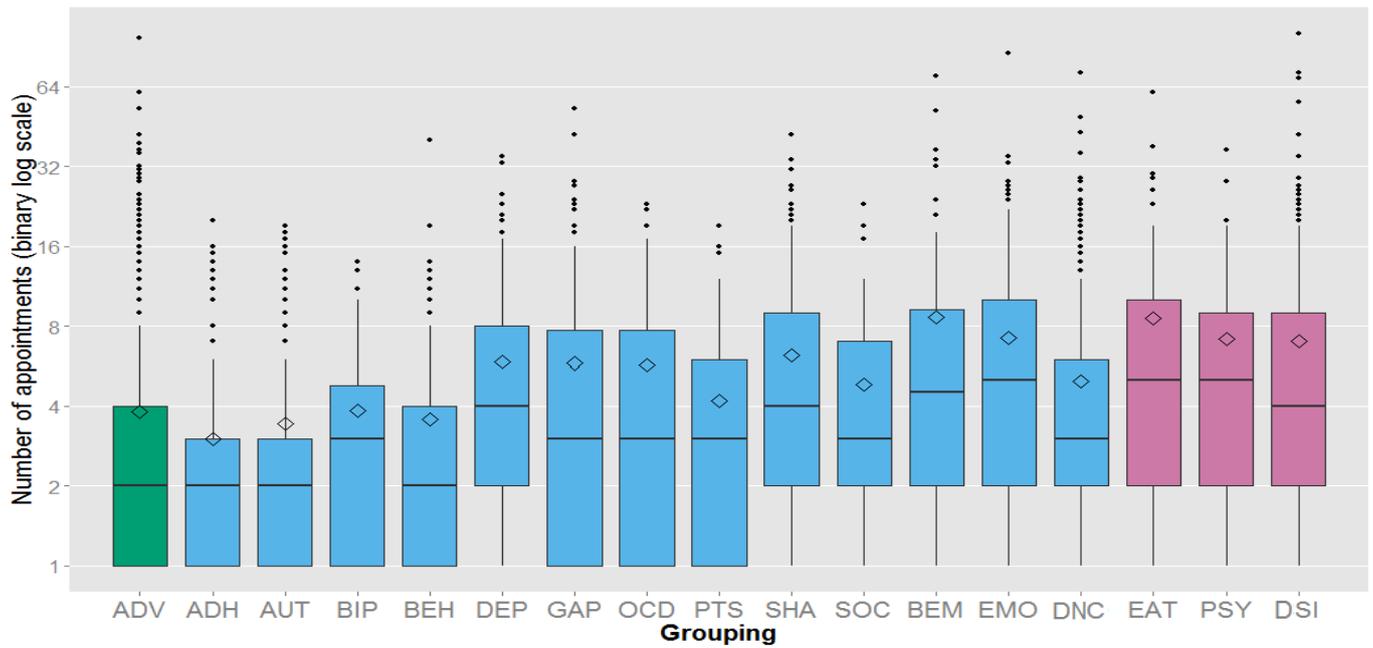
Notes: n = 11,353. * The grouping 'Getting Advice: Neurodevelopmental Assessment' is not mutually exclusive with the remaining groupings. Thus percentages sum to 100 %, not counting the grouping 'Getting Advice: Neurodevelopmental Assessment'. The grouping 'Getting More Help: Presentation Suggestive of Potential BPD (Guided by NICE Guideline 78)' is not represented, since there is currently no allocation algorithm for this group.

Figure 3.2 Estimated percentages of grouping membership



Notes: n = 11,353. Grouping labels are defined in Table 3.1. The error bars represent 95 % confidence intervals. See also notes to Table 3.1.

Figure 3.3 Number of appointments by grouping



Notes: The graph shows boxplots. The horizontal line in the middle of the box represents the median number of appointments. The lower and upper edges of a box represent the 25th and 75th percentile, respectively. The lines and dots extending below and above the boxes represent the range of “number of appointments”. The arithmetic mean is represented by a rhombus. Data are shown on a binary log scale. The grouping ‘Getting Advice: Neurodevelopmental Assessment’ is not represented, as it is not mutually exclusive with the remaining groupings. The grouping ‘Getting More Help: Presentation Suggestive of Potential BPD (Guided by NICE Guideline 78)’ is not represented, since there is currently no allocation algorithm for this group. N = 4573.

4. Background and objectives

4.1 Context

The direction of mental health payment system development highlights an important role for ‘currencies’ as an information building block to assist with commissioning and contracting (Monitor and NHS England 2014a). Currencies can be considered an approach to classification that aims to group together periods of health care (or advice/help) with broadly similar resource use, in a manner that is meaningful to practitioners and compatible with need.⁵ They are hoped to support commissioners and providers in gaining a better understanding of their service users and care package costs (Department of Health 2008a). Careful analysis and presentation of information derived from currencies data has the potential to increase the transparency of service provision (Busse and Quentin 2011).

The NHS in England operates a rules-based system for paying health care providers, maintained by annual guidance that is informed by stakeholder consultation. Once currencies are adequately developed and applied in practice, recommendations for linking them to payment may be issued. Payment rules were introduced to the acute hospital sector in 2003 under the name ‘Payment by Results’ (PbR) (Department of Health 2008b). In the following years mental health was highlighted as a priority area for the expansion of PbR (Department of Health 2008b; Department of Health 2010; York 2012). The current direction of travel with regard to mental health services retains some of the aspects of PbR, including currency development and exploring the potential of national prices (Monitor and NHS England 2014a; NHS England 2014a). However, emphasis is shifting from understanding and incentivising activity or ‘outputs’, to understanding both the ‘outputs’ and outcomes of services,⁶ and incentivising the latter (NHS England 2014a; Finnin and Brennan 2015). Cashin et al. (2014) suggest that attention to the ‘net’ effects of such ‘paying for performance’ initiatives is warranted, which include both positive ‘spillover’ effects (e.g. improved generation and use of data) and negative unintended consequences (e.g. shift of focus away from unrewarded aspects of quality).

The Project Group share an aspiration to improve and support youth wellbeing through commissioning and service development guided by a holistic understanding of children, young people and families’ needs and desired outcomes, and informed by evidence of effective approaches (JCPMH 2013; Murphy and Fonagy 2013; Data and Standards Task and Finish Group 2015). Several challenges are recognised to exist in this context. First, the issue of transferability of evidence from clinical effectiveness studies, which often focus on a single diagnosis, to children with multiple and complex problems (Weisz et al. 2012). Second, validation of assessment and outcome measures in child and adolescent mental health services (CAMHS) is limited (Deighton et al. 2014). Third, there is a lack of consistent definitions and information technology support for recording interventions and indirect activities⁷. At a local level, the availability of data on the needs for advice or help of service users, coupled with high quality information on interventions and outcomes, would play a valuable role in assessing the state of provision, prioritising areas for action and monitoring the effects of changes. The current data reporting and block contract arrangements in CAMHS are felt to offer limited information on these dimensions.

We use the term ‘need for advice or help’ as a conceptualisation of need that invites consideration of the appropriateness or cost-effectiveness of interventions that may be offered, as well as service users’ informed preferences (Marshall 1994; Culyer 2007). Specifically, this refers to the identified approach to advice or help collaboratively agreed via a process of shared decision making between service provider and service user, within the parameters and scope of the commissioned service. Resource use is distinct from ‘need for advice or help’, since current practice patterns may vary in person-centeredness and cost-effectiveness. However, when interpreted carefully, resource use may serve as an indicator of need. It is recognised that in the context of finite resources it is not possible to meet all needs for advice or help and thus we consider needs in a relative sense, in that the average need for advice/help among one grouping of service users may be considered higher, lower or similar to that of another grouping of service users.

⁵ Currencies are discussed in more detail in Chapter 5.

⁶ An output is an aggregation of activities and is different to an outcome, which can be considered as the output’s effect on health or wellbeing (Smith 2009).

⁷ We define direct activities as those involving direct contact with the child, young person and/or family and indirect activities as those related to a specific case (named child), but not involving direct contact with the child, young person and/or family (e.g. consultation or case discussion with another professional).

Current classification systems in CAMHS are felt to be limited in their ability to measure needs for advice or help, precluding meaningful analyses of service user populations and activity. For example, although the type of service received may be described generally by one of four tiers, these are inconsistently defined and may not always be the most appropriate for a child's situation (Partridge and Richardson 2010; CAMHS Tier 4 Report Steering Group 2014). Categorising by diagnosis may go some way to inform specific interventions, but diagnoses lack sensitivity towards service users' personal strengths, contexts and views on treatment options (Carr 1999). There is continuing debate about the usefulness of diagnosis in predicting resource use in mental health (TAMHSS 2012; RCP 2014), with some discussants stressing the importance of comorbidity, risk, functional impairment, severity and social isolation (TAMHSS 2012).

4.2 Project background

In October 2011, a consortium led by the Tavistock and Portman NHS Foundation Trust and South London and Maudsley NHS Foundation Trust, including providers, commissioners and academics was appointed by the Department of Health to take forward the development of currencies for CAMHS. The consortium was supported by an Advisory Group made up of stakeholders from around the country and other government departments.

The project was originally titled CAMHS PbR in reference to the expansion of the PbR system beyond the acute sector (York 2012). When responsibility for the NHS payment system transferred from the Department of Health to NHS England and Monitor and the term PbR was superseded by the 'National Tariff Payment System', the project's name was updated accordingly (Monitor and NHS England 2014b). Prior to October 2011 development work on specific aspects of CAMHS PbR had already been undertaken by various groups, notably in London, the West Midlands and Liverpool. The Project Group were able to build on the lessons learned from this previous work to shape their thinking.

4.3 Objectives

Six key project objectives were formulated. They are listed below, along with references to the chapters and sections of this report that address them.

- Develop needs-based groupings: Chapters 6 and 7 and Appendix A.
- Develop an algorithm to support grouping: Section 7.4 and Appendix C.
- Deliver a data collection tool that enables grouping and will inform the development of a needs assessment tool: Section 7.4 and Appendix D.
- Work with the Health and Social Care Information Centre to develop the CAMHS minimum data set to allow information to support a payment system: Section 11.2.
- Identify appropriate pathways and packages of care and their costings: Sections 6.3 and 7.5.
- Recommend an approach to monitoring user outcomes which links to the needs-based currencies and appropriate care: Chapter 10.

The Project Group were also asked to communicate with the wider CAMHS community and other stakeholders to promote awareness and acceptance of the developing groupings. The consultation and engagement undertaken during the project is described in Section 6.2. In addition to these activities, Project Group members presented updates at numerous national and local conferences and meetings.

5. What are currencies?

5.1 What is a currency?

Currencies are classifications that aim to group together instances or periods of health care (or advice/help) with broadly similar resource use, ideally in a manner that is compatible with need (NHS England Pricing Team 2015). Some currencies may be regarded as a vocabulary for categorising a provider's 'outputs'. An example of a currency that relates to an instance of care is an outpatient attendance in geriatric medicine categorised as 'single professional' and 'first attendance' (DH PbR Team 2012a). In adult mental health services, an example of a currency based on a period of care is a four week 'maximum cluster review period' for a service user grouped into a 'severe psychotic depression cluster' (Monitor and NHS England 2014c).

Although each occurrence of service received by an individual has a unique set of circumstances and approaches, one may be regarded as similar to another with respect to certain attributes. Instances or periods of care can be grouped on the basis of these attributes, with the intention that the resultant groupings meet particular criteria. Criteria for currencies have been proposed in several sectors of health services including acute, mental health and community (Sanderson et al. 1998a; Department of Health 2008c; Self et al. 2008; National Casemix Office 2013; NHS England Pricing Team 2014). A recent NHS England publication (NHS England Pricing Team 2014) suggests that a currency should:

- be clinically meaningful,
- identify health care provision of broadly similar resource usage, reflecting patient need and
- group units of care consistently (i.e. be reliable).

As our brief was to develop groupings of people based on their needs, and given our interpretation of need as including (but not being limited to) service user preferences (Marshall 1994), we also strived to develop groupings that would be as meaningful to children, young people and families as possible.

Currencies comprise a grouping or classification component and an activity component, which defines the start and end points of a currency unit (Self et al 2008; National Casemix Office 2013). The information used to allocate, or inform the allocation of, service users to a particular group within a set of currencies can be based on: (i) service user characteristics, e.g. adult mental health care clusters; (ii) the setting/characteristics of the service provided, e.g. hospital outpatient attendances; or (iii) a combination of both, e.g. admitted patient care healthcare resource groups, palliative care development currencies (DH PbR Team 2012a; NHS England Pricing Team 2014; Monitor and NHS England 2014c).

Currencies may be recommended as the units of payment between commissioners and health care provider organisations, as part of the NHS in England's national framework regulating how providers are paid. In acute physical health care, national currencies have been used for reimbursement since 2003, and it was recently estimated that these payment arrangements cover two-thirds of services provided to patients (PwC 2012). In this situation currencies are the units to which local or national prices are assigned, and can be viewed as one of the 'information building blocks' underpinning the NHS payment system (Monitor and NHS England 2014a; Monitor and NHS England 2014b). The value of a currency-based information system is derived from the benefits to service users it facilitates minus its costs. Benefits arise from the positive impact of decisions and actions based on currency information on health and wellbeing. Costs arise from implementing and administering the system as well as any unintended negative effects.

5.2 How do currencies relate to case-mix and episodes of care?

Expressing the output of an entity of interest (e.g. service provider) with regard to cost weights⁸ assigned to the currency units it has delivered over a given time period is an example of case-mix measurement (Quentin et al. 2011). The term 'case-mix' has been used to describe different approaches that seek to gauge either the resource usage, or outcomes, of an entity, through a method that accounts for the predicted effect of service user-related factors on either resource use (e.g. Fetter et al. 1980) or outcomes (e.g. Ogles et al. 2008). Given that providers serve different types of clients, this may facilitate fairer comparisons of the performance of entities, or of the same entity over time, in respect to these dimensions. It is notable that a case-mix adjustment method that aims for fairer comparisons of resource use is unlikely

⁸ See Quentin et al. (2011) for further information on cost weights for currency units (in the acute hospital sector).

to be the optimal method for facilitating fairer comparisons of outcomes, and vice versa, since the service user-related factors included in a method may be predictive of either dimension to differing degrees (Bevan and Price 1990; Damberg et al. 2009).

Where case-mix measurement is concerned with resource use and involves the grouping together of similar patient conditions or interventions (as opposed to being calculated solely by a statistical model), an emphasis has often been placed on constructing a manageable number of case categories for management purposes. Preference has been expressed for case categories to be in the hundreds rather than thousands, and certainly fewer in number than the diagnostic or procedure codes they are constructed from (Fetter et al. 1980; Sanderson et al. 1998b). The case-mix of a service provider may be regarded as the proportions of its cases in each of the categories.

Case-mix classifications traditionally have not provided, at the point of classification, an opportunity for clinician or patient views to influence the group that a patient is assigned to (Fetter et al. 1980; Buckingham et al. 1998; Sanderson et al. 1998a). This contrasts with the process of allocating service users to clusters in mental health services for working age adults and older people, where clinician judgement directly influences the group a service user is assigned to (Jacobs 2014). However, in the traditional approaches to case-mix classification subjective judgement does feature during the collection of certain data items (e.g. diagnosis, measures of clinical severity), which form the inputs to an algorithm that automatically assigns patients to case-mix groups.

The start and end points of a currency unit may be defined by specific events (e.g. the start and end of a single outpatient attendance, the admission to and discharge from a service) or by time duration (e.g. 1 day, 6 months, 1 year). An episode of care is a collection of related items of service, directed at treatment of a period of ill-health or requested by a person seeking help, and delivered by a single provider or multiple providers (Hornbrook et al. 1985). A currency may draw upon the concept of an episode of care in the specification of its start and end points. One approach has been to use the dates of intake into and discharge from a service, the period between which is referred to as a 'spell' in the NHS. Although 'spell-based' healthcare resource group (HRG) currencies have been utilised for several years in the acute sector (DH PbR Team 2012a; National Casemix Office 2013), it is argued that this approach may be less relevant for mental health, where there may be greater variability in the care needs of service users within spells, which may span longer periods of time on average (Self et al. 2008). Alternative approaches being explored in mental health base currency units on episodes or 'phases' that are defined by service user characteristics and/or goals of care at particular moments in time (Self et al. 2008; Eagar et al. 2013).

5.3 What a currency is not

'Currency' and 'price' do not refer to the same concept (NHS England Pricing Team 2014). A price is an amount of money that may be attached to a currency unit. Prices can only be developed once currencies are implemented and cost data are collected to inform price development. Local prices and national tariffs can be distinguished as follows:

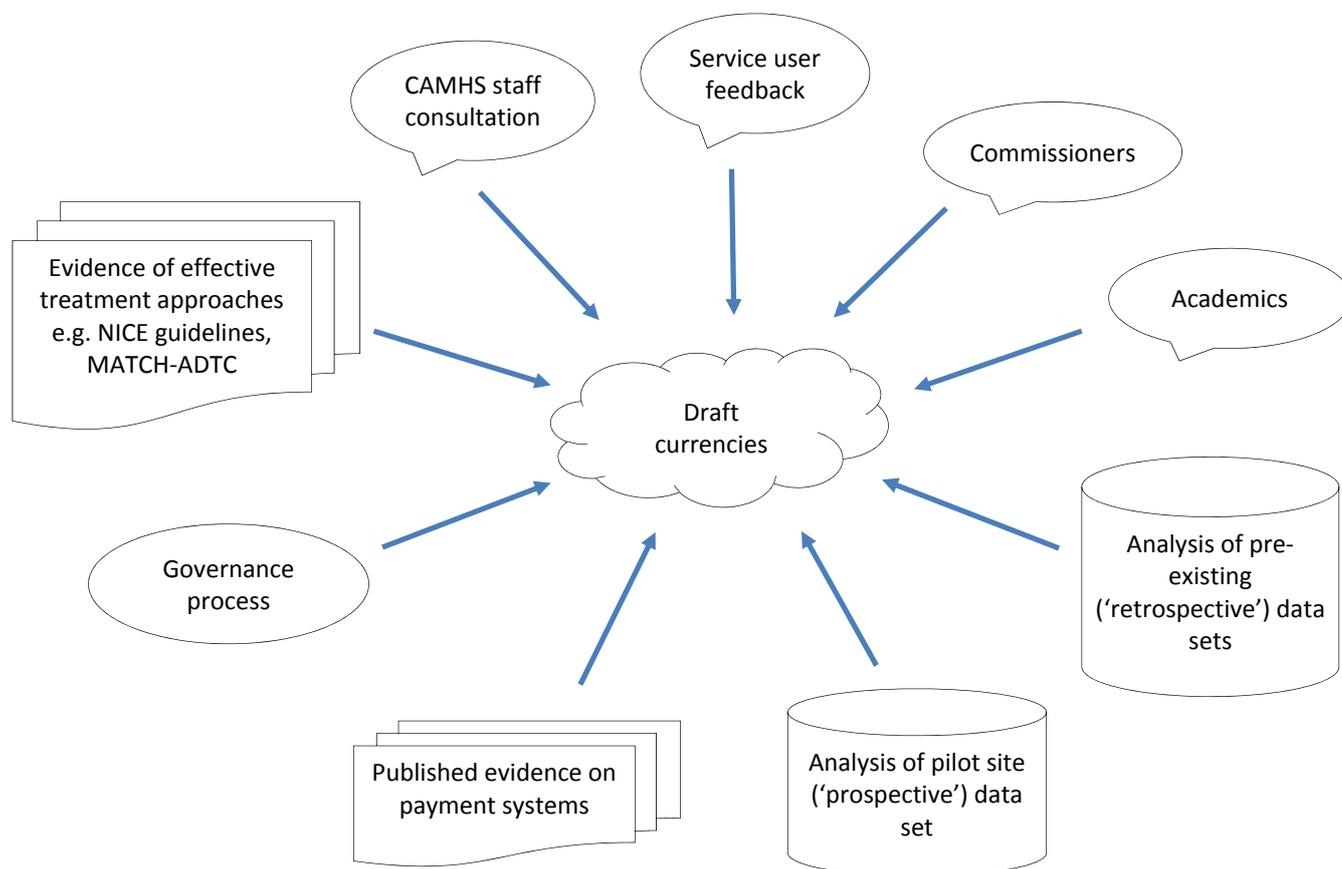
"Where a price is agreed upon for a currency between a commissioner and provider in a local health economy, this is known as a local price. Where a currency and price are published by NHS England and Monitor within the National Tariff Document, this is a national tariff." (NHS England Pricing Team 2014)

An example of a national tariff is for a care spell grouped into a 'Chest Pain' healthcare resource group. For 2014-15 the combined day case / ordinary elective spell tariff is £658 (Monitor and NHS England 2014d). After adjustment by a 'market forces factor', which recognises the costs over which a provider does not have full control, this becomes the payment a commissioner should make to a provider during 2014-15 for each day case or ordinary elective spell classified as 'Chest Pain' (Monitor and NHS England 2014b). For mental health services, Monitor and NHS England are interested in introducing national tariffs for currencies that follow established treatment pathways (Monitor and NHS England 2014a).

