

# Case Mix 2019

## Introduction

Case mix is a tool developed by the BDA to help dentists gauge the complexity of patients according to six identifiable criteria. The results of this can be used in both commissioning/contract matters and also wider epidemiological work. It was developed at the British Dental Association by clinicians with many years' experience in providing Special Care Dentistry and has been widely field tested and was consulted on with other societies with a specific interest in Special Care Dentistry. It has helped to demonstrate to commissioners the challenges and value of the work we do. Some services are using the criteria to assist in decision making regarding referrals, both at the time of acceptance and at discharge. Individual dentists are using the criteria to demonstrate the complexity of their caseload as part of their portfolio and for their appraisals. Clinical directors use it to benchmark dentists and clinics within their areas, both as a performance management tool and to ensure appropriate deployment of resources.

The tool was developed in response to the Department of Health's 'Valuing Peoples Oral Health' which highlighted the importance of incorporating oral care into all healthcare plans acknowledging that some disabled children and adults present barriers and challenges to primary and secondary care providers when providing dental care and that, as such, 'commissioners need information regarding the degree of difficulty in carrying out dental treatment, based on the individual's impairment or disability and the impact this has on providing a responsive service'.

Recent developments have seen commissioners seeking to use the tool to measure pediatric patient complexities, a measure that it was never designed to report. Considering this, the tool was amended to include criteria for pediatric patients to ensure that their complexities could also be measured.

The complexities measured are those of the patient in respect of dental care provision and not of the actual dentistry to be provided in comparison to providing equivalent care for the 'average' patient. Each individual episode of care is measured separately, thus the model reflects the actual complexity experienced in providing a specific course of treatment. This ensures the model is realistic in describing resource needs.

Although case mix was developed in primary care and in response to an English governmental policy, it is used and has utility across the UK and in all NHS dentistry.

## **Criteria and scoring**

This model identifies six independent criteria that, either solely or in combination, indicate a measurable level of patient complexity. Each criteria covers both actual provision of clinical care for the patient, and the many additional pieces of work needed to facilitate care for many of these patients.

- Ability to communicate
- Ability to co-operate
- Medical status
- Oral risk factors
- Access to oral care
- Legal and ethical barriers to care

Each of the criteria is independently measured on a 4-point scale where 0 represents an average fit and well child or adult attending for dental care, and A, B and C represent increasing levels of complexity. The complexity may be related to the actual provision of care and/or the many additional actions necessary to facilitate care for such patients.

The criteria and the scores given relate to a course of treatment (episode of care) and will normally be assessed when a course is either completed or discontinued. There will be an element of subjectivity in assessing the scores, but this pack aims to provide you with enough information to serve as a 'best guide' model.

#### Ability to communicate

Reflects issues of communication between the dental team and the patient/parent/guardian/carer while in the surgery. (Note: communication regarding appointment etc. is covered under Access). Such communication may be direct between staff and patient/parent/guardian/carer, or may require the need for a third party to act as interpreter, advocate etc.

0	Free communication with adequate understanding between patient, parent, guardian, carer and dental team.	0
A	<ul> <li>Mild restriction</li> <li>Some difficulty in communication but can overcome</li> <li>Patient / parent / guardian speaks English but not as first language</li> <li>Patient/ parent/ guardian can communicate for themselves without intervention of 3rd party</li> <li>Patient/ parent/ guardian has mild learning difficulty</li> <li>Very young child with limited verbal communication</li> </ul>	2
В	<ul> <li>Moderate restriction</li> <li>Non- verbal communication necessary</li> <li>Child/ parent has autism or other communication impairments</li> <li>Child/parent has moderate learning difficulty</li> <li>Limited communication only possible</li> </ul>	4
с	<ul> <li>Severe restriction</li> <li>No ability to communicate due to impairment</li> <li>Multiple communication aids required</li> <li>Interpreter/ 3<sup>rd</sup> party required to communicate</li> </ul>	8

#### Ability to co-operate

Reflects circumstances wherein patient co-operation affects the delivery of dental care. It may be expected that clinicians with differing patient management skills may score an individual differently in respect of this criteria, or patients may vary between appointments. The grade given should reflect the average experience over a course of treatment. The definitions regarding length of appointment and behaviour modification are intended as guides only. The highest grade, C, is reserved for cases involving general anaesthetic, sedation or other advanced techniques as this reflects also the greater numbers of staff necessary to provide care in these instances.