6. Development process

This chapter describes the various processes and sources of information that contributed to deriving the currencies (Figure 6.1). Our consideration of the meaning of ‘needs for advice or help’ and review of methods employed by other case-mix classification projects suggested from an early stage that currency development for children, young people and their families would benefit from the combination of several different sources of quantitative and qualitative information.

Figure 6.1 Information sources for currency development



6.1 Review of related case-mix classification initiatives

Previous work in Australia, New Zealand and England set out to define groupings of mental health service users with the same properties sought by the current project – resource use homogeneity reflective of need and clinical meaningfulness (Buckingham et al. 1998; Gaines et al. 2003; HSCIC 2006; Rigby 2013). The approaches can be broadly divided into those driven by clinical judgement (including multidisciplinary panel review of data) and those driven by analysis of the relationship between service user attributes and resource use/costs data. The classifications developed to date are reported to have clinical face validity, although their prediction of resource use is judged to be relatively poor (Buckingham et al. 1998; Gaines et al. 2003), or untested with regard to the current version (Rigby 2013). This may in part be due to inter-provider differences in data recording practices, service availability (including interfacing services), clinical practice, administrative processes and levels of social and family support (Buckingham et al. 1998). The programme of mental health classification was recently resumed in Australia and features a six month costing study aimed at collecting better data for further case-mix development (IHPA 2015).

Pre-existing algorithms to classify community episodes of children and young people (Buckingham et al. 1998; Gaines et al. 2003) give prominence, in no particular order, to the following service user-related variables reported to be associated with costs:

- age
- Children’s Global Assessment Scale (CGAS) score (a measure of functioning)

- Health of the Nation Outcome Scales for Children and Adolescents (HoNOSCA) total score (a measure of symptom severity and functioning)
- poor school attendance (HoNOSCA scale 13)
- hallucinations and delusions (HoNOSCA scale 7)
- non-accidental self-injury (HoNOSCA scale 3).

The limitations of the methods that generated these findings may be considered to include relatively small sample sizes (2,098 community episodes of ≤ 8 weeks (Buckingham et al. 1998) and 2,411 community episodes of ≤ 3 months (Gaines et al. 2003)) and lack of testing on data sets other than those used to derive them.

6.2 Consultation and engagement

Both were continuous through parallel forums and our website/newsletter, with particular consultation and engagement activities at critical stages of the project, i.e.:

6.2.1 Workshops and online survey in 2012

These were crucial in determining the principles of the payment groupings at the early stage of the project. The online survey was completed by 180 participants from representative roles and geographical areas. The findings were discussed at two participatory events attended by 91 participants. The key findings were:

- Needs should be broader than diagnosis
- Complexity factors should be taken into consideration
- Indirect activities should be included
- Factors should be linked to both resource use and outcome
- Development of relatively easy to use assessment measures

6.2.2 Service user consultation

This involved 8 young people in April 2013. The main comments concerned the language and how this might be perceived or misconstrued. Young people urged to “continually be aware of and explore potential unintended consequences”. They were particularly wary of the use of ‘severity’ based on symptoms, as these often fluctuate, rather than on their impact on the young person’s life. They proposed a number of factors to be taken into consideration in determining the grouping such as support at home, disability or schooling.

6.2.3 Perspectives of commissioners

Commissioners’ views continuously shaped the project through representation on the Project and Advisory Groups, consultation events, and a commissioning sub-group. The key views and principles endorsed by commissioners were the importance of linking needs and resource use to outcomes, the anticipation of different types of joint health and social care commissioning, the specificity of groupings and intervention packages to allow choice, and the minimisation of potential gaming.

6.2.4 Engagement events in December 2014

The emerging findings were shared with a large number of stakeholders, again representative of different roles and areas, at two participatory events. The 60 participants in Leeds and 80 participants in London included commissioners, clinicians, managers, finance staff and service user representatives, in addition to members of the Project Group. Overall, there was positive feedback on the types of groupings, which were viewed as compatible with clinical practice. Recommendations were consistent with earlier feedback, in opting for user-friendly and non-diagnostic names, and aiming for specificity while combining groupings where commonly concurrent (such as within anxiety problems). Discussions were extended to the future implementation of groupings, practical aspects such as compatibility of IT systems, and implications for tier 4 and transition to adult services.

6.3 Review of NICE guidelines

These were independently reviewed by two raters at the beginning and towards the end of the project. The initial purpose was to determine factors that would be considered by the Project Group and the consultation process in determining the principles underpinning CAMHS groupings (diagnosis vs. needs vs. resource use; direct and indirect activities; complexity vs. comorbidity vs. impairment). The purpose of the second review was to link needs/diagnostic groups to intervention packages, and to contrast those with the

empirical data.

Of the guidelines reviewed, some were specific to children and young people, while some were developed for adults but with reference to their relevance for younger groups (NICE 2004a; NICE 2004b; NICE 2005a; NICE 2005b; NICE 2005c; NICE 2006; NICE 2008b; NICE 2009a; NICE 2009b; NICE 2011a; NICE 2011b; NICE 2011c; NICE 2013a; NICE 2013b; NICE 2013c; NICE 2013d; NICE 2013e; NICE 2013f; NICE 2015b). Guidelines on drug and alcohol misuse (NICE 2007; NICE 2011d) were identified but not reviewed in detail as these difficulties are not normally seen in CAMHS as a sole problem (although they may be a comorbid problem). Further guidelines on 'Nocturnal enuresis' and 'Constipation in children and young people' referenced occasional use of specialist psychological services (NICE 2010a; NICE 2010b).

The guidelines reviewed were largely diagnostic and provided a fair amount of detail on recommended treatment packages (framework, symptomatic indications and duration); but were variable in their contextualisation of interventions (application in different clinical settings), complexity (usually confined to comorbidity or impairment), indirect activities such as liaison and consultation, costings, and links between interventions and desired outcomes.

6.4 Data analysis – Summary of methods and findings

We now turn to the findings from statistical data analysis that informed grouping development. The analysis relied mainly on data collected within the Payment Systems Pilot Project, although we shall occasionally make reference to other data sources. This section of the report will contain the findings and a general outline of the methodology. For technical details and full model specifications, we will refer the reader to appendices E, F, G, and H.

6.4.1 Secondary analysis of existing data

We give a brief account of exploratory analyses conducted on existing data, which were not primarily collected for the purpose of the Payment System project. The aims of these analyses were:

- to estimate the distribution of "number of appointments until case closure", in order to obtain a description of the average and variation in resource use among service users;
- to establish a sense of the relationship between presenting information and resource use.

We used clinical records of CAMHS service users submitted by services to the Child Outcomes Research Consortium CORC (Fleming et al. 2014). The analysis sample contained 38794 periods of contact from 107 clinical teams in 21 CAMH services, submitted to CORC between March 2012 and December 2013. Children included in the data set were between 0 and 18 years old.

Distribution of "Number of Appointments". The modal number of appointments was 1; almost a quarter (24 %) of periods of contact were closed after the first appointment. The median number was 3, that is, half of all cases were closed after three appointments or fewer had been attended. The distribution was strongly positively skewed: 37.8 % of all appointments were attended by the 5.25 % most 'resource-intensive' patients, who attended more than 30 appointments each. So approximately, more than a third of all appointments were given to the 5 % of patients that were most resource-intensive. This would suggest that a payment system aiming to reflect the real variation in resource use should take account of the large group of cases that are closed after relatively few appointments, and also take account of a relatively small group of children who presumably have the most need, and whose treatment takes up a relatively large proportion of CAMHS resources.

Prediction of resource use. The type of presenting problem was indicated by clinicians in the form of responses to a list of twelve possible presenting problems;⁹ severity of impairment was measured by clinician CGAS ratings (Shaffer et al. 1983). We analysed data separately for three age groups (0-5 years old, 6-12 years old, 13-18 years old). Our findings suggest that type of presenting problem and severity both independently predict the number of appointments until case closure. In the teenage group, the presence of Psychosis or Eating Disorders predicted the highest number of sessions. In all age groups, children with Emotional Problems and children with poorer functioning tended to attend a higher number of

⁹ These were, according to the CORC Snapshot data specification: Emotional, Conduct, Hyperactivity, Learning Disability, Autism, Psychosis, Eating, Self Harm, Developmental, Habit, Substance Abuse, and Other Problems. Problem categories were not mutually exclusive.

sessions than children with most other problems. In the middle age group, Conduct Problems and Autism also led to a raised average number of sessions. In all age groups, higher severity of impairment predicted more resource use, after controlling for problem type. Importantly, overall the model's prediction of resource use was poor, in the sense that there was considerable variation among children presenting with the same types of problems and the same severity of impact. Moreover, variation in treatment provision between services is arguably greater than variation between children with very different symptoms and severities. As section 6.4.2 shall show, these results are largely confirmed by our analysis of the data collected specifically for the Payment System project.

6.4.2 Analysis of data from the Payment System Pilot Project

The main phase of analysis used data collected within the Payment System Pilot Project. The purpose of the analysis was to develop a classification of patients attending CAMHS that met, as far as possible, the following criteria:

- i. Groupings should be clinically meaningful;
- ii. Patients within the same group should be likely to require similar types and amount of resources;
- iii. Group membership should be able to be reliably identified.

We aimed to meet criterion (i) by discussing findings from data analysis within the Payment System Project Team, as well as the Payment Systems Project Group. We also sought feedback from CAMHS practitioners, service managers, users, and commissioners via national engagement events in November 2013 and December 2014. To increase our chances of meeting criterion (ii), group development took account of CAMHS users' resource use. To increase the reliability of group membership (criterion iii), we developed an algorithm that suggests a group allocation for any given patient, based on their ratings on a Current View Form. We also carried out exploratory studies that investigated the reliability and validity of the Current View Form.

Sample. We applied strict criteria to decide whether to include data from a particular period of contact for group development. The inclusion criteria for periods of contact were as follows:

- Must be closed or "dormant" (without activity for at least six months);
- Must have Current View Form completed at assessment;
- Must have information on activity, and at least one direct contact ("appointment") must be recorded as having been attended by the child or young person;
- Must come from a service whose data quality overall was sufficiently strong.

A decision on the last criterion was made via a combination of data inspection and communication with the services. In many cases, service representatives told us about problems in the collection of activity data that suggested that information from their service was incomplete or otherwise not valid. If this was the case, we excluded data from the service from the Analysis Sample for grouping development. However, data from that service may still have been used for other purposes. Please see Appendix E for details.

The Analysis Data Set comprised clinical records from 4573 periods of contact in 11 CAMH services. All periods of contact had a completed Current View Form at assessment, and at least one direct contact had taken place.

It is difficult to say how many cases were treated at the 11 CAMH services, but were not included in the analysis sample, because services have not necessarily sent us information about all cases seen in the observation period. Incomplete information on cases could be a potentially serious limitation: if cases included in our sample differ systematically from cases that were not included (either because they did not fit the inclusion criteria, or because we never received any information about them at all), then our sample would not be representative of the CAMHS population. We have no direct way of assessing the extent of selection bias, if it exists. However, we did compare our analysis sample with other large samples of CAMHS clinical records, and found that our analysis sample was very similar to other sources with respect to the distributions of age, gender, and presenting problems. Details are presented in Appendix F.

Measures

Resource Use. Our primary indicator of resource use was “Number of Sessions”, i.e. the number of direct contacts (face-to-face or telephone) that the service user (child or young person) had with the CAMH service. We counted only appointments that had actually been attended, and did not count missed or cancelled appointments. We considered using additional information for the operationalization of resource use, namely the duration of appointments and the staff presence at the appointments. This was challenging due to large proportion of missing values on the relevant variables. However, we conducted a sensitivity analysis, using multiple imputation of missing values, to investigate whether using this information would have led us to different conclusions regarding the relationship of our groupings to resource use, as well as the relevance of additional factors (complexity, context, and EET issues) for the prediction of resource use. We found no evidence that our conclusions would have changed, had we used duration and staff presence during appointments in addition to the number of appointments until case closure. The sensitivity analyses and our rationale are reported in detail in Appendix E, Section 7.1.

Presenting Information. Our indicators of presenting information were the ratings the clinician gave their client on the Current View Form at assessment.

Methods

We used three methods of grouping development, reflecting different research strategies, and in the end tested the classification suggested by each method against the others, using a statistical model. The three methods were:

- (1) Unsupervised Cluster Analysis (k-medoids cluster analysis)
- (2) Supervised Cluster Analysis (Regression Trees)
- (3) Clinically-driven classification (based on diagnostic categories for which NICE guidance existed at the time of this study)

Unsupervised Cluster Analysis. Cluster analysis aims to group cases in a sample based on their similarity or dissimilarity to one another with respect to a specific set of characteristics, so that cases within a given group tend to have similar characteristics to one another, and be dissimilar to cases in any other group. The types of cluster analysis that are called “unsupervised” do not relate the case characteristic to any dependent variable, i.e. the classification itself is achieved without reference to any prediction. In our case, this means that the unsupervised cluster analysis aimed to group cases based on their current view information only, and that resource use is not, in the cluster analysis itself, taken into account. However, having performed the cluster analysis, we tested how well the resulting classification predicted resource use, and compared its predictive power to that of the classifications derived from our other methods. The specific method we used is called k-medoids cluster analysis (Kaufman and Rousseeuw 2009). Details on the method and findings are contained in Appendix E.

Supervised Cluster Analysis. In contrast to unsupervised cluster analysis, supervised methods of cluster analysis classify cases on the basis of characteristics that predict a given dependent variable (in our case, resource use). We used recursive partitioning, a type of regression tree (Hothorn et al. 2006). Details on the methods and findings are contained in Appendix E.

Clinically-driven classification. We developed a third classification based on our review of the NICE guidance (see section 6.3). Initially, three alternative classifications were developed: a three-group model, a five-group model, and a 16-group model. After presenting these options at the Engagement Events in December 2014, a fourth model using 18 groups was developed based on comments received. Details on the method and findings are contained in Appendix E. Note that the 19th group in our proposed classification, “Getting More Help: Presentation Suggestive of Potential BPD (Guided by NICE Guideline 78)”, is not represented in this classification, as we did not think that young people belonging to that group can be identified from Current View Ratings at assessment.

Results

Unsupervised cluster analysis resulted in poorly fitting classifications, both with respect to the distinguishability of clusters, and with respect to the prediction of resource use. Three different classifications suggested by the k-mediod cluster analysis were inspected and tested: a two-cluster classification, a six-cluster classification, and a twenty-six cluster classification. All of them displayed poor fit. To understand what this means, imagine a child called Robert. Based on the Current View Form that Robert's clinician filled in, Robert is classified, according to the k-mediods cluster analysis, in Cluster A. A well-fitting classification is one where Robert is similar, with respect to his characteristics as assessed by the Current View Form, to most other children in Cluster A, but different from most children in other clusters (say Cluster B, Cluster C, and so forth). However, in the classifications our method found, Robert was quite likely to be more similar to many children in Clusters B and C (etc.) than to many of the children in his own cluster A.

So the classification derived from k-mediod cluster analysis gives a poor summary of children's characteristics. We interpret this result to indicate that CAMHS patients are indeed difficult to classify, because they are (1) very diverse in their characteristics, and (2) do not naturally fall into distinct groups. It seems that many different problem combinations appear in CAMHS, and that they don't naturally fall into neat, distinct groups. Details of the k-mediods analysis are given in Appendix E. We also assessed how well the three classifications (the 2, 6, and 26 cluster solutions) predicted resource use, compared to other approaches. The results are displayed below in Table 6.1.

The supervised approach to cluster analysis, via regression trees, led to unreliable classifications. Regression trees are liable to overfitting. Overfitting is defined as the optimization of a model based on a single sample at hand, which incurs the risk of making predictions based on random noise, so that the resulting model may then not be reproducible in new data sets. We guarded against overfitting by using cross-validation procedures (Kuhn and Johnson 2013). We estimated regression trees on different random subsets of our data, and found that the trees resulting from different sub-sample were appreciably different from one another. This suggests that the regression tree approach does not lead to reliable solutions for our data. We therefore decided against basing CAMHS groupings on the regression tree method. A full account of the analysis and the rationale for our decision is given in Appendix E.

The clinically-derived classification was based on the following considerations:

- NICE guidance recommends treatment and care packages for fourteen diagnoses or presentations, based on research evidence and expert consensus;
- NICE guidance is often based on evidence from clinical trials with strict exclusion criteria, so that it is not always clear whether treatments recommended on the basis of study participants are the best choice for patients presenting with complex problems that are not represented in the research evidence;
- Resource use in CAMHS is predicted both by the type of problem and the severity of the presentation, so both aspects should be taken into account;
- A relatively small proportion of CAMHS patients with the highest resource use are using a relatively large proportion of resources.

We developed four different classifications, which were distinguished by the specificity of the categories, i.e. they differed by the number of clusters they implied: 3, 5, 16, or 18 groups. We tested these classifications against each other, using a statistical model that used the classification to predict resource use of individual patients. These model comparisons are displayed in Table 6.1. Full details of the model specifications can be found in Appendix E.

We compared models using two indicators of model quality, the Akaike Information Criterion (AIC), and the Bayesian Information Criterion (BIC). Both the AIC and the BIC balance model fit and parsimony in different ways. For both criteria, a smaller number indicates a better model. As Table 6.1 shows, the 18 group model derived from clinical considerations fitted the data better than the smaller models, and better than all models derived from unsupervised cluster analysis. In the following, we will present the 18-group model and the properties of the resulting classification.

Table 6.1 Model comparison: Mixed negative binomial regression

	Model	Log-likelihood	Para- meters	AIC	BIC
Null Model	Intercept & Random Effect for Service only	- 10957.8	3	21921.6	21940.9
Clinically derived	Three Groups	-10898.4	5	21806.8	21838.9
	Five Groups	-10896.9	7	21807.8	21852.8
	Sixteen Groups	-10839.9	18	21715.8	21831.5
	Eighteen Groups	-10828.5	20	21697.0	21825.6
	Eighteen Groups + Complexity Factors, Contextual Problems & EET Issues	-10804.0	39	21686.0	21936.7
Data-driven	Unsupervised CA: 2 clusters	-10950.7	5	21911.4	21943.5
	Unsupervised CA: 6 clusters	-10880.5	9	21779.0	21836.9
	Unsupervised CA: 26 clusters	-10834.1	29	21726.2	21912.6

Notes: All models include a random effect for service. AIC: Akaike Information Criterion. BIC: Bayesian Information Criterion. Dependent Variable: Number of appointments. AIC and BIC are model quality criteria. Each balances model fit (“log-likelihood”) with model parsimony (“number of parameters”) in a different way. For each AIC and BIC, a smaller number indicates a better model. $AIC = -2 \times LL + k \times 2$; $BIC = -2 \times LL + k \times \ln(n)$, where LL is the log-likelihood, k is the number of parameters, and n is the sample size.

In Unsupervised CA, a small group of cases had no problems rated as present and was excluded from CA, but is included in the models as a separate group.

Sizes of groups

We think that the estimates derived from our data may be very rough. Errors are likely to be due to the limited validation of the grouping algorithm that we were able to carry out. In practice, clinicians should be able to overrule the algorithm for group allocation based on clinical judgement, and we think that further development may be able to improve the algorithm to be a more accurate reflection of group membership for a given sample of children. However, at the current state of knowledge, the data presented in Table 6.2 represent our best estimates of grouping proportions.

Our findings suggest that over a quarter of children present at CAMHS with mild problems only, so that they may appropriately be classified in the Getting Advice group. Around six in ten children, we estimate, present with problems that can appropriately be classified as one of the groups within the Getting Help supergrouping. Of these, about half are estimated to be grouped into one of the ten NICE guidelines subsumed under “Getting Help”, while the other half belong to the three “co-occurring problem” groups within the “Getting Help” supergrouping. Finally, around ten percent of children present with Eating Disorders, Psychotic Symptoms, or multiple severe problems, and are therefore likely to be appropriately classified to one of the groups within the “Getting More Help” supergrouping.

Overall, across the Getting Help and Getting More Help supergroupings, NICE guidelines are estimated to apply to about half of the children, while the remaining half are likely to present with problem combinations that renders it doubtful whether a single NICE guideline can sensibly be applied. We believe that this result points to the need to increase efforts of producing evidence of best treatment for the whole range of

problem presentations seen in CAMHS.

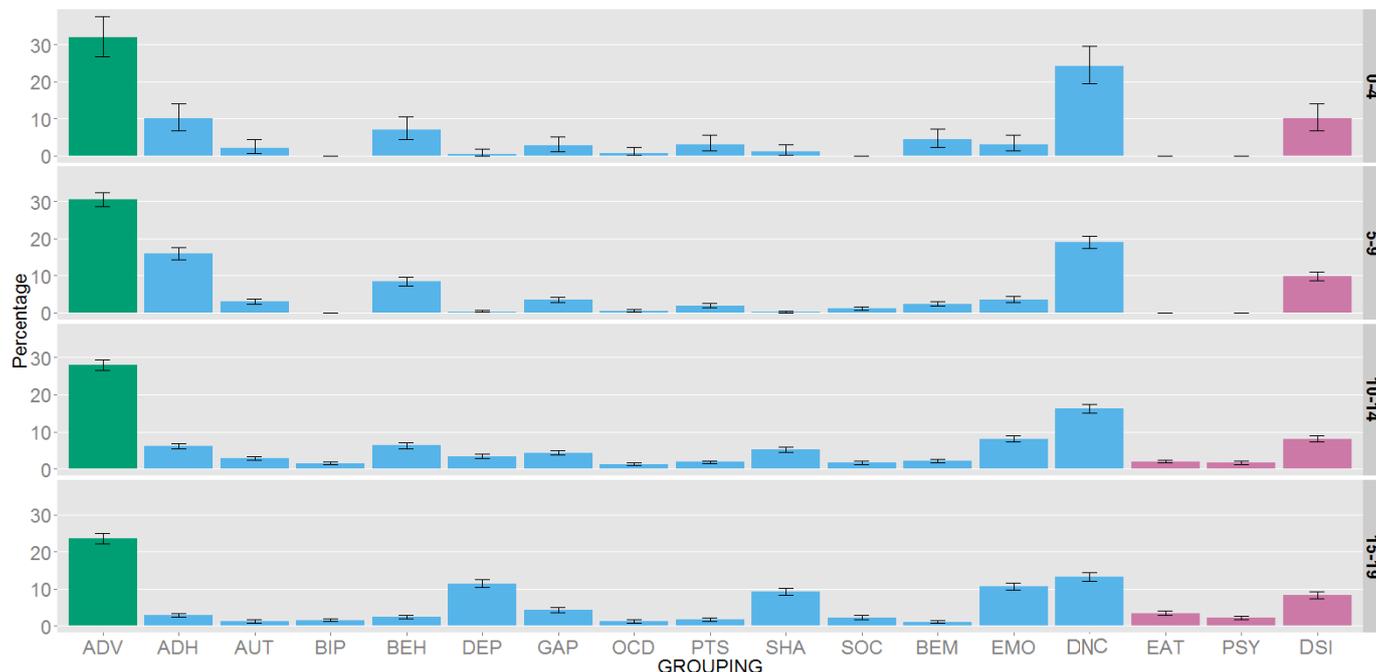
Table 6.2 Estimated percentages of group membership

Grouping name	Short label	Estimated percentage of CAMHS users
Getting Advice: Signposting and Self-management Advice (NICE Guidance as Relevant)	ADV	27.70 %
Getting Advice: Neurodevelopmental Assessment (NICE Guidance as Relevant)*	NEU	3.47 %
Getting Help: ADHD (Guided by NICE Guideline 72)	ADH	6.96 %
Getting Help: Autism Spectrum (Guided by NICE Guideline 170)	AUT	2.16 %
Getting Help: Bipolar Disorder (Guided by NICE Guideline 185)	BIP	1.03 %
Getting Help: Behavioural and/or Conduct Disorders (Guided by NICE Guideline 158)	BEH	5.18 %
Getting Help: Depression (Guided by NICE Guideline 28)	DEP	5.76 %
Getting Help: GAD and/or Panic Disorder (Guided by NICE Guideline 113)	GAP	4.22 %
Getting Help: OCD (Guided by NICE Guideline 31)	OCD	1.11 %
Getting Help: PTSD (Guided by NICE Guideline 26)	PTS	1.74 %
Getting Help: Self-harm (Guided by NICE Guidelines 16 and/or 133)	SHA	5.68 %
Getting Help: Social Anxiety Disorder (Guided by NICE Guideline 159)	SOC	1.59 %
Getting Help: Co-occurring Behavioural and Emotional Difficulties (NICE Guidance as Relevant)	BEM	1.69 %
Getting Help: Co-occurring Emotional Difficulties (NICE Guidance as Relevant)	EMO	7.65 %
Getting Help: Difficulties Not Covered by Other Groupings (NICE Guidance as Relevant)	DNC	16.08 %
Getting More Help: Eating Disorders (Guided by NICE Guideline 9)	EAT	1.76 %
Getting More Help: Psychosis (Guided by NICE Guidelines 155 and/or 185)	PSY	1.24 %
Getting More Help: Difficulties of Severe Impact (NICE Guidance as Relevant)	DSI	8.43 %

Notes: n = 11,353. * The grouping 'Getting Advice: Neurodevelopmental Assessment' is not mutually exclusive with the remaining groupings. Thus percentages sum to 100 %, not counting the grouping 'Getting Advice: Neurodevelopmental Assessment'. The grouping 'Getting More Help: Presentation Suggestive of Potential BPD (Guided by NICE Guideline 78)' is not represented, since there is currently no allocation algorithm for this group.

Figure 6.2 and Table 6.3 show the estimated group proportions separately for four age groups. The results broadly agree with clinical experience and epidemiological evidence on child mental health (Green et al. 2005): Our data imply that boys are more likely to display mental health problems in the pre-teenage years, and tend to present with conduct problems or ADHD, while in the teenage years, girls are more likely to suffer from a mental health problem, and Depression, Anxiety, Self-Harm and Eating Disorders are among the more common problems.

Figure 6.2 Percentage of Grouping Membership, by Age Group



Notes: Total n = 10,172. There were 1180 children in the Full Sample had no information on age and are excluded from this table. Error bars show 95 % confidence intervals. The group “Neurodevelopmental Assessment” is not represented, as it is not mutually exclusive with the remaining groups. The group “Presentation Suggestive of Potential BPD” is not represented, since there is no allocation algorithm for this group.

Table 6.3 Group Membership in percent by Age Group

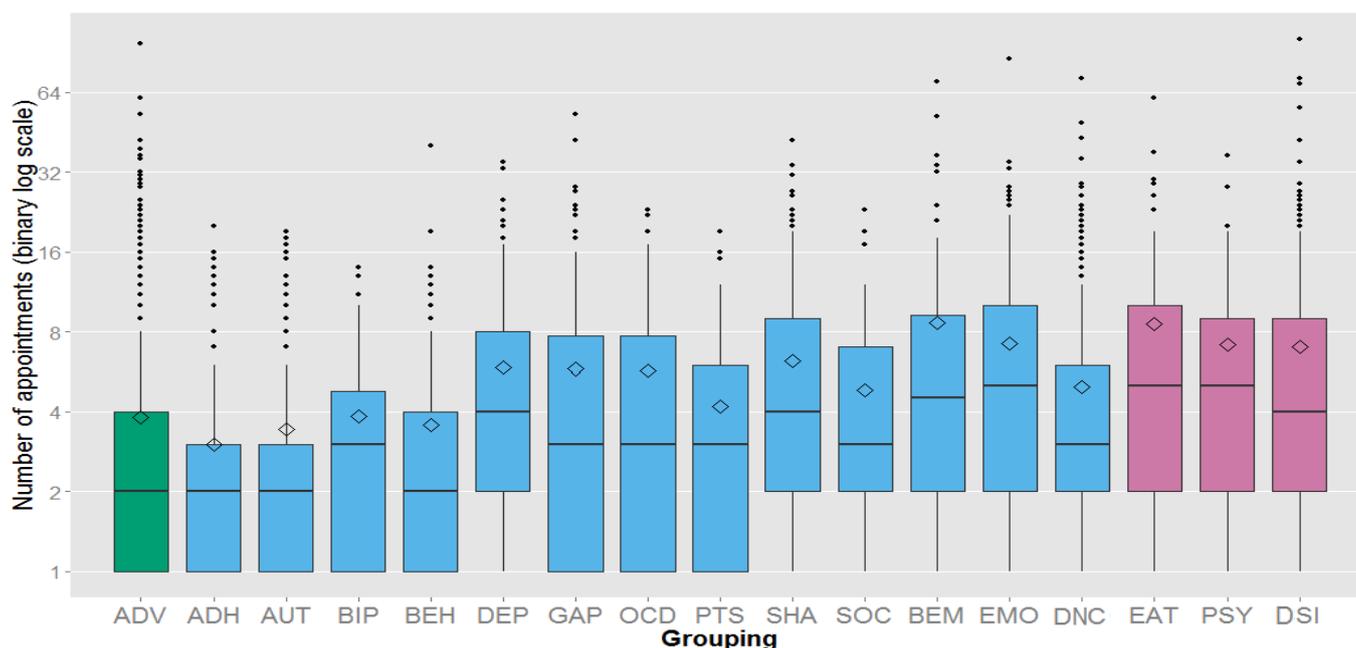
Group	Age Group			
	0-4	5-9	10-14	15-19
ADV	31.9	30.5	27.9	23.5
ADH	10.0	15.9	6.1	2.8
AUT	2.0	3.0	2.7	1.2
BIP	0.0	0.0	1.5	1.5
BEH	7.0	8.3	6.3	2.3
DEP	0.3	0.3	3.4	11.4
GAP	2.7	3.4	4.3	4.3
OCD	0.7	0.5	1.2	1.2
PTS	3.0	2.0	1.8	1.7
SHA	1.0	0.2	5.4	9.5
SOC	0.0	1.1	1.6	2.3
BEM	4.3	2.3	2.1	1.0
EMO	3.0	3.6	8.0	10.6
DNC	24.3	19.0	16.1	13.1
EAT	0.0	0.0	2.0	3.3
PSY	0.0	0.0	1.6	2.1
DSI	10.0	9.8	8.0	8.3
Base	301	2187	4048	3637

Notes: Total n = 10,172. There were 1180 children in the Full Sample who had no information on age and are excluded from this table. The group “Neurodevelopmental Assessment” is not represented, as it is not mutually exclusive with the remaining groups. The group “Presentation Suggestive of Potential BPD” is not represented, since there is no allocation algorithm for this group.

Relationship to Resource Use

Figure 6.3 shows the relationship of group membership to resource use. The graph illustrates two findings. In broad terms, average resource use varies by group membership as we would expect: average resource use is relatively low in the “Getting Advice” grouping, relatively high in the three “Getting More Help” groupings, and somewhere in the middle between the two for most “Getting Help” groupings. Among the Getting Help groupings, some do not appear to have higher average resource use than “Getting Advice”, while some had average levels of resource use approaching or exceeding one or two of the “Getting More Help” groupings. Note that the results are shown on a binary log scale, which has the effect of making some of the group averages look closer together than they are. The reason for displaying results on this scale is that the graph also shows the variation of resource use within each group, and that this variation widely exceeds the differences in averages (so much so that, if displayed on a regular scale, the differences in averages would have been all but invisible given the restriction to display the graph on a sheet of A4 paper).

Figure 6.3 Number of appointments by group (17 groups)



Notes: The graph shows boxplots. The lower end of the box denotes the 25th percentile, the line in the middle of the box denotes the median, and the upper end of the box denotes the 75th percentile. The vertical lines and dots above and below the boxes represent the range. The arithmetic mean is represented by a rhombus. Data are shown on a binary log scale. The grouping ‘Getting Advice: Neurodevelopmental Assessment’ is not represented, as it is not mutually exclusive with the remaining groupings. The grouping ‘Getting More Help: Presentation Suggestive of Potential BPD (Guided by NICE Guideline 78)’ is not represented, since there is currently no allocation algorithm for this group. N = 4573.

So the within-group variation is large relative to the between-group variation. This means that any prediction of resource use in the course of a period of contact (a course of treatment) derived from group membership alone is likely to be poor. While some variation within groups is to be expected - children with apparently the same presentations will not necessarily receive, or need, exactly identical number of appointments, for example – some of the differences between children within the same group are likely due to characteristics that we either have not measured, or have not measured well enough.

One set of characteristics that we hypothesized, at the beginning of the project, to improve the prediction of resource use are the complexity factors, contextual problems and EET issues that complement the problem description on the Current View Form. We tested whether using the information from these characteristics would allow us to improve our prediction of resource use compared to the 18-group model. As Table 6.1 illustrates, we did not find strong evidence that this was the case. According to the BIC, the 18-group model without additional factors performed better than the 18-group model plus complexity factors, contextual problems and EET issues. Although the AIC suggested that the model with additional factors may be

marginally better than the model without, overall the evidence for additional factors is weak at best. That is to say, once children have been classified into 18 groups, additional knowledge about any complexity factors, contextual problems or EET issues in their lives do not appear, from our evidence, to improve the prediction of resource use of children in CAMHS.

7. Currency proposals

7.1 Scope of provision covered

The groupings presented in this chapter are a first attempt to categorise the needs for advice or help of children, young people (CYP) and families seeking mental health support in England. They are designed to be applicable in the statutory, independent and voluntary sectors. We adopted a ‘setting independent’ approach and originally envisaged the scope of the pilot work to include the inpatient setting. However, due to data constraints we propose further research to explore their validity in this area. The recent report into CAMHS tier 4 provision recommended a procurement exercise to align currencies geographically (CAMHS Tier 4 Report Steering Group 2014), and it may be valuable to explore where there is potential for coordination between these currencies and the approach presented here.

Work that is not related to a specific child, young person or family, including generic training, promotion and prevention, is out of scope of this classification. The Project Group recognise the crucial importance of these activities, for which different models of funding would be required.

The group considered the needs of practitioners working in acute hospital settings undertaking paediatric liaison. Whilst not all of the work of these liaison teams would fall in scope of currency groupings, it was felt that the majority of the work would be encompassed by the scheme. Certain areas of liaison practice would require separate contracted arrangements. These would include areas such as consultation work to whole ward systems or clinics e.g. psychosocial ward rounds.

7.2 Proposed draft groupings

Nineteen needs-based groupings were developed and are summarised in Figure 7.1. They are structured under three ‘super groupings’: ‘Getting Advice’, ‘Getting Help’ and ‘Getting More Help’. The grouping names are intended to be sensitive to young people’s preference for language that focusses on the support available rather than the severity of their difficulties. The needs-based groupings do not necessarily require or imply any particular diagnosis, as we felt that (i) needs for advice or help are broader than diagnoses, and the choice of grouping should therefore include service user preferences and clinical judgement, and (ii) diagnosis is not always helpful or applicable to CYP and their families, especially for younger children. Each grouping has been assigned a three letter label for ease of reference.

Descriptions of the groupings are provided in Appendix A. Two considerations underpin the classification. The first relates to its ability to differentiate groups of service users with regard to their average resource use,¹⁰ currently estimated by application of the algorithm to Current View tool data collected shortly after the beginning of each service user’s period of contact. Given the limitations of the data available to us at this time,¹¹ we believe that the three ‘super groupings’ of Getting Advice, Getting Help and Getting More Help provide a productive way of differentiating service users, with average resource use increasing from the former to the latter. That is not to say that the additional ‘level’ of grouping beyond the ‘super groupings’ does not improve the prediction of resource use; it simply does so to a lesser extent than stratification by ‘super grouping’.