0	Patient will accept all restorative care and simple extractions with LA +/- routine behavioural management techniques	0
A	<b>Some difficulty in co-operation</b> Full examination and/or simple treatment possible, but requiring additional support or behaviour management techniques	3
В	<ul> <li>Considerable difficulty in co-operation</li> <li>Limited examination only possible</li> <li>Clinical holding required</li> <li>Patient will accept limited restorative care with difficulty</li> <li>Patient requires multiple acclimatisation visits to accept treatment</li> </ul>	6
с	Patient requires general anaesthetic, sedation or other advanced management techniques to accept treatment	12

#### **Medical Status**

Reflects circumstances where modifications have to be made to provision of dental care due to the patient's medical history and issues where a patient's medical history is not readily obtainable at a dental appointment.

0	<ul> <li>Adequate medical history obtainable at appointment with no significant relevance to this course of treatment</li> <li>No additional investigations required</li> </ul>	0
A	<ul> <li>Some treatment modification required</li> <li>Medical history unable to be obtained at first appointment</li> <li>Further information required in order to complete medical history</li> </ul>	2
В	<ul> <li>Moderate impact of medical or psychiatric condition on provision of care</li> <li>Medical or psychiatric status complex or unstable, affecting the provision of treatment</li> <li>Child in need</li> </ul>	6
с	<ul> <li>Severe impact of medical condition on provision of care</li> <li>Multidisciplinary review required to treat</li> <li>Multidisciplinary appointment for medical reasons</li> </ul>	12

#### **Oral risk factors**

The technical complexity of the dentistry provided is not relevant in assessing oral risk. Rather it reflects the specific risk factors which require a higher than average resource be allocated to their care. Examples include working with carers or patients themselves in mitigating risk factors, the amount of treatment necessary to maintain oral health, or specific oral issues making provision of dental care more complex.

	Minimal risk factors	
0	<ul> <li>Stable oral environment; teeth brushed twice a day with fluoride paste</li> <li>Can comply with all aspects of 'Delivering Better Oral Health' advice</li> </ul>	0
A	<ul> <li>Moderate risk factors e.g.</li> <li>Can comply with most aspects of 'Delivering Better Oral Health' advice</li> <li>Child unable to brush effectively themselves</li> <li>Good Oral Hygiene hindered by malocclusion /manual dexterity</li> <li>Course of treatment following a period of neglect</li> </ul>	3
В	<ul> <li>Severe risk factors e.g.</li> <li>Extensive support to achieve some aspects of 'Delivering Better Oral Health' advice</li> <li>Oral hygiene relies on 3<sup>rd</sup> party to maintain</li> <li>Child uses non-fluoride toothpaste</li> <li>Cariogenic diet resulting in uncontrolled caries</li> <li>Molar Incisor Hypomineralisation with symptoms or post-eruptive breakdown</li> <li>Altered salivation</li> <li>Access to oral cavity severely restricted</li> <li>Children with severe dental or craniofacial developmental abnormalities</li> </ul>	6
С	<ul> <li>Extreme risk factors e.g.</li> <li>Unable to comply with any aspects of 'Delivering Better Oral Health'</li> <li>Unable to brush effectively due to challenging behaviour or limited co-operation</li> <li>High calorie supplementation</li> <li>Regular sugar-containing medication</li> <li>Severe xerostomia</li> <li>PEG feeding</li> <li>Immunocompromised</li> </ul>	12

#### Access to oral care

Reflects complexities surrounding patient access to care at any point during the course of treatment. The criterion takes into account any obstacles created by the patients themselves that would hinder their access to dental care, e.g. persistent failure to attend. Grade 'C' is reserved for provision of care in a domiciliary setting or equivalent.