With the exception of NEU, the groupings are intended to be mutually exclusive. In other words, they are designed so that a CYP or family is only assigned to one grouping at a time. NEU is not mutually exclusive as we felt that the resources for neurodevelopmental assessments and investigations are additional to and generally distinguishable from the resources used to treat a different problem, or to provide advice for a different problem.

The second consideration is built on our understanding of how evidence-based guidance may be applied in

¹⁰ Resource use is distinct from ‘need for advice or help’, since current practice patterns may vary in cost-effectiveness and person-centeredness. However, when interpreted carefully, resource use may serve as an indicator of need.

¹¹ Unfortunately, despite enormous effort on the part of participating sites and focussed work on data quality, limitations of existing electronic record systems and staff availability at participating sites meant that we were unable to take indirect activity into account in the analysis. Apart from analysing the number of appointments, however, we did conduct sensitivity analyses taking into account the duration of appointments, and the number and professions of clinical staff present at appointments. These analyses are reported in Appendix E: Section 7.1. Importantly, we found that our conclusions did not change when we replaced “Number of appointments” as an indicator of resource use by “relative treatment costs”, based on the number and duration of appointments and staff presence.

CAMHS. We found that recommendations published by the National Institute for Health and Care Excellence (NICE) cover the majority of child mental health problems and are organised into clinical guidelines that generally focus on single difficulties or diagnoses (NICE 2004a; NICE 2004b; NICE 2005a; NICE 2005b; NICE 2005c; NICE 2006; NICE 2009a; NICE 2011a; NICE 2011b; NICE 2011c; NICE 2013a; NICE 2013b; NICE 2013c; NICE 2013d; NICE 2013e; NICE 2015b). We also found evidence of a large number of CYP and families seen in CAMHS who experience co-occurring difficulties. This suggested that the application of NICE guidance to these cases is not straightforward. We therefore designed the classification to provide flexibility for choice of whether a grouping guided by a specific NICE clinical guideline could be appropriate.

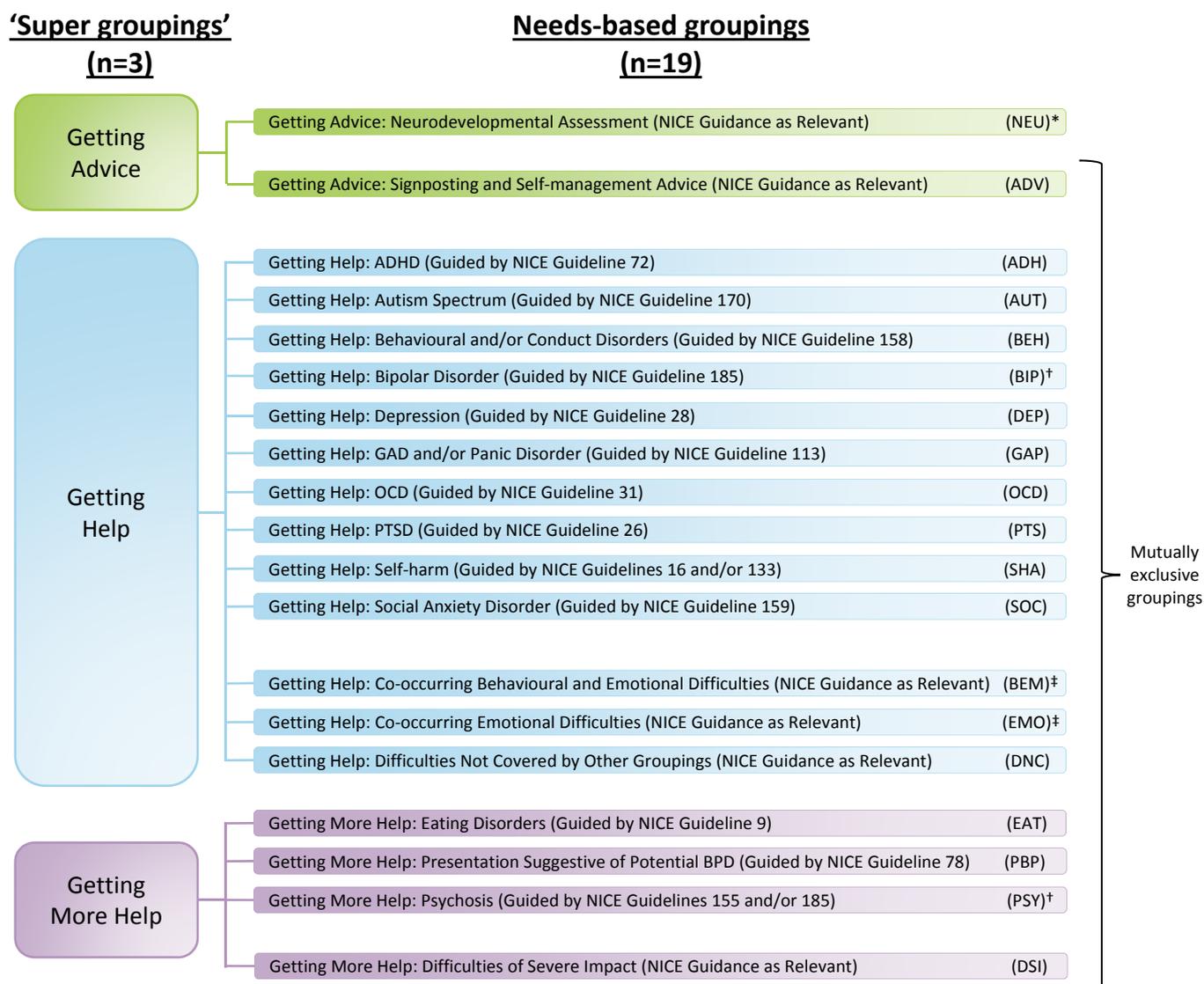
Advice offered in the Getting Advice Groupings (NEU and ADV) may be guided by the relevant parts of any NICE guidelines. Groupings ADH, AUT, BEH, BIP, DEP, GAP, OCD, PTS, SHA, SOC, EAT, PBP and PSY are intended for cases where it is felt that care packages guided by single NICE guidelines may be beneficial. The slight exceptions are 'Getting Help: Self-harm (Guided by NICE Guidelines 16 and/or 133)', where the NICE guidance is organised as two guidelines (NICE 2004b; NICE 2011c), and 'Getting More Help: Psychosis (Guided by NICE Guidelines 155 and/or 185)', where we felt that the relatedness of psychosis and bipolar disorder entailed a grouping to cover both.

Two groupings refer to the NICE guideline for bipolar disorder (BIP and PSY). We believe moderate mood swings may benefit from psychological interventions described by the NICE guideline without either medication or inpatient treatment and most often will resolve or be managed without longer term consequences. In this case BIP is likely to be the appropriate grouping. BIP may also be suitable for the majority of cases where bipolar is a differential diagnosis which cannot be dismissed or confirmed until there has been some history and tracking of the swings. Where severe mood swings are present, and longer-term treatment and monitoring is anticipated, we think the Getting More Help grouping (PSY) is more likely to be appropriate.

Groupings BEM, EMO, DNC and DSI cater for cases where it is felt that a care package guided by one of the specified NICE guidelines would not be sufficient. For the purposes of the BEM and EMO groupings, behavioural and emotional difficulties are defined with respect to the following items on the Current View tool: Behavioural difficulties (Conduct Disorder or Oppositional Defiant Disorder); Depression/low mood (Depression); Panics (Panic Disorder); Anxious generally (Generalized anxiety); Compelled to do or think things (OCD); Anxious in social situations (Social anxiety/phobia); Anxious away from caregivers (Separation anxiety); Avoids going out (Agoraphobia); Avoids specific things (Specific phobia).

We are mindful of the sensitivities around the relevance of the construct of 'emerging borderline personality disorder' to CYP. Clinicians recognise a pattern of high risk behaviours, accompanied by volatile emotional states in the context of strained close relationships, leading to repeated crisis service use. Many draw upon approaches known to be effective with adults presenting with borderline personality (NICE 2009a), but are reluctant to reach such a diagnosis with adolescents, especially younger ones, for whom this may be a transient problem. The pros and cons of including a grouping related to the NICE guideline for this presentation continue to be debated. We have included 'Getting More Help: Presentation Suggestive of Potential BPD (Guided by NICE Guideline 78)' as one of the draft needs-based groupings. However, the possible appropriate use of a potential category of 'Getting Risk Support' may also be explored (Wolpert et al. 2015).

Figure 7.1 Overview of the draft needs-based groupings



Notes: * A child can be in the grouping 'Getting Advice: Neurodevelopmental Assessment (NICE Guidance as Relevant)' (NEU) at the same time as being in one of the other groupings. Apart from NEU all other groupings are mutually exclusive.

† If extremes of mood or bipolar disorder have moderate impact on functioning (at individual or family level) and/or distress consider grouping 'Getting Help: Bipolar Disorder (Guided by NICE Guideline 185)' (BIP); if they have severe impact consider grouping 'Getting More Help: Psychosis (Guided by NICE Guidelines 155 and/or 185)' (PSY).

‡ Behavioural difficulties include Conduct Disorder and Oppositional Defiant Disorder. Emotional difficulties include Depression/low mood (Depression), Panics (Panic Disorder), Anxious generally (Generalized anxiety), Compelled to do or think things (OCD), Anxious in social situations (Social anxiety/phobia), Anxious away from caregivers (Separation anxiety), Avoids going out (Agoraphobia), and Avoids specific things (Specific phobia).

7.3 Grouping assignment and transitions

7.3.1 Assignment of children, young people and families to needs-based groupings

In this section we share our thinking on how shared decision making, clinical judgement and the suggestion of the algorithm may be combined to assign CYP and families to groupings (CAMHS EBPU et al. 2014). As the groupings have not yet been piloted we feel this would benefit from iterative testing and refinement. Our initial thoughts are outlined in Figure 7.2. The algorithm, presented in Section 7.4, may support this process by suggesting a grouping for consideration.

As discussed above, the groupings do not necessarily require or imply a diagnosis. This may mean that groupings are chosen that are not simply aligned with any assumed presenting problem or diagnosis. In Figure 7.2, the grouping chosen could be viewed as a categorisation of the collaboratively agreed means of moving towards a particular aim or aims of advice or help, alongside the choice of an outcome indicator or indicators for tracking progress. It can be viewed as a 'high-level' description of the identified need for advice or help.

Hypothetical examples illustrating our intention for grouping choice to be based on this concept of need for advice or help are as follows:

- A young person's behavioural difficulties and generalized anxiety are rated as 'moderate' on the Current View tool, which means the algorithm suggests the grouping 'Getting Help: Co-occurring Behavioural and Emotional Difficulties (NICE Guidance as Relevant)'. The clinician and parents consider that the primary intervention should target the externalising behaviours, as the young person does not wish to engage with individual sessions on anxiety. Thus the grouping 'Getting Help: Behavioural and/or Conduct Disorders (Guided by NICE Guideline 158)' is chosen.
- The algorithm suggests the grouping 'Getting Help: OCD (Guided by NICE Guideline 31)' based on a rating of the 'Compelled to do or think things (OCD)' item on the Current View tool as having severe impact on a young person's functioning and/or distress. The young person chooses to tackle the symptoms (e.g. excessive hand washing) on their own and collaboratively agrees with the clinician to consider bibliotherapy with one-off follow up. Thus the grouping 'Getting Advice: Signposting and Self-management Advice (NICE Guidance as Relevant)' is chosen.

Further examples of hypothetical shared decisions are included in Appendix A.

With regard to choosing an outcome indicator(s), we think it may be helpful to consider an indicator from one of five overlapping 'domains' (Table 7.1). The indicator should relate to the aims being worked on, and therefore no one-to-one mapping is suggested between outcome measures/indicators and particular groupings. For advice on using outcomes and feedback tools with CYP and families, we refer readers to the following:

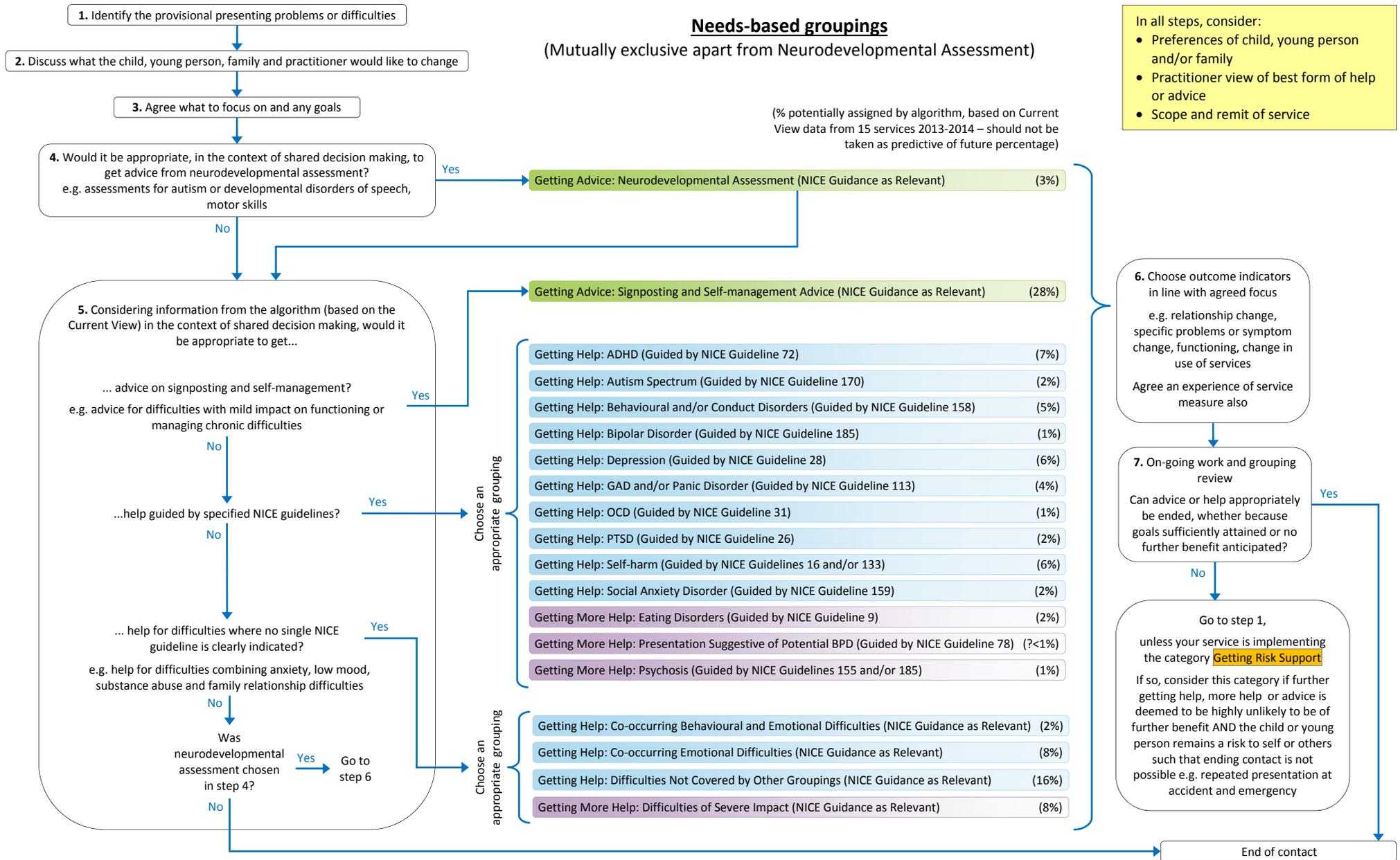
- Child Outcomes Research Consortium (CORC); www.corc.uk.net
- Children and Young People's Improving Access to Psychological Therapies programme (CYP IAPT); www.cypiapt.org
- Quality Network for Inpatient CAMHS (QNIC); www.rcpsych.ac.uk

Table 7.1 Outcome indicator 'domains'

Domains (may overlap)	Domain description	Example of indicator
Bespoke goals	What I/we would like to achieve	Goals based outcome (GBO)
General wellbeing	How things are generally	Short Warwick-Edinburgh Mental Well-being Scale (SWEMWBS)
Symptoms	How things are specifically	Social Phobia Subscale of Revised Child Anxiety and Depression Scale
Impact on life	How school, work, home life, friendships or relationships are affected	Attendance or attainment with regard to education, employment and training
Experience of service	Would I recommend to a friend	CHI Experience of Service Questionnaire (CHI-ESQ)

Reference: Wolpert (2014a).

Figure 7.2 Choosing a needs-based grouping in CAMHS: a collaboration between practitioners, children and families (v1)



7.3.2 Transitions from CAMHS to adult mental health services

The developing CAMHS currencies are different to the adult mental health currencies (care clusters and their associated review periods) because of the different needs of CYP and families. It is currently proposed that service users will be 're-grouped' at the point of transition using the adult mental health currencies. The Project Group feel that transition to adult mental health services is best supported by clear transition policies and local protocols regardless of the system in use (either in CAMHS or adult mental health services).

7.4 The draft algorithm and Current View tool

We developed an algorithm, which we propose may inform, but not determine, the choice of grouping in the context of shared decision making between the clinician, CYP and family. The ambition is for it to be available to practitioners in computerised form.

The algorithm uses ratings from a completed 'Current View' tool. The Current View tool, an earlier deliverable from the project, is a clinician-rated one page form intended to provide a snapshot of provisional problems, complexity factors, contextual problems, and education/employment/training (EET) difficulties (CAMHS EBPU 2012; Jones et al. 2013). Further details on the development of the Current View are provided in Appendix D.

The draft algorithm's logic is set out in Table 7.2a and Table 7.2b. All groupings are mutually exclusive, with the exception of 'Getting Advice: Neurodevelopmental Assessment (NICE Guidance as Relevant)' (NEU), which may be combined with any of the other groups. Each column in the two tables represents a draft grouping and the rows represent the algorithm's criteria for that grouping. The criteria refer to ratings assigned to the 30 provisional problem descriptions on the Current View, the complexity factor 'Pervasive Developmental Disorders (Autism/Asperger's)' and the age of the CYP. As defined in the Current View tool guidance, the impact of the provisional problems should be rated independently in terms of both functioning at the individual or family level, and/or distress of the CYP. If functioning and distress levels differ, then the higher rating should be selected. Impact levels are rated as 'none', 'mild', 'moderate' or 'severe' on the Current View. The complexity factor 'Pervasive Developmental Disorders (Autism/Asperger's)' is rated as 'yes' or 'no'.

Thirteen of the groupings are defined by a single provisional problem on the Current View, which we refer to as an 'index' presenting problem (Table 7.2a). For each column of Table 7.2a the 'index' problem is the cell shaded green. The majority of the 'index' presenting problems correspond to single NICE clinical guidelines. For the algorithm to suggest a grouping defined by a single 'index' presenting problem, the 'index' problem on the Current View form must be rated as 'moderate' or 'severe', or in other words, \geq 'moderate'. Groupings BIP, PSY and AUT are exceptions to this rule. In order for the algorithm to suggest BIP it requires the difficulty 'Extremes of mood (Bipolar disorder)' to be rated as 'moderate'. To suggest PSY it requires either the difficulty 'Extremes of mood (Bipolar disorder)' to be rated as 'severe' or the difficulty Delusional beliefs and hallucinations (Psychosis) to be rated as \geq 'moderate'. AUT requires 'Pervasive Developmental Disorders (Autism/Asperger's)' to be rated on the Current View as 'yes'. Furthermore, an age criterion of 10 years or older applies to BIP, EAT and PSY.

To suggest a grouping defined by a single 'index' problem the algorithm also requires ratings of other difficulties to be lower than certain impact levels. These constraints were formulated using the guiding question that a clinician might ask – "If these other problems were present at a given level would this make it inappropriate or impair treatment effectiveness to limit interventions to the recommendations within the relevant NICE guidance?" The constraints are different for each grouping and are highlighted in yellow and red in each column of Table 7.2a. Their ratings may be lower than or equal to the rating of the 'index' problem, lower than the rating of the 'index' problem, or lower than or equal to 'mild' (i.e. 'mild' or 'none'). Note that there are two columns in Table 7.2a for the grouping 'Getting Help: GAD and/or Panic Disorder (Guided by NICE Guideline 113)', and for the algorithm to suggest this grouping the criteria in either or both of the columns need to be met.

Some problem items do not contribute to the algorithm in all, or some, groupings. They are allowed to be at any level of severity without it affecting a young person's eligibility to be allocated to a NICE guidance grouping. This results from the pervasiveness of such difficulties across CAMHS service users, where

treatment is likely to be the NICE guidance for the index problem augmented by specific interventions (sometimes included in the NICE guidance) to address the co-occurring problem (e.g. substance use, family relationship difficulties, carer management issues) which may range from simple psychoeducative interventions to substantial systems interventions. Over-constraining the algorithm would have placed the vast majority of young people in the multiple needs groupings, when, in fact, the most appropriate evidence based intervention would likely be to follow NICE guidance with small adjustments.

The criteria for the algorithm to suggest one of the five remaining groupings are set out in Table 7.2b. So, for example, if a completed Current View form does not fit the criteria of any of the groups in Table 7.2a (except Neurodevelopmental Assessment), and one or no presenting problems are rated moderate or higher, the algorithm will suggest 'Getting Advice: Signposting and Self-management Advice (NICE Guidance as Relevant)' (ADV). Some of the criteria in Table 7.2b refer to short lists of provisional problems which are provided in the notes underneath the table.

The algorithm does not currently define a pattern of ratings to suggest the grouping 'Getting More Help: Presentation Suggestive of Potential BPD (Guided by NICE Guideline 78)' (PBP). In the case of young people who are not already known to services, we think the Current View and algorithm's ability, at the beginning of a period of contact, to identify those who fit this grouping would be poorer than their ability to identify young people who fit other groupings. We therefore propose that assignment to this grouping is based on clinical judgement and shared decision making (where appropriate), informed by the grouping's conceptual description. We feel there is scope to explore future development of an algorithm for this grouping that takes into account the history of a young person's pattern of behaviour and interaction with services (e.g. re-referral).

Table 7.2a Groups defined by a single "index" presenting problem

Current View Presenting Problem	SHA: Self-Harm	PTS: PTSD	DEP: Depression	OCD: OCD/BDD	BIP: Bipolar Disorder	ADH: ADHD	Gen: Generalised Anxiety/Panic Disorder	GAP: Generalised Anxiety/Panic Disorder	BEH: Conduct Disorder	SOC: Social Anxiety	AUT: Autism management	EAT: Eating Disorders	PSY: Psychosis	NEU: Neurodev. Assessment
ANXIOUS AWAY CAREGIVERS	≤Self-harm	<Trauma	≤mild	<Comp do think	Any	≤mild	≤Anx Gen	<Panic	≤mild	<Anx Soc	≤mild	≤mild	Any	Any
ANXIOUS SOCIAL	≤Self-harm	<Trauma	≤mild	<Comp do think	Any	≤mild	≤Anx Gen	<Panic	≤mild	≥moderate	≤mild	≤mild	Any	Any
ANXIOUS GENERALLY	≤Self-harm	<Trauma	≤mild	<Comp do think	Any	≤mild	≥moderate	Any	≤mild	<Anx Soc	≤mild	≤mild	Any	Any
COMPELLED DO THINK	≤Self-harm	<Trauma	≤mild	≥moderate	Any	≤mild	≤Anx Gen	<Panic	≤mild	<Anx Soc	≤mild	<Eat	Any	Any
PANICS	≤Self-harm	≤ Trauma	≤mild	<Comp do think	Any	≤mild	Any	≥moderate	≤mild	<Anx Soc	≤mild	≤mild	Any	Any
AVOIDS GOING OUT	≤Self-harm	≤ Trauma	≤mild	<Comp do think	Any	≤mild	≤Anx Gen	<Panic	≤mild	<Anx Soc	≤mild	≤mild	Any	Any
AVOIDS SPECIFIC THINGS	≤Self-harm	<Trauma	≤mild	≤Comp do think	Any	≤mild	≤Anx Gen	<Panic	≤mild	<Anx Soc	≤mild	<Eat	Any	Any
REPETITIVE PROBLEM BEHARS	≤Self-harm	<Trauma	≤mild	<Comp do think	Any	≤mild	≤Anx Gen	<Panic	≤mild	<Anx Soc	≤mild	≤mild	Any	Any
LOW MOOD	≤Self-harm	<Trauma	≥moderate	≤mild	Any	≤mild	≤mild	≤mild	≤mild	≤mild	≤mild	≤Eat	Any	Any
SELF HARM	≥moderate	≤mild	<Low Mood	Any	<Extremes Mood	≤mild	<Anx Gen.	<Panic	≤mild	≤mild	≤mild	Any	Any	Any
EXTREMES OF MOOD	<Self-harm	≤mild	≤mild	≤mild	moderate	≤mild	≤mild	≤mild	≤mild	≤mild	≤mild	≤mild	severe OR	Any
DELUSIONAL BELIEF HALLUCINATIONS	≤mild	≤mild	≤mild	≤mild	<Extremes Mood	≤mild	≤mild	≤mild	≤mild	≤mild	≤mild	≤mild	≥moderate	Any
DRUG ALCOHOL DIFFICULTIES	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any	≤mild	Any	Any	Any
DIFFICULTIES SITTING STILL CONCENTRATE	≤mild	<Trauma	<Low Mood	<Comp do think	Any	≥moderate	≤mild	≤mild	≤mild	≤mild	≤mild	≤mild	Any	Any
BEHAVIOURAL DIFFICULTIES	≤mild	<Trauma	<Low Mood	<Comp do think	Any	Any	≤mild	≤mild	≥moderate	≤mild	Any	≤mild	Any	Any
POSES RISK OTHERS	≤mild	≤mild	≤mild	<Comp do think	Any	Any	≤mild	≤mild	Any	≤mild	Any	≤mild	Any	Any
CARER MANAGENT	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any
TOILET PROBLEMS	≤mild	≤mild	≤mild	<Comp do think	Any	≤mild	≤mild	≤mild	≤mild	≤mild	≤mild	≤mild	Any	Any
TRAUMATIC EVENT	≤mild	≥moderate	≤mild	<Comp do think	Any	≤mild	≤mild	≤mild	≤mild	≤mild	≤mild	≤mild	Any	Any
EATING ISSUES	≤mild	≤mild	<Low Mood	<Comp do think	Any	≤mild	≤mild	≤mild	≤mild	≤mild	≤mild	≥moderate	Any	Any
FAMILY REL'SHIP DIFFICULTIES	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any
ATTACHMENT CARER PROBLEMS	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any
PEER RELATIONSHIP DIFFICULTIES	Any	Any	≤Low Mood	≤mild	Any	Any	≤mild	<Panic	Any	Any	Any	Any	Any	Any
PERSIST. REL'SHIP DIFFICULT.	≤Self Harm	Any	<Low Mood	≤mild	Any	Any	≤mild	<Panic	Any	Any	Any	Any	Any	Any
DOES NOT SPEAK	≤mild	Any	<Low Mood	<Comp do think	Any	≤mild	≤Anx Gen	<Panic	≤mild	Any	Any	Any	Any	Any
GENDER DISCOMFORT	<Self Harm	Any	Any	<Comp do think	Any	Any	<Anx Gen	Any	<Behav diffs	Any	Any	Any	Any	Any
UNEXPLAINED PHYSICAL SYMPTOMS	≤mild	Any	≤Low Mood	<Comp do think	Any	≤mild	≤Anx Gen	<Panic	≤mild	Any	Any	≤mild	Any	Any
UNEXPLAINED DEVELOPM. DIF.	≤mild	≤mild	≤mild	≤mild	Any	Any	≤mild	≤mild	≤mild	≤mild	≤mild	Any	Any	≥moderate
SELF CARE ISSUES	<Self Harm	Any	≤Low Mood	<comp do think	Any	Any	<Anx Gen	<Panic	≤mild	Any	Any	Any	Any	Any
ADJUSTMENT HEALTH ISSUES	≤mild	Any	Any	Any	≤mild	Any	Any	Any	≤mild	Any	Any	Any	≤mild	Any
Complexity: Pervasive Develop. Disorder	Any	Any	Any	Any	Any	Any	Any	Any	NO	Any	YES	Any	Any	Any
Age	Any	Any	Any	Any	≥ 10 years	Any	Any	Any	Any	Any	Any	≥ 10 years	≥ 10 years	Any

Colour key:

Colour	Meaning
Green	"Index problem", or required condition.
Yellow	Exclusion criterion compared to the index problem.
Red	Absolute Exclusion Criterion. Problem must be absent or mild (where appropriate).
Blue	No restrictions on ratings apply.
Light Green	Additional required condition (age restriction for BIP, EAT and PSY).

Symbols:

\leq **Less severe or equal severity.** Example: " \leq mild" means "Must be rated 'none' or 'mild'".

$<$ **Less severe than.** Example: " $<$ Self-Harm" means "must be rated as being less severe than self-harm"

\geq **More severe or equal severity.** Example: " \geq moderate" means "must be rated 'moderate' or 'severe'"

NO *Must be absent.*

YES *Must be present.*

Any *No conditions on ratings apply.*

Table 7.2b Remaining groups

	ADV: Getting Advice: Signposting and Self-management Advice	DNC: Getting Help: Difficulties Not Covered by Other Groupings	DSI: Getting More Help: Difficulties of Severe Impact	EMO: Getting Help: Co-occurring Emotional Difficulties	BEM: Getting Help: Co-occurring Behavioural and Emotional Difficulties
Does not fit the criteria of any of the groups in Table 7.2a (except Neurodevelopmental Assessment)	YES	YES	YES	YES	YES
Number of presenting problems rated moderate or higher ≤ 1	YES	Any	NO	NO	NO
Number of presenting problems rated moderate or higher ≥ 2 OR Number of presenting problems rated severe =1 AND number of presenting problems rated moderate = 0	NO	YES	Any	Any	Any
Number of presenting problems rated severe ≥ 2 OR [Number of presenting problems rated moderate or higher ≥ 2 if one of these is from list A AND the child is aged ≥ 10]	NO	NO	YES	Any	Any
Number of "emotional" problems rated moderate or higher ≥ 2	NO	Any	Any	YES	Any
Any "emotional" problem rated moderate or higher AND Behavioural Difficulties rated moderate or higher	NO	Any	Any	NO	YES
Number of problems from list B rated moderate or higher = 0	YES	Any	Any	YES	YES

Notes: For the purpose of this table, the complexity factor "Pervasive Developmental Disorder" is counted as a "moderate presenting problem" if present.

List A: Delusional Beliefs/Hallucinations; Eating Issues; Extremes of Mood (severe rating only)

List B: Extremes of mood (Bipolar disorder); Pervasive Developmental Disorders (Autism/Asperger's); Delusional beliefs and hallucinations (Psychosis); Eating issues (Anorexia/Bulimia); Disturbed by traumatic event (PTSD); Self-Harm (Self injury or self-harm); Difficulties sitting still or concentrating (ADHD/Hyperactivity)

"Emotional" presenting problems: Depression/low mood (Depression); Panics (Panic Disorder); Anxious generally (Generalized anxiety); Compelled to do or think things (OCD); Anxious in social situations (Social anxiety/phobia); Anxious away from caregivers (Separation anxiety); Avoids going out (Agoraphobia); Avoids specific things (Specific phobia).

7.5 Considerations for pathways and packages of care

For many of the needs-based groupings (ADH, AUT, BEH, BIP, DEP, GAP, OCD, PTS, SHA, SOC, EAT, PBP and PSY), care pathways and packages will be drawn directly from the appropriate NICE guidance associated with the grouping. These are referenced in the group definitions. This promotes a natural development of care pathways and packages, and appropriate amendments as new NICE guidance becomes available. Our approach also makes salient where there are gaps in the current suite of national guidance available to CAMHS.

Our thinking behind the groupings guided by specific NICE guidelines (ADH, AUT, BEH, BIP, DEP, GAP, OCD, PTS, SHA, SOC, EAT, PBP and PSY) is that a certain amount of leeway with regard to co-occurring problems would be appropriate within these groups. This is shown in detail by the blue and yellow shaded cells in the section of the algorithm presented in Table 7.2a. However, a large proportion of CAMHS service delivery addresses multiple needs, where single NICE guidelines may not be applicable in a straightforward way. The existence of multiple comorbidity is well known in CAMH services and confirmed in the data we have collected (see, for example, Figures E3 and E4 in Appendix E). We have been influenced by the work of Chorpita and Weisz's MATCH ADTC model in thinking how care pathways and packages might be established for these service users.

Chorpita and Weisz (2009) provide a 'modular' evidence-based manual for constructing packages of care from the existing evidence base for individual problems, so that one can address individual presentations of multiple need (e.g. more than one of ADTC: Anxiety, Depression, Trauma and Conduct problems). This approach would allow the development of care packages and pathways for the multiple need groupings we have included in the proposed structure (specifically, groupings BEM and EMO).

The data specification for our prospective project to establish current resource use allowed for detailed costings. Unfortunately, despite enormous effort on the part of participating sites and focussed work on data quality, limitations of existing electronic record systems and staff availability at participating sites meant that we were unable to take indirect activity into account in the analysis. It is to be wished that developments in data collection and more effective future information technology procurement will facilitate accurate costings of service provision. The grouping structure we propose should then enable more direct comparison of the cost of provision amongst providers, as the more similar needs of young people treated within each grouping will be more appropriately compared regardless of setting.

Furthermore, where NICE guidance exists for a grouping, costs of recommended treatment should be more easily calculated, based on the recommended model and dose of treatment. It should be noted, however, that NICE guidance does not account for the need (and cost) of providing clinically indicated levels of professional network liaison and care coordination, which in complex cases, represented in some of the Getting Help, and all of the Getting More Help groupings, can be an appreciable and important component of a successful outcome.

7.6 Consideration of the start and end points of currency units

Section 5 described how a currency consists of a grouping dimension and an activity or temporal dimension, which defines the start and end points of a currency unit. This enables the number of currency units delivered by services to be counted. Different definitions of start and end points are likely to have practical implications for analyses of currencies data and any payment arrangements and decisions that rely on or are informed by them (Aylin et al. 2004; Rosen and Borzecki 2012).

We recognise the attractiveness of a longitudinal, or episode-based, form of currency unit in the scope it offers for enabling more direct assessment to be made of the relationship between resource use and outcomes, compared with, for example, currency units defined as individual items of service (Hornbrook et al. 1985). Support for an approach to data collection and analysis that helps to link people's needs, resource usage and the outcomes of services provided was evident from the stakeholder consultation during this project, and from NHS England's engagement with the mental health sector (NHS England 2014a). This raises the question of specifically how episode-based currency units for CYP and their families should be determined.

Episodes can be defined from different perspectives (Hornbrook et al. 1985; Damberg et al. 2009). For data

collection and analysis purposes, closed ‘periods of contact’ were used. Our initial thoughts are that currency units may be constructed in practice as either ‘quantum-’ or ‘time-based’ (Table 7.3). By ‘quantum’ we mean the total activity delivered while a service user is assigned to a needs-based grouping, regardless of the length of time this occurs over. Time-based refers to a pre-specified length of time a service user is assigned to a needs-based grouping (e.g. 1 year). We propose that the period between the beginning of a period of contact and the assignment to a needs-based grouping may be named ‘choosing a grouping’.

Table 7.3 Types of currency units

Currency unit	Start point(s)	End point(s)
Choosing a grouping	• First direct or indirect activity in a period of contact*	• Assignment to a needs-based grouping • End of contact on a named basis with mental health / wellbeing support
Quantum-based grouping episode	• Assignment to the needs-based grouping	• End of contact on a named basis with mental health / wellbeing support • Transition to adult mental health services • Assignment to a different needs-based grouping
Time-based grouping episode	• Assignment to the needs-based grouping • Start of new pre-specified period of time while remaining assigned to the same grouping	• End of a pre-specified period of time while remaining assigned to a needs-based grouping • End of contact on a named basis with mental health / wellbeing support • Transition to adult mental health services • Assignment to a different needs-based grouping

*Note: * We define direct activities as those involving direct contact with the child, young person and/or family and indirect activities as those related to a specific case (named child), but not involving direct contact with the child, young person and/or family (e.g. consultation or case discussion with another professional).*

Broadly, we think that currency units may specified for each of the groupings as follows:

- Groupings within the Getting Advice ‘super grouping’: Quantum-based episode
- Groupings within the Getting Help ‘super grouping’: Quantum-based episode
- Groupings within the Getting More Help ‘super grouping’: Time-based episode

Our preference for specifying episodes as the quantum of activities while assigned to a grouping arises from a possible risk with time-based episodes, which is that they do not incentivise sufficient treatment, sufficiently promptly. For example, the two-month episode in Medicare’s Home Health Prospective Payment System is suggested to have encouraged extensions of periods of contact into additional two-month episodes, particularly for patients deemed to be ‘more profitable’ (Kim and Norton 2015). However, as assignment to groupings within the Getting More Help ‘super grouping’ would be more likely to last longer than a year than the other ‘super groupings’, dividing a Getting More Help period of contact into time-based episodes (e.g. of a year in duration) may be more practicable than handling the quantum of activities spanning several years as one episode.