	Unrestricted	
0	<ul><li>Patient can access surgery without additional requirement</li><li>Child accompanied by a parent</li></ul>	0
A	<ul> <li>Moderately restricted</li> <li>Patient who fails to attend, or cancels at short notice, more than once in a course of treatment</li> <li>Child who is not brought to an appointment more than once in a course of treatment</li> <li>Patient requires support to access the surgery eg carer attends; administrative support</li> </ul>	2
В	<ul> <li>Severely restricted</li> <li>Specialised equipment required to attend the surgery (eg ambulance, hoist, wheelchair tipper, slide board)</li> <li>Child whose parent (or vulnerable adult whose carer) repeatedly cancels, giving concern about possible disguised compliance</li> </ul>	4
с	Domiciliary care required*	8

\*This criteria is intended **ONLY** for patients seen on a "domiciliary" basis in a hospital or nursing home. Do not use for operating theatre cases

#### Legal and ethical barriers to care

Reflects other barriers to care not otherwise covered in the previous 5. Two of the most common are the time spent in consultation with 3rd parties to obtain consent to treat, and the difficulty identifying the financial status of some patients and thus eligibility for free treatment. This criterion should also be used when resource is necessary for other reasons to consult with guardians, advocates, or seek the opinion of a court of law for example. The highest grade, C, is reserved for case conferences or equivalent where a multi-professional team needs to be consulted before care can proceed.

0	No legal or ethical issues affecting care; e.g. No problems with consent or parental responsibility.	0		
А	<ul> <li>Some legal/ethical difficulties may arise</li> <li>Best interests' decision not requiring additional correspondence</li> <li>Child in need</li> </ul>			
В	<ul> <li>Moderate legal/ethical difficulties may arise</li> <li>Fluctuating capacity to consent</li> <li>Best interests' decision requires additional correspondence with carers/ relatives</li> <li>Financial responsibility requires further clarification</li> <li>Child who is subject to a care order</li> <li>Child who is the subject of a child protection plan</li> <li>Parental responsibility requires further clarification</li> <li>Looked after child</li> </ul>	4		
с	<ul> <li>Severe legal/ethical difficulties</li> <li>Multi-professional consultation/ case conference required including but not limited to, child protection meeting</li> <li>Referral to an IMCA</li> <li>Safeguarding referral made</li> </ul>	8		

## A separate set of 'Legal and Ethical barriers' have been developed to reflect the separate legal system in Scotland.

0	No legal or ethical issues affecting care; e.g. No problems with consent or parental responsibility.	0
A	<ul> <li>Some legal/ethical difficulties may arise</li> <li>Looked after children</li> <li>Parental responsibility requires further clarification</li> <li>Financial responsibility requires further clarification</li> <li>Clinician required to make a best interests decision not requiring a second opinion</li> <li>Clinician required to assess capacity and provide treatment.</li> <li>Informal consultation with family and carers</li> <li>No AWI certificate issued</li> </ul>	2
В	<ul> <li>Moderate legal/ethical difficulties may arise</li> <li>Children in foster care</li> <li>Fluctuating capacity to consent due to psychiatric illness</li> <li>Clinician required to assess capacity and AWI certificate issued.</li> <li>Consultation with welfare attorney/ carer</li> </ul>	4
С	<ul> <li>Multi-professional consultation required in order to overcome legal/ethical difficulties</li> <li>Best interest meeting/case conference required</li> <li>Referral to other colleagues SLT or clinical psychologists/ case conference/ 2<sup>nd</sup> dental opinion required before AWI issued or where there is a dispute</li> </ul>	8

## **Recording and analysis**

#### Recording

A record should be made per course of treatment, and reflect the complexity presented by the patient specific to that course of treatment. It is important that all 6 criteria are judged and recorded for each episode of care.