Although pricing is separate to currency development (Section 5.3), and was thus out of scope of this project, the preceding discussion raises some possibilities and issues in relation to pricing, on which we offer brief comments. First, we feel there is an opportunity with the ‘NICE guideline-related’ groupings to explore the feasibility of deriving ‘guide price ranges’ for currency episodes from the recommendations in the guidelines. The feasibility of this task may vary between the guidelines, depending on their specificity with regard to the quantity and type of recommended interventions. Consensus would need to be sought on the skill levels of staff required for recommended interventions, their associated hourly rates, and the additional resource requirements for adjunct family work, planning, review and liaison common in many cases.¹²

¹² Planning refers to agreeing a care plan, aims of care and appropriate outcome measurement indicators. This may involve parents, carers, schools and practitioners from other organisations (e.g. social care, residential homes). Review meetings involve sharing progress with the network of stakeholders and amending the care plan, aims and outcome indicators on the basis of lessons learnt from implementation of the original care plan and knowledge of interim outcomes. Liaison refers to communication with the stakeholders to facilitate planning and treatment. These tasks support treatment and the resources associated with them are not usually specified in NICE guidelines.

Second, for quantum-based currency episodes, the actual amount of activity delivered within the episode may vary widely between service users. Where empirical data on the costs of delivering episodes are used in the development of prices or guide prices, the standard practice of 'trimming' data to exclude those episodes that are outside of a 'normal' range for that currency may prove useful. We also think it would be beneficial to develop and seek feedback on recommended review points for each grouping (e.g. expressed as a number of appointments). Care would need to be taken to clearly distinguish these 'grouping review points' from clinical progress review points.

Third, a payment system with prices attached to quantum-based episodes would provide incentives for service providers to both reduce costs within episodes and increase the number of episodes (Allen 2009; Mechanic 2011). In this situation it may, therefore, be informative to monitor for 'gaming' activity, which we hypothesise might include (i) discharges and re-referrals that lead to a continuation of the same grouping assignment (in a new episode) within a short space of time, (ii) 'flipping' between groupings and (iii) inappropriate early discharge. Monitoring the quality and outcomes of the advice or help delivered may also provide an additional incentive against inappropriate early case closure or transfer.

We note a recent call to acknowledge a sizeable group of service users who may be supported by CAMHS without receiving focussed treatment (Wolpert et al. 2015). These may include CYP who remain at risk to themselves or others but "are not able to make use of help offered, or where help offered has not been able to make a difference" (Wolpert et al. 2015). If these service users are initially assigned to a quantum-based currency unit, once their resource use exceeds the 'normal' range for that currency there may be an incentive to re-group them into a time-based currency unit (e.g. DSI) if it is felt to be inappropriate to discharge them. It may be useful to investigate the pros and cons of including a grouping in the classification that reflects the needs for support (but not necessarily treatment) of this group.

8. Assessing against criteria for currencies

This chapter will re-visit the criteria noted in Section 5.1 and will outline further work that would be necessary to assess the draft needs-based groupings against them. Early indications of performance against these attributes will also be discussed.

8.1 Clinical meaningfulness

From the outset, and following extensive consultation, we established the principle that, while groupings should be needs-led, and that these needs should be broader than diagnoses, they should:

- be clinically compatible, i.e. consistent with practice; and
- not drive clinical decisions.

These factors were taken into consideration in the finalisation of the groupings, in particular in matching emerging findings with NICE guidelines, as far as this was possible. At engagement events and other meetings we received positive feedback from clinicians on the notion of a significant proportion of CYP and families seeking support for whom advice on signposting and self-management is the most appropriate intervention, given an informed choice (the Getting Advice grouping). There was considerable stakeholder support at the December 2014 engagement events for a classification that disaggregated the Getting Help and Getting More Help 'super groupings', when presented alongside alternative versions with less disaggregation. However, questions remained about the lack of a definitive answer on the relationship between resource use and groups with particular complexity factors (e.g. looked after children), who clinical staff often cited as having complex needs.

One topic that frequently arose in discussion with clinicians regarded where crisis intervention fits in the classification. We think that a proportion of cases in many of the needs-based groupings may benefit from crisis intervention. This will increase the cost of those particular groupings, but when the average cost of care for a large number of service users in a particular grouping is calculated, the amount of crisis intervention work for that grouping will be reflected in the average cost. Thus the cost of the care for an individual service user who receives crisis intervention care may be above the average cost for that grouping but, correspondingly, the cost of care for a service user who does not receive crisis intervention will be below the average grouping cost.

8.2 Ability to identify periods of care of broadly similar resource use

Section 6.4 presented our evidence regarding the relationship between group membership and resource use. We developed the conceptually-driven classification, based on (1) a broad distinction between the Getting Advice, Getting Help, and Getting More Help, and (2) NICE guidance. We have argued that this classification provides a better prediction of resource use than those derived from purely data-driven methods (k-medoids cluster analysis and regression trees). To find a conceptually driven model that outperforms models based on a-theoretical data analysis is a good argument for the relevance of the concepts that have informed our classification.

We have also shown that the prediction of resource use provided by our 18-group classification is poor. Although average resource use differs between the groupings broadly in line with our theoretical expectations, there is arguably more variation within the groupings than between the groupings. Some children that are classified, according to our algorithm, into the least resource-intensive "Getting Advice: Signposting and Self-Management Advice" group, nonetheless attended over fifty treatment sessions. On the other hand, some children classified into groupings expected to be relatively resource-intensive left after a single session.

This means that much of what causes variation in resource use between children is not captured in our classification. One factor that is important to consider in this respect is variation between services. In terms of statistical effect, the variation in resource provision between some services was larger than any differences in average resource use between groupings. We cannot rule out that data quality may be partly responsible for this result. Some of the apparent between-service differences in resource provision may be due to differences in the completeness of the information on treatment activity that the services supplied to us, rather than real differences in the average activity levels of the services. However, we invested considerable effort to help services maximize data quality, with a particular focus on treatment activity data. Also, we constructed our analysis sample by carefully selecting only those services whose data quality we

judged to be adequate. We think, therefore, that there is some grounds to believe that service variation in treatment provision has a strong influence on 'how much' treatment a given child presenting at CAMHS is likely to receive, so that children with the same characteristics may receive widely different amounts of treatment, depending on which service they attend. If this is the case, then of course the prediction of resource use based on child characteristics alone is going to be relatively poor. We should add that we are not the first to find that the variation in resource provision between mental health providers is larger than between children with different characteristics (Buckingham et al. 1998; Eagar et al. 2004; Mason et al. 2011; Vostanis et al. 2015).

8.3 Consistency of identification

Within this project, we were not able to strictly test consistency of grouping identification, that is, the question whether the grouping descriptions we have developed allows clinicians to make reliable decisions regarding which grouping a given patient belongs to. We have, however, tried to increase the chances of identification in a variety of ways:

We have developed an algorithm that suggests a grouping for any given child based on a clinician's ratings of a Current View Form. This algorithm is published in Appendix C. We suggest that future work should investigate the agreement between grouping allocations based on the algorithm and those based on clinical judgement. Such work may well lead to a refinement of the algorithm, and we would argue that this work should be undertaken before the groupings are introduced for mandatory data collection.

We have also tested some aspects of the reliability and validity of the Current View Form itself, as far as limited time and means allowed us to do within this project. Our findings suggest that those items on the Current View Form that we were able to validate against established psychometric instruments performed better than anticipated. We found that Current View items on behavioural difficulties, peer relationship problems and hyperactivity correlated moderately well with corresponding subscales of the Strengths and Difficulties Questionnaire (SDQ; Goodman 2001). We also found that Current View items designed to measure low mood and anxiety correlated weakly to moderately with corresponding subscales of the RCADS inventory (Chorpita et al. 2000). To assess reliability, we conducted exploratory studies investigating how well clinicians agree in their ratings of case vignettes and real CAMHS users. The results suggest that Current View Ratings are moderately reliable at best. It is unclear how far reliability of ratings could be improved by training clinicians in the use of the form. We intend to conduct further, more rigorously designed research into the reliability of Current View ratings, and expect that this work may result in suggestions for amendments to the form. Details of our investigations into validity and reliability of the Current View Form are contained in Appendix G.

9. Learning from the implementation of clusters in AMH services

9.1 Adult and Older Adult Mental Health Services (AMH) – a brief background history

AMH clusters were made available for use in April 2010, but progress in implementing clusters by different trusts was sketchy over the course of 2010-11. This was evidenced by the lack of completeness in the reference cost submissions in July/August 2011.

The guidance issued by DH for 2011-12 made it a requirement that all patients should be clustered by 31 December 2011. Most trusts were only able to achieve around 90% clustering by that date but, because of the 'scaling up' process over the course of the year, it meant that clustering data for 2011-12 were still only partially complete. Thus, 2012-13 was the first year where clustering data were anywhere near complete. The DH originally expected trusts would agree cluster-based contracts with commissioners for 2012-13, albeit with a high level of risk share (DH PbR Team 2012b). Almost without exception, this did not happen and trusts were then required to implement local cluster-based contracts and prices for 2013-14 (DH PbR Team 2013). However, in London, at least, this was not possible, as Trusts did not believe their cluster data quality was accurate enough to support reliable prices.

9.2 Some early data quality issues with the AMH clusters

Analysis of reference cost returns for 2012-13 and 2013-14 (Department of Health 2013; Department of Health 2014) revealed the following:

- Clusters 1 – 3 are for relatively short term conditions, e.g. depression, anxiety caused in the main by traumatic life events such as death, divorce, redundancy. To date all reference cost returns have shown at least 25% of costs attributable to inpatient stays, which are extremely unlikely for this group of patients. Also, a detailed examination of some patient records showed that many patients had been left in these clusters for more than one review period, when they should have been either discharged or moved to a higher cluster.
- AMH clusters have a set review date by which the patient should be reviewed and discharged or re-clustered (which could be the same cluster in some cases), but this should have been recorded as a new care episode. An analysis of cluster review dates in the reference cost returns showed that in some cases the average cluster review period exceeded the standard (maximum) review period, indicating that cluster reviews were not being carried out.
- Not reviewing and re-clustering at the review date then had 'knock on' consequences for cluster costs, particularly in the emergency clusters (clusters 14 and 15), where the costs of care should have related closely to the cost of inpatient care: for the first 2 – 3 years the average cost of care per day in these clusters was way below the average cost of a day's inpatient care.

9.3 AMH quality and outcome measures

It took a while before AMH could decide on appropriate outcome measures. There was discussion of possible measures in the DH guidance for 2012-13 which was further strengthened in the 2013-14 guidance. However, outcome measures were still in development and their implementation was compromised by the fact that patient record systems had not been designed to record the data in a form that could easily be searched, extracted and submitted to the HSCIC as part of the MHMDS. The measures that were eventually agreed were a clinician rated outcome measure (CROM), a patient rated outcome measure (PROM) and a patient rated experience measure (PREM). Guidance on how outcome measures could be built into a payment system is still outstanding.

9.4 Lessons learned

Data quality: Data quality is key to establishing a successful tariff. If providers have concerns on the accuracy of their data, they will then have concerns over the accuracy of their pricing and be unwilling to set a tariff for fear of creating financial instability. Trusts should be given guidance on quality checking to ensure grouping accuracy.

Grouping definitions and descriptions: Groupings need to be clearly defined and described to help ensure good data quality, as well as the right choice of care pathway. The factors which clearly distinguish between groupings need to be highlighted so that clinicians, children, young people and their families can more easily make the right decisions as to which group the allocation should be. This will be particularly important if some groupings provide for different combinations of co-morbid conditions where the same

condition can be present in more than one combination.

Grouping algorithm: It would be helpful for a grouping algorithm to be made available and for this to be built into patient record systems used by trusts. Although clinicians should be able to override the suggested grouping as part of a collaborative choice with service users, cross-checks should be built into the software for recording the grouping assignment, so that any illogical choice of grouping can be flagged up as a warning prior to the final choice of grouping being confirmed. NB: in AMH the decision to override the cluster selection could be made independently of the clustering algorithm, which meant there was no automatic cross-check to ensure the override decision was not 'illogical' (i.e. did not run counter to cluster requirements on which the algorithm made its recommendations).

Training: Clinicians need to be properly trained so that they understand the grouping assignment process and can work with children, young people and families to facilitate informed choices of groupings. Training also needs to be continuous: both initial training for new staff and refresher training for all other staff, especially those who may facilitate collaborative choices of groupings only occasionally. In AMH Services training was left to individual trusts to implement, but there may be rationale (from both quality and cost perspectives) in training being provided regionally / centrally.

Errors / change in assessment of need and reviews: The design of the groupings and related instructions need to allow for and specify the action to be taken where there is evidence for change or the course of treatment has come to an end.

Timescale: The timescale for the implementation process needs to be thought through and then set down so service providers will know what they have to work to.

Outcome measures: It would be helpful if these could be built into the system from the outset so that work can commence on recording outcomes at the same time that groupings are recorded.

Exclusions: If any conditions / categories of service users or treatment are to be excluded from CAMHS currencies this will need to be clearly spelt out in the guidance, for instance activities that are not related to named service users.

Reference cost collections: It will be necessary to ensure that costs are collected separately for excluded activities, which will include activities not related to providing care to a named individual. Both providers and commissioners will need to know these costs so that separate contracts / contractual elements can be agreed at a price that will sustain the contracted level of activity.

10. Recommended approach to incorporating outcomes monitoring

10.1 What do we mean by ‘outcomes’?

From the outset the group working on this project have been committed to the aspiration to ensure that any payment system incentivises positive impact and outcomes for those accessing services. Many members of the group have led on the implementation and use of patient and clinician reported outcome measurement in CAMHS and beyond to support clinical practice and to help allow for comparison and review of service impact (e.g. Wolpert et al. 2012a; Fleming et al. 2014; Wolpert 2014b; Wolpert et al. 2014). However, we are also very alive to the complexities and challenges in this area. Some of which we list below for ease of reference.

10.1.1 What counts as a measure of outcome?

“Outcomes” is an increasingly overused term (Macdonald and Fugard 2015). In mental health it is often used to refer to questionnaire responses on one or more measures. These measures have been defined elsewhere as follows:

“Patient reported outcome measures (PROMs) refer to any questionnaire completed by those using services (in the case of child mental health services this includes parents and carers as well as children and young people) that is used to try to assess whether there has been improvement in one or more domains relevant to the outcome of treatment. Thus PROMs may, for example, measure change in symptoms or impact of difficulties on the young person’s life and/or sense of wellbeing. PROMs should be distinguished from Clinician rated outcome measures (CROMs) which are clinician completed questionnaires relevant to assessing treatment outcomes. PROMs should also be distinguished from patient reported experience measures (PREMs) which measure the patient’s satisfaction with a service they received but not the “outcome” of the service as such.” (Wolpert 2014b)

However it should be noted that a positive outcome might be measured by a change and not a questionnaire as such, such as increased attendance at school, difference in academic grades, differences in health or care status, improved behaviour in the classroom, better social communication skills, or uptake of employment and training.

10.1.2 What can be taken to have caused that outcome?

It should also be noted that “outcomes” are often taken to be outcomes of treatment but that in almost all case this is entirely inferential. Thus, an event or change in state measured at some point after the start of an intervention is taken to be, at least in part, the consequence of that intervention. But of course correlation is not causation and there may be many factors accounting for change or the lack of it. Research suggests that while therapeutic interventions do have a positive impact on outcome, there are other factors within the lives of people seeking help which appear to have much more impact on the outcome of their difficulties. As we have noted elsewhere:

“Any attempt to measure ‘impact’ of a service using a given ‘outcome’ is complex. The Keogh report acknowledges: “two different measures of mortality, HSMR [Hospital Standardised Mortality Ratio] and SHMI [Summary Hospital Level Mortality Indicator] generated two completely different lists of outlier trusts” (Keogh 2013). This was ‘solved’ by using both lists, but with a suggestion to move to one measure of morbidity in the future. Yet challenges remain: other measures of outcome may be relevant to consider (eg, years of high quality life) and any measure of risk adjustment (even one as well accepted as the European System for Cardiac Operative Risk Evaluation (EuroSCORE) for heart surgery (Nashef et al. 1999)) may not control for all factors that impact on outcomes (Lilford et al. 2004).

If consideration of performance of hospitals in terms of morbidity data is complicated, then the challenges of applying outcome measures in mental health may appear insurmountable. There is no equivalent ‘hard’ indicator with the status of mortality. Relevant mental health outcomes include symptom change, adaptive functioning, subjective well-being and experience of recovery. There is no one commonly accepted risk adjustment model equivalent to EuroSCORE, although there is evidence that case severity at the outset may be among the most powerful predictors of outcome (Norman et al. in press).” (Wolpert et al. 2014)

The issue of how best to interpret outcome data in meaningful ways is still in its infancy in CAMHS (Law and Wolpert 2014; MacDonald and Fugard 2015) but this does not mean that the ambition is not very important to pursue.

10.1.3 Whose outcome is it?

Again as we have noted elsewhere:

“The evaluation of children's outcomes is additionally complicated by the need to elicit and interpret the views of children at different developmental stages, and the need to consider these views alongside those of carers and other stakeholders... In practice these views often differ, with parents and children, for example, sharing no more than 10% of the variance in their perception of difficulties (Verhulst and Van der Ende 2008). Each may be important in terms of understanding different aspects relevant to performance management. Children's own views may be crucial to ensure the voice of the child influences review of services, and there is evidence that children as young as 8 years old can reliably comment on their experiences and outcomes (Department of Health 2012). However, parents can also offer rich insights on particular areas, such as reporting changes in behavioural difficulties exhibited by children (Verhulst and Van der Ende 2008). Clinicians are important reporters particularly in relation to complex symptomatology and functioning (Garraalda et al. 2000).” (Wolpert et al. 2014)

10.1.4 What constitutes a positive outcome?

One of the difficulties in embedding outcomes in any payment system is the issue of agreeing what constitutes a good outcome and from whose perspective. As has been noted that given the complexity of problems it may be that for some young people a good outcome is prevention of further deterioration or ability to manage risk (Wolpert et al. 2015); for others it may be a reduction in impact on life whilst the symptoms remain, while for others it may be a change in symptoms such that they are no longer clinically significant. There is an increasing emphasis on focussing on collaboratively agreed goals between those seeking help and those providing help that can define and determine appropriate outcome measurement (Law 2011; Weisz et al. 2011; Law and Wolpert 2014).

For this reason it is important that a range of possible indicators of outcome be considered and these should be tailored to the aims and aspirations of any particular care package, as defined in collaboration between service users and providers, whilst using as many common tools as possible to aid comparison and benchmarking as appropriate. The Project Group has worked alongside those working on the approach to outcome measurement developed by the Child Outcomes Research Consortium (CORC) (www.corc.uk.net) and CYP IAPT (www.cypiapt.org). In collaboration with clinicians and young people this has led to the development of a list of possible measures that can be used for a range of difficulties that try to balance the need for both idiographic (bespoke measures that try to capture the uniqueness of the issues of the person seeking help, but which are therefore difficult to use as comparators between people or services) and norm-based measurement (which can be used to make comparisons across populations but may not fully capture an individual's issues) (Wolpert et al. 2012a; Wolpert et al. 2012b).

10.1.5 What are the dangers of measuring outcomes to inform payment systems?

Wolpert (2014b) summarised the issues as follows:

“What Are the Potential Iatrogenic Consequences of the Use of PROMs for Audit and Research Purposes?”

The benefits of using PROMs for audit or research can feel quite distal from the daily dilemmas and decision making challenges facing those implementing them on the ground and can feel separate from, and even undermining of, the clinical encounter. The standard questions may seem irrelevant to a given patient and can be experienced as a potential burden for clinicians and patients alike and raise anxieties about use to limit service provision (Moran et al. 2012). Clinicians in particular can experience PROMs in this context as an additional bureaucratic burden, imposed autocratically from above, particularly in the context of lack of adequate IT to support their use in a non-resource intensive way and escalating demands from managers for more and more form filling (Batty et al. 2013).

As part of the CAMHS Outcomes Research Consortium (CORC), a learning collaboration of Child and Adolescent Mental Health Services (CAMHS) across the UK and Europe, committed to using

PROMs to inform service improvement, I and others have been instrumental in recommending use of key measures such as the Strengths and Difficulties Questionnaire to assess patients' wellbeing and symptoms at the start and outcome of treatment. In part this is because such measures had access to national norms and thus could potentially be used to assess the "added value" of service intervention (Ford et al. 2009). What we have discovered in practice in the UK is that this has meant national funders of services mandating the use of this measure for services, setting targets for completion rates and that little attention has been paid to its integration with clinical conversations or clinical care. This, combined with clinician anxiety and concern over measure use, has led to a situation where clinicians across the UK may never see the completed questionnaires in time to use them in sessions with patients and service users never get to hear what their scores mean or how they are used, which may severely limit potential positive benefits (de Jong et al. 2012)."

How Should PROMs Be Implemented for Research and Audit in Such a Way as to Mitigate Potential Iatrogenic Impact?

Whilst clinicians should be encouraged to collect PROMs data to inform national aggregation, trained in how to implement and challenged if they argue they feel such an approach is never helpful, ultimately there may need to be at least some freedom for clinical judgment in relation to PROMs use. Whilst there is no evidence of actual harm caused by use of PROMs and rather more evidence of anxiety about use of PROMs inhibiting use (Batty et al. 2013) there is emerging evidence that intensive PROMs may have a less positive impact in certain contexts such as in inpatient services or with young adults in crisis (de Jong et al. 2012; Vane Oenen personal communication). It may be important to be more explicit in roll out of PROMs nationally about how new an approach this is and how little we know about the psychometric properties, impact or indeed utility of many of the measures being used.

Any targets in relation to PROMs use should be related to stage of implementation of PROMs (for example whether a service has just started to use PROMs) and should concentrate on clinical use of data to inform practice, rather than assessing success of implementation in terms of how much data has been collected for central analysis (CAMHS Outcomes Research Consortium 2013). It is important that data is aggregated and fed-back rapidly but also in ways that are appropriate to the flaws and tentativeness of the data (Spiegelhalter 2005). All those wishing to use these data should be encouraged to appreciate that PROMs data alone are unlikely to be able to yield reliable results and will need to be triangulated with other data sources. For example at the level of service evaluation consideration will need to be given to case mix variables, staffing variables and other indicators of quality such as level of complaints, drop out rates and referrer satisfaction. Furthermore, data should be interpreted in relation to underlying theories of processes and mechanisms."

10.1.6 What are the advantages of measuring outcomes to inform payment systems?

Despite the complexities recognised and outlined above we still feel monitoring outcomes is crucial to any system of payment as without this there is no way to assess value for money (e.g. Porter's (2010) definition of value as "patient health outcomes achieved per dollar spent") and there is a danger of a focus on processes or other factors meaning that those outcomes most important to those seeking help get lost leading to mis-diagnosis of preferences (Mulley et al. 2012). Making use of data that relates to outcomes of interventions is crucial to allow meaningful discussions between managers and commissioners, underpinning decision making processes both clinical and in terms of service delivery.

"How Do PROMs Work for Audit and Research Purposes?"

PROMs used to inform audit and research involves data being collected, aggregated and analysed at a system level (Department of Health 2012; Devlin et al. 2010). The tools need to be psychometrically robust and the data need to be as complete as possible to prevent false interpretation (Clark et al. 2008). These sort of data made public and shared within careful parameters (Black 2013; Spiegelhalter 2005) have been shown to powerfully influence improvements in service quality and outcomes in a range of specialities (Porter 2010). Making such data available and making use of it for quality control is at the heart of the attempts to improve quality across state funded health systems such as in the UK (Department of Health 2012; Francis 2013).

The aspiration is that aggregated data will in time inform direct clinical care by allowing clinicians to

identify and consider differences in outcomes between individuals in their care and appropriate group norms, though this requires careful modelling of a sort still in its infancy (Lutz et al. 2007).” (Wolpert 2014b)

10.2 Using indicators of outcomes to consider performance as part of payment systems

There have been attempts to use outcome measures directly to inform payment systems (Cashin et al. 2014; Monitor and NHS England 2014e). Different options include: (i) comparison to a target e.g. “how do our outcomes compare to those achieved in effectiveness studies?” (this is very dependent on known and accepted outcomes being comparable and suitable case complexity adjustments being agreed); (ii) comparison between entities e.g. “how do our outcomes compare with others?”, “how do our outcomes compare with a national average?” such as is used in hip and knee replacement (Gommon and Goriwoda 2014) – again this is very dependent on appropriate case-mix adjustments and (iii) comparison over time for the same entity (e.g. provider, team) e.g. “by how much are our outcomes getting better or worse over time?”, “by how much have our outcomes improved or worsened following an intervention / action plan / incentive?”

These approaches above are all of interest but any attempt to link payment directly with any one indicator of outcome should be treated with extreme caution. There are indications that any simple alignment of outcomes measures to payment may have unintended negative consequences (Cashin et al. 2014) and may undermine the use of outcome monitoring for clinical decision making (Wolpert 2014b). Moreover as highlighted above a key issue is how best to adjust for the potential for differences between service-user characteristics that impact on outcomes (which may be different from those that impact on resource use). Key to rising to this challenge is supporting all those using the data to make distinctions between expected and unexpected variation and to agree approaches to considering quality improvement or other actions in relation to variation that cannot be readily explained. Another key challenge is likely to be difficulties with data quality (see e.g. Appendix H) leading to potential sampling bias, information bias and differences in factors influencing outcomes outside of the control of the entity being compared – this may be especially problematic with multi-agency provision.

A number of us have suggested an approach to use for consideration of outcome data to inform service comparison and performance monitoring. This approach suggests:

“appropriate statistical comparisons are made in relation to the most meaningful clinical unit (in the UK this is the multidisciplinary team) employing multiple perspectives and harnessing the strength of a learning collaboration (Wolpert et al. 2014). This MINDFUL framework (see below) involves: a consideration of multiple perspectives, interpreting differences in the light of the current base of evidence, a focus on negative differences when triangulated with other data, directed discussions based on ‘what if this were a true difference’ ... the use of funnel plots as a starting point to consider outliers, the appreciation of uncertainty as a key contextual reality and the use of learning collaborations to support appropriate implementation and action strategies.

The MINDFUL framework

MINDFUL approach to using data to inform performance management in teams (Wolpert et al. 2014)

- *Multiple perspectives: child, parent, practitioner considered separately*
- *Interpretation: team or individual level or care pathway*
- *Negative differences: as a starting point*
- *Directed discussions: focus on what one would do if negative differences were real (75 % discussion time) rather than examining reasons for why they might be not real (25 % discussion time)*
- *Funnel plots: a good way to present data to reduce the risk of over-interpretation but still only a starting point*
- *Uncertainty: important to remember that all data are flawed and that there is a need to triangulate data from a variety of sources*
- *Learning collaborations: CORC supports local learning collaborations of service users, commissioners and providers, to meaningfully interpret data.” (Fleming et al. 2014)*

10.3 Recommended approach

In light of the issues discussed above our recommended approach to incorporating outcomes monitoring as part of any development of payment systems is as follows:

- 1) All interventions for all the proposed groupings should have a range of possible outcome indicators that can be drawn upon. Initial thoughts on choosing outcome indicators are included in Appendix A. These indicators should always include collaborative agreed goals and may include patient reported outcomes and/or experience and/or clinician views and/or other indicators of change. The priority should be to agree indicators that are of most importance to the young people and families seeking help but are also consistent with the remit of the service and that the list of indicators to be drawn from should be nationally agreed (regularly updating the minimum data set to ensure comparability) and as specific to the likely goals of a given group as possible but with the possibility of local supplementation as relevant.
- 2) All outcome indicators should be openly agreed between service users and providers and commissioners and primarily used to inform direct clinical work. If an indicator is going to be used that is not of clinical relevance or used for performance comparison purposes then the cost, burden and possible adverse effects should be assessed at the outset.
- 3) We are not yet at a stage where we can recommend any one outcome measure or indicator that can be safely used as a basis for payments. At this stage it is recommended the focus be on funding and developing more comprehensive collection with use of the data from outcome indicators to inform practice and suggest service improvements. Thus any payment incentives may consider focussing on incentivising use of outcome data in e.g. supervision, or evidence of service improvements having an impact (see CORC (2013) advice on CQUINs as one example of an approach on this, and also the Wolpert et al. (2014) MINDFUL approach).
- 4) For outcome measurement to be useful it must be comprehensive with adequate data for any proxy indicators used. There needs to be high quality, well supported and integrated IT systems, which must crucially be designed around the real-time information needs of the clinical encounter. These are essential to minimise burden on clinicians and maximise real time feedback for direct use in clinical decision making. International experience questions whether direct support and investment to upgrade IT systems may be a more effective approach than attempting to achieve this through incentivisation (Cashin et al. 2014).
- 5) We support the approach suggested by Monitor and NHS England (2014a), which acknowledges the challenges with estimating outcomes and argues for combining information from outcomes measurement with measures of the quality of clinical processes and patient experiences (CORC et al. 2014).

11. Links with and impact on national and local initiatives

This chapter describes other initiatives relevant to children and young people's mental health and how the draft currencies may relate to them. The meanings of the various acronyms used are included in a glossary (Section 14).

11.1 NICE guidance

Having attempted to find natural groupings grounded purely in the data the pilot sites were able to provide with our support (including complexity and contextual factors), we were not able to identify any stable groupings. We therefore decided to draw on clinically based categories, wherever possible based on existing best practice guidance in the form of NICE clinical guidelines. For this reason, it is desirable that the two systems remain linked, with updated or new NICE guidelines (e.g. on attachment problems/disorders) taken into consideration in the on-going review of groupings.

Several of the groupings are not guided by NICE clinical guidelines as no existing national guidance could be found. It is the hope of the Project Group that NICE consider developing guidance for these difficulties or co-occurring difficulties not covered by existing guidance, which we estimate made up a substantial percentage of cases in the data collection pilot study (estimated to be a third of service users currently grouped as needing help or more help from data analysis carried out in this project). The Project Group would hope that NICE would consider whether guidance that was not diagnosis dependent may be appropriate to develop.

11.2 CAMHS minimum data set (now part of the Mental Health Services Data Set)

11.2.1 Background

Information from national data sets maintained by the Health and Social Care Information Centre (HSCIC) is a vital ingredient to commissioning and service management. A variety of systems are used among service providers to capture the base data and national data sets provide standardised extracts and reports of these. Submission and reporting of child mental health services data at a national level via HSCIC is not yet in operation. However, a national data set specification for CAMHS was developed (HSCIC 2012), and it has evolved into the current draft of the Mental Health Services Data Set (MHSDS) through combination with the Children and Young People's Improving Access to Psychological Therapies (CYP IAPT) and (adult) Mental Health and Learning Disabilities Data Sets (HSCIC 2015a). Updates on the MHSDS can be found on the HSCIC website (<http://www.hscic.gov.uk>).

Since early 2012 the CYP IAPT team has been administering standardised data collection from services participating in the CYP IAPT programme. The CYP IAPT data set specification defines the content and format of files to be outputted from providers' electronic systems for central submission. Sites participating in the CAMHS Payment System Project data collection pilot submitted data according to the same specification, as can services who are members of the Child Outcomes Research Consortium (CORC) (www.corc.uk.net). Many of the data items felt to be important for a future information and payment system for CAMHS are contained within this specification.

11.2.2 Liaison with HSCIC until April 2015

The CYP IAPT central team and its partners, including representatives from the CAMHS Payment System Project Group, have been working with HSCIC towards including the CYP IAPT data set specification items in the MHSDS. We identified the overlaps and differences between the CYP IAPT data set and the CAMHS data set (HSCIC 2012), which preceded the MHSDS, and consulted with CAMHS stakeholders to gather further requirements for national data reporting. Project Group representatives provided input on the integration of data sets at meetings of the CAMHS Data Set Specialist Advisory Group (SAG) in 2014 and the newly formed Mental Health Services Data Set Technical User Group (TUG) in April 2015.

11.2.3 Post April 2015

The areas of information we believe are key to supporting contracting and performance investigation using currencies are described below. As the MHSDS is currently undergoing rapid development, we would recommend that alongside any future work to pilot the currencies, the suitability of the MHSDS's information architecture for the requirements of the child mental health community is checked with stakeholders and refinements made where appropriate.

Currencies: For CAMHS, this would require information architecture to receive data on the grouping that each service user is assigned to, and the dates and times that service users join and leave groupings. We would like to highlight that the groupings developed by this project are intended to be mutually exclusive (i.e. a service user can only be in one grouping at a given time), apart from 'Getting Advice: Neurodevelopmental Assessment (NICE Guidance as Relevant)' (NEU). We propose that a child can be in the grouping NEU at the same time as being in one of the other groupings and thus any data validation rules applied during submission to HSCIC would need to take account of this.

The ability to receive data on the reason for leaving a grouping may also prove useful. Part of testing the groupings could include exploring 'grouping end reasons' with the aim of establishing an agreed list of end reason categories for inclusion in the MHSDS. Examples of grouping end reasons which may be useful to gather views on include discharge from service/team, transfer to another provider, assignment to a different grouping due to change in understanding of needs for advice/help, assignment to a different grouping due to change in situation, erroneously assigned to grouping, or death.

Activity: The data set specification should ideally be designed to receive data on the direct and indirect activities that occurred as part of each service user's period of contact. The current structure of the MHSDS allows the collection of both types of activity data (HSCIC 2015b). The MHSDS is designed for specific details on interventions within direct and indirect activities to be reported through the clinical terminology SNOMED CT. There will probably be a need for on-going refinement of intervention descriptions in SNOMED CT to make them as meaningful as possible for practitioners in the field of child mental health and wellbeing.

Outcomes: Version 4.1 of the CYP IAPT data set specification includes 34 different questionnaires relevant to child mental health, many with different versions to capture the perspectives of different respondents (e.g. children/young people, parents/carers, clinicians) (CYP IAPT 2014). Ideally the MHSDS should be able to receive data on the full range of questionnaires. The MHSDS is designed for outcomes data to be reported through SNOMED CT. The questionnaires in the CYP IAPT data set specification have been submitted to the SNOMED CT team for inclusion. There may be licensing issues to address with some of the measures.

Service and team identification: This requires the ability to receive data on which service(s) or team(s) provided advice, help or support to each service user, to allow, for example, particular activity to be identified as either 'in scope' or 'out of scope' of the National Tariff Payment System. The current version of the MHSDS includes data items that allow a team's unique local identifier and the type of service/team to be included in submissions (HSCIC 2015b).

11.3 CYP IAPT

The Children and Young People's Improving Access to Psychological Therapies programme (CYP IAPT) is a service transformation programme (www.cypiapt.org). This began in 2011 and by March 2015 has a target to work with CAMH services that cover 60% of the 0-19 population. There is a commitment from government to roll out to 100% coverage. The aim of the programme is to improve existing CAMHS working in the community. Services come together to form a partnership including, NHS, local authority and voluntary sector providers. CYP IAPT seeks to improve services through training staff in evidence based therapies, integrating regular frequent outcome monitoring, ensuring easy access and use of technologies and active participation by young people and families in the design and delivery of services. Evidenced based therapies are taught from a centralised CYP IAPT curriculum and include interventions that match the proposed groupings for CAMHS currencies.

Since 2011 CORC has been commissioned to analyse the data collected from this programme. It is available to services within the project and disseminated via the quarterly data bulletins (See <http://www.corc.uk.net/resources/cyp-iapt-data/> for bulletins).

The CYP IAPT programme has a number of expert groups who have produced a range of documents and support materials which are useful for commissioners. This includes the first CAMHS specification published in January 2015 (NHS England 2014b). This document is designed to be tailored locally to

commission services and was developed by a range of professionals working across health and local authorities. The local specification should focus on meeting user needs whilst giving a clear picture of what will and will not be provided within an integrated approach. The specification also links to the use of outcomes (see Chapter 10) and quality standards.

Delivering With, Delivering Well was published in December 2014 (CORC et al. 2014). This document outlines a set of standards which are underpinned by CYP IAPT philosophy and values to form an overarching quality framework. Services can demonstrate their compliance with the CYP IAPT values by providing evidence of the standards via recognised accreditation and quality improvement bodies (Quality Network for Community CAMHS (QNCC), Youth Wellbeing Directory with ACE-V Quality Standards (ACE-Value), Choice and Partnership Approach (CAPA) and the Child Outcomes Research Consortium (CORC). The document can also be used both strategically and locally by a range of stakeholders, e.g. providers, commissioners, Health and Well Being Boards and Local Authorities who may not wish to follow formal accreditation processes.

Work currently in progress which aligns to the CYP IAPT Programme includes the development of a system dynamic tool for CAMHS. The tool should assist commissioners to gain an overview and plan investment across health, social care and education pathways. The project has a rapid timescale. Work started on this in October 2014 and it is anticipated that it will be available at the end of May 2015.

Commissioners will need to carefully consider the groupings/currencies developed in the payment system project in the development of best practice within local service specifications.

11.4 CAMHS tier 4 commissioning

Ideally, the same payment system should incorporate both community (Tier 2/3) and tertiary (Tier 4 – largely in-patient) cases and services, to reflect continuity of care and comprehensive provision. Importantly, children and young people usually move across these services, often in a non-planned way. For this purpose, we set out a payment system that was not setting-specific. Unfortunately, this was constrained by the separate commissioning of Tier 4 CAMHS, as well as pragmatic difficulties in identifying children moving across tiers and sites (indeed across geographical areas) if these were not participating in the project. In future, it is recommended that, should such constraints be overcome, needs-based groupings include Tier 4 input as a more accurate representation of service input in its totality. In the near future, it may be valuable to explore opportunities for alignment between the groupings presented in this report and existing Tier 4 currencies.

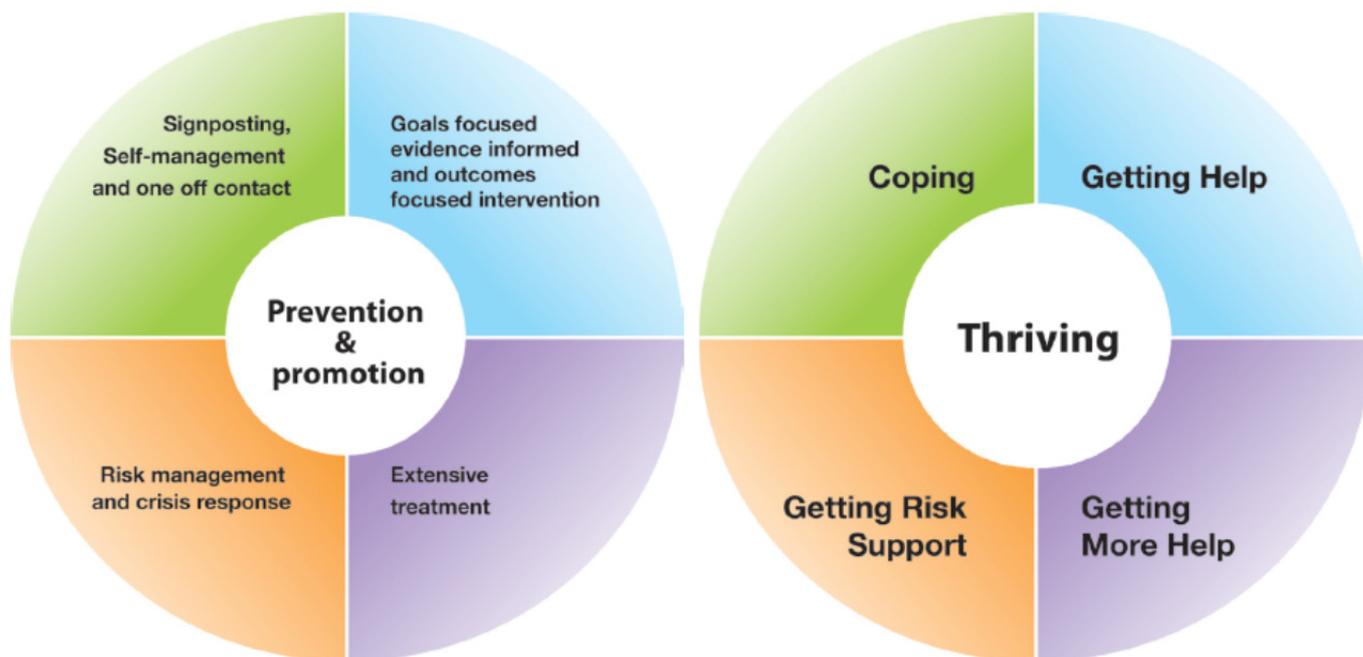
11.5 THRIVE

THRIVE is an attempt to re-conceptualise a needs-based analysis of CAMHS that was developed in parallel to the Payment systems work by many of the same people who were involved with the Payment systems project. It is consistent with the approach we have developed here though not dependent on it, (and vice versa). Full details of the THRIVE approach can be found at http://www.ucl.ac.uk/ebpu/docs/publication_files/New_THRIVE

The model aims to

“replace the tiered model with a conceptualisation that addresses the key issues outlined above and is aligned to emerging thinking on payment systems, quality improvement and performance management. The model outlines groups of children and young people and the sort of support they may need and tries to draw a clearer distinction between treatment on the one hand and support on the other. Rather than an escalator model of increasing severity or complexity, we suggest a model that seeks to identify somewhat resource-homogenous groups (it is appreciated that there will be large variations in need within each group) who share a conceptual framework as to their current needs and choices. The THRIVE model below conceptualises four clusters (or groupings) for young people with mental health issues and their families, as part of the wider group of young people who are supported to thrive by a variety of prevention and promotion initiatives in the community. The image to the left describes the input that is offered for each group; that to the right describes the state of being of people in that group [Figure 11.1] – using language informed by consultation with young people and parents with experience of service use.” (Wolpert et al. 2015)

Figure 11.1 THRIVE model



Source: Wolpert et al. (2015).

12. Conclusions

12.1 Development of the needs-based groupings

The core task was to develop a classification to group together children, young people (CYP) and their families seeking mental health support according to their needs. Nineteen needs-based groupings were developed, from which either 'quantum-' or 'time-based' currency units may be constructed when supplemented by data on when service users join or leave groupings. Other tasks included linking the draft currencies to outcomes monitoring, appropriate care packages and the developing national data set specification. Our approach was to build on existing work to avoid duplication and minimise impact on staff time. Obviously, such components will need refinement during the next phase.

'Needs for advice or help' refers to the definition of 'need' we adopted that invites consideration of the appropriateness or cost-effectiveness of interventions that may be offered, as well as the informed preferences of CYP and families. We propose that the assignment of CYP and families to groupings arises from choices made collaboratively with clinicians, which may be supported by the algorithm. This aligns with on-going efforts to implement shared decision making in CAMHS (CAMHS EBP et al. 2014).

Efforts were maintained throughout the development process to make the groupings and their descriptions as meaningful to practitioners and service users as possible, and to find compromises where stakeholder views differed. Having attempted to find natural groupings grounded purely in the data the pilot sites were able to provide with our support (including complexity and contextual factors), we were not able to identify any stable groupings. We therefore decided to draw on clinically based categories, wherever possible based on existing best practice guidance in the form of NICE clinical guidelines (NICE 2015a). This means that some of the categories may look like they are diagnosis based, since NICE guidelines are often, though not always, framed as a response to a diagnosis. This is not the intention. Membership of a grouping does not necessarily imply a diagnosis, but rather is taken to imply that treatment drawing on these NICE guidelines might best meet the needs of individuals in this grouping (e.g. see worked examples in Appendix A).

The classification has been estimated to go some way towards identifying periods of similar resource use in the project data set, insofar as Getting Advice is one of the lower-average resource use groupings, groupings within the Getting More Help 'super grouping' tend to have the highest average resource use, and around half of the groupings within the Getting Help 'super grouping' have averages in between Getting Advice and Getting More Help. However, due to the wide variation in resource use within the groups we do not think that the terms 'resource homogeneous' or 'iso-resource' accurately describe them, as far as we can estimate from algorithmic allocation of periods of contact in the project data set. 'Groupings of children, young people and families with a general need for advice or help in common' would be an alternative descriptor.

12.2 Prospects for the needs-based groupings

We believe the groupings offer promising prospects to inform commissioning, service management and research. For example, data on the proportion of people assigned to each group could provide a high-level profile of the needs for advice/help of the CYP and families served by a particular organisation or team. In conjunction with good quality cost data, the classification has the potential to increase transparency of service provision, which may inform contracting and ultimately provider payment (Busse and Quentin 2011). It may make comparisons of resource use over time and between entities (e.g. organisations, teams) less unfair, by accounting for some of the differences in service user characteristics outside of their control.

Experience suggests that analyses afforded by this sort of classification work are unlikely to provide the answers to questions of efficiency or appropriateness, but may facilitate the asking of questions and discussion (Smith et al. 1998; Duncan and Holliday 2014). We therefore advocate for such comparisons to be treated as exploratory, and used as a guide for further investigation with the entities concerned. This cautiousness is supported by our finding that algorithmic grouping of periods of contact in the project data set explained a relatively small proportion of service users' variation in resource use. We think it likely that there are other characteristics of CYP and their parents/carers that contribute to their need for advice/help at a given point in time, which were not fully captured, or captured at all, by Current View forms completed

soon after first contact. To the extent that any sources of residual variation aside from 'true' differences in practice and efficiency vary systematically between entities being compared, biased comparisons will follow, and potentially lead to inappropriate responses (Taroni 1990). We think, therefore, it would be informative to explore the service-level variation in resource use that remains after applying the current groupings, to try to understand how much is due to differences in clinical and management practice versus other factors. These may include data coding, subtypes of need within groupings, funding levels and the availability and contributions of nearby services, for example schools, social care, general practices, voluntary sector organisations and other CAMHS (Terris and Aron 2010; Jacobs 2014).

12.3 Incorporating outcomes

Many members of the Project Group have led on the implementation and use of patient and clinician reported outcome measurement in CAMHS and beyond to support clinical practice. In collaboration with clinicians and young people this has led to the development of a list of possible measures that can be used for a range of difficulties that try to balance the need for both idiographic and norm-based measurement. Despite this and other complexities outlined in Chapter 10, we believe that making use of data that relates to outcomes of interventions is crucial to allow meaningful discussions between managers and commissioners, underpinning decision making processes both clinical and in terms of service delivery.

In light of the opportunities, challenges and tensions we suggest that all interventions for all the proposed groupings should have a range of possible outcome indicators that can be drawn upon (one possible approach is outlined in Appendix A). We are not yet at a stage where we can recommend any one outcome measure or indicator that can be safely used as a basis for payments. All outcome indicators should be openly agreed between service users and providers and commissioners and primarily used to inform direct clinical work. If an indicator is going to be used that is not of clinical relevance or used for performance comparison purposes then the cost, burden and possible adverse effects should be assessed at the outset.

12.4 Next steps

The Project Group are in favour of a programme of work to test and refine the classification, and recommendations are offered in relation to this (Section 13). Several of these areas would undoubtedly be supported by stronger IT infrastructure, specifically with regard to the collection of better resource use data and the development of systems to feed back information from currencies and outcomes in a way that can usefully inform clinical decision making. International experience questions whether direct support and investment to upgrade IT systems may be a more effective approach than attempting to achieve this through incentivisation (Cashin et al. 2014).

Improvements to data may include more detailed and complete data from statutory and voluntary services that not only captures direct but also indirect work, and the staffing costs related to those activities. The upcoming introduction of the Mental Health Services Data Set (MHSDS) will provide a helpful foundation (HSCIC 2015a). It is likely to do this through enabling the national collation of data from community CAMHS for the first time, as well as providing concomitant standards to ensure IT systems are developed to allow collection of the base data. In the longer term, an integrated or linked data set that includes the contribution of as many entities as possible (e.g. CAMH services, social care, voluntary sector organisations, schools) would inform the development of the classification in a direction that might offer better support to multi-agency commissioning and provision.

12.5 Challenges to consider during testing and implementation

In this section we draw on our learning throughout the project to offer our thoughts on the challenges that may be encountered on the path towards implementation.

12.5.1 Data collection

Deficiencies in data quality and completeness comprised a major challenge during the data collection pilot phase of the project. Causes varied between sites and included the lack of a single electronic system for entering both the Current View and resource use data and the limited availability of staff time for collecting and validating data. Until the groupings are incorporated into the Mental Health Services Data Set (MHSDS) and an information standard issued to stimulate the development of provider IT systems to be able to record them, similar issues may be faced.

We feel it is crucial to carefully consider the additional training and administrative burden that any new data collection requirements might lead to, particularly in the context of the significant time and resources already sought for data collection for routine outcomes monitoring (Hall et al. 2014). Instituting from the start IT software prompts to assist with assigning service users to groupings (Martin 2012) and processes for regularly feeding back information from currencies to frontline staff in a format that they find useful may offer some counterbalance (Batty et al. 2013; Macdonald and Fugard 2015).

12.5.2 Language

The importance of awareness to the sensitivities of language was an on-going theme. Firstly, consultation with service users alerted us to the possibility for groupings to be seen as labels that could be stigmatising, particularly if they refer to severity. We generally managed to stick to the principle of avoiding a language of severity in grouping nomenclature. However, after considerable deliberation we found no other reasonable alternative to including the word 'severe' in the name of the grouping 'Getting More Help: Difficulties of Severe Impact (NICE Guidance as Relevant)'. Moreover, although the grouping names focus on approaches to help or advice that may be chosen, the potential for unintended consequences remains, particularly as the names may be shortened in ways that are more meaningful to particular people (e.g. service users, clinicians, managers) than the codes attached to them (i.e. NEU, ADV, ADH, AUT, etc.).

Secondly, not all providers of services aimed at improving the mental health and wellbeing of CYP and families subscribe to a diagnostically organised model of evidence, as represented by the NICE clinical guidelines. This was one of the reasons why the Current View tool was designed to collect data on 'provisional problem descriptions' that may or may not relate to diagnostic categories. We have been careful to construct the groupings so that they do not necessarily require or imply any particular diagnosis, however certain groupings have diagnoses in their names where the NICE guideline refers to a diagnostic category. We recognise this may lead to a misconception, which we are trying to address upfront (Section 3a).

12.5.3 Gaming and unintended consequences

'Gaming' is a challenge that has concerned health care payment and performance measurement system administrators internationally (Silverman and Skinner 2004; Cots et al. 2011; O'Reilly et al. 2012; Kim and Norton 2015). It is arguable that the mental health field is particularly susceptible due to the subjective nature of measures. In order to be needs-based, it is the explicit intention for the classification we have developed to include subjective judgements from clinicians and service users in the process of grouping assignment. Where analyses enabled by currency classifications inform decisions that may have positive or negative consequences for service providers, a variety of undesirable strategies may arise in relation to adjusting practice patterns or data to (i) improve or maintain reputation with regard to the quality of services provided, (ii) increase revenue, for example by 'upcoding', or (iii) reduce costs, for example by 'cherry picking' service users or discharging 'quicker and sicker'. Monitoring data trends over time and benchmarking may help to identify where this is happening. Undesirable strategies for reducing costs could include the avoidance of service users within currency categories expected to incur higher costs, for fear that payment will be inadequate (Allen 2009; Cots et al. 2011). It is arguable that the more imprecise groupings are as a measure of 'actual' need, the greater this risk. This highlights the importance of continual monitoring for, and investigation into, factors that may improve the prediction of resource use (as a proxy for needs for advice/help), with a view to potentially sub-dividing groupings where it might reasonably be expected to reduce the 'residual' variation of needs for advice/help within them. Furthermore, agreement of 'top up payments' or alternative funding arrangements for the service users who need the most costly interventions may be appropriate (Monitor and NHS England 2014c).

13. Recommendations

13.1 Recommendations for next steps

Given the nascent state of the groupings the Project Group is in support of work to test their practical applications and to refine them accordingly. We consider it would be useful for future efforts in piloting and research to address:

- 1) Validation and refinement of the classification:
 - a. Comprehensiveness: do the groupings represent the needs of the full range of children, young people and families seen in CAMHS? Particular areas to consider are inpatient provision and the potential inclusion of a 'Getting Risk Support' grouping
 - b. Clinical meaningfulness and utility: do groupings provide accurate descriptions of types of children, young people and families seen in CAMHS, and the treatment, advice or support that they need?
 - c. Relationship to resource use: can the relationship between grouping and resource use found in this project be replicated in new data, where group assignment will have been made on the basis of shared decisions and clinical judgement, rather than Current View ratings alone?
- 2) Reliability of assignment to the groupings:
 - a. Are clinicians consistent in the way they assign service users to groupings?
 - b. What training and refresher training is required to achieve acceptable reliability?
- 3) Further investigation into complexity and contextual factors (e.g. as defined on the Current View tool) and their association with resource use
- 4) Acceptability to service users and clinicians of the groupings and proposed process of assignment
- 5) Currency unit development (constructing episode-based units for use in contracts):
 - a. Groupings within the Getting Advice and Getting Help 'super groupings': Can these be operationalized as 'quantum-based' currency units? What would be the optimal 'grouping review points' (e.g. expressed as a number of appointments) to recommend for each?
 - b. Groupings within the Getting More Help 'super grouping': Can these be operationalized as 'time-based' currency units? Is a year a useful time frame for these currencies?
- 6) Outcomes incorporated into practice:
 - a. Combining information from outcomes measurement with measures of the quality of clinical processes and patient experiences to explore how these data might be used as part of performance monitoring or payment systems without introducing too many perverse incentives
- 7) IT infrastructure development
 - a. Funding or incentivisation for more comprehensive data collection and use to inform clinical and commissioning decision making
- 8) Costing the packages of care that are being delivered

13.2 Principles for implementation of groupings as currently defined

We believe that application of the following principles will assist with implementation of the needs-based groupings:

- 1) *A grouping should be chosen by a process of shared decision making.* This includes **both** judgement of the appropriateness of interventions offered **and** the informed choices of children, young people and their carers regarding the approach to advice or help that is best for them at a given time, **within** the parameters and scope of the commissioned service.
- 2) *The algorithm is only a guide.* The Current View tool and algorithm serve as a guide for grouping but are not intended to be the sole determinant of grouping membership. The algorithm merely provides a suggestion, which may be one of the considerations that enters into the shared decision making process for choosing a grouping.
- 3) *Outcome measurement is crucial.* It is vital to agree indicators of outcomes to monitor progress and whether the advice or help selected continues to be the most appropriate for a child, young person or family's needs to help them meet their chosen goals. If this does not seem to be so, discuss with the service user the appropriateness of a change in the approach or specific form of advice or help, which may or may not lead to a choice of a different grouping.

14. Glossary

ADHD	Attention deficit hyperactivity disorder
AIC	Akaike Information Criterion
AMH	Adult and older adult mental health
BIC	Bayesian Information Criterion
BPD	Borderline personality disorder
CA	Cluster analysis
CAMH	Child and adolescent mental health
CAMHS	Child and adolescent mental health services
CAPA	Choice and Partnership Approach
CGAS	Children's Global Assessment Scale
CORC	Child Outcomes Research Consortium
CROM	Clinician rated outcome measure
CYP IAPT	Children and Young People's Improving Access to Psychological Therapies programme
CYP	Children and young people
DH	Department of Health
EBPU	Evidence Based Practice Unit
EET	Education, employment and training
GAD	Generalised anxiety disorder
HoNOSCA	Health of the Nation Outcome Scales for Children and Adolescents
HRG	Healthcare resource group
HSCIC	Health and Social Care Information Centre
IHPA	Independent Hospital Pricing Authority (based in Australia)
JCPMH	Joint Commissioning Panel for Mental Health
MATCH-ADTC	Modular Approach to Therapy for Children with Anxiety, Depression, Trauma, or Conduct Problems
MHMDS	Mental Health Minimum Data Set
MHSDS	Mental Health Services Data Set
NHS	National Health Service
NICE	National Institute for Health and Care Excellence
OCD	Obsessive-compulsive disorder
PbR	Payment by Results
PREM	Patient reported experience measure
PROM	Patient reported outcome measure
PTSD	Post-traumatic stress disorder
PwC	PricewaterhouseCoopers
QNCC	Quality Network for Community CAMHS
QNIC	Quality Network for Inpatient CAMHS
RCADS	Revised Child Anxiety and Depression Scale
RCP	Royal College of Psychiatrists
SAG	Specialist Advisory Group
SDQ	Strengths and Difficulties Questionnaire
SNOMED CT	Systematized Nomenclature of Medicine - Clinical Terms
TAMHSS	Transforming Australia's Mental Health Service Systems
TUG	Technical User Group

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