As a rule, it is recommended that the record is made at the end of a course of treatment, and reflects all activity required to complete that course. Where it is necessary to make a recording part way through a course (for example, if more than one operator is involved) it is important that the records are reviewed and, if necessary, amended at the end of the course.

Data capture methodology is available on dental software systems commonly in use in primary dental care in the UK. Use of such systems enables grades given to be reviewed regularly, allows recording to be made mandatory prior to completion and enables alternate methods of analysis to be undertaken with the original data. Where such electronic data capture is not available it is necessary to determine the analysis required prior to design of a data capture form. An example form used in the main field trial is included in this pack and should be adapted to facilitate the analysis required in each local situation.

#### **Provisional weighting**

In order to facilitate analysis, the criteria have been assigned weightings based upon the opinion of a group of experienced clinicians in the BDA working group. In the field trial both quantitative and qualitative analysis of the main data demonstrated some validity to these provisional weightings. It can however be anticipated that with the introduction of electronic data capture and analysis, widespread use and benchmarking between services, future evidence may demonstrate a need for some adjustment.

	0	А	В	С
Ability to communicate	0	2	4	8
Ability to co-operate	0	3	6	12
Medical status	0	2	6	12
Oral risk factors	0	3	6	12
Access to oral care	0	2	4	8
Legal and ethical barriers	0	2	4	8

#### Analysis

There are two recommended methods of analysis:

- Based on the banded total score
- Based on the maximum score

Both these methodologies have been built into the dental software systems. It is anticipated that with more widespread usage further recognised methodologies for the most commonly used analyses will develop.

#### **Banded total score**

The weighting scores across all six criteria are summed to give a total score for each course of treatment. These are then allocated to one of the bands below, and the case mix can subsequently be analysed by calculating the numbers and percentage in each band, split into different cells as appropriate e.g. whole service; different age groups; different clinics; different operators.

0	Standard patient
1 - 9	Some complexity
10 - 19	Moderate complexity
20 - 29	Severe complexity
30+	Extreme complexity

In the field trial this methodology clearly demonstrated a full range of variations in case mix between different operators and clinics within the same service. Thus, it would be equally appropriate to use this to benchmark one service against another.

#### Maximum score

Of the six criteria used in the scoring, only the most complex criteria would be used in this analysis. For example, a patient requiring GA would be analysed as a 'C' category patient, irrespective of the scores for the other five criteria. While such analysis is simpler than the banded score method, the field trial demonstrated that the maximum score method was markedly less effective in highlighting the differences in case mix between operators. Such methodology is however being used in some locations to develop referral criteria or demonstrate compliance with patient acceptance or discharge criteria.

## **Frequently asked questions**

Every episode of patient care may not easily fit within this scoring system and common sense will be necessary in some cases. It should be remembered that the system is intended to inform clinicians, managers and commissioners of the complexity of the patients cared for within a service. It does not describe the experience of the practitioners carrying out the care and although an information pack is available for use the system does not rely on standardisation of clinicians.

Bearing this in mind, the following are the most commonly asked questions from clinicians using the system.

## Q. What about patients referred for management of severe trauma and dental anomalies? Shouldn't they receive high scores?

A. Not necessarily. This system is intended to identify issues relating to the impairment and/or disability of the patient and not to the complexity of their individual dental problems.

## Q. How would I reflect the time taken for full mouth rehabilitation which is very time consuming?

A. This should be recorded using different criteria. This system is intended to identify issues relating to the impairment and/or disability of the patient and not to the complexity of their individual dental problems.

#### Q. What about patients who need extended courses of treatment because of neglect? They are very time consuming and may not score very highly?

A. They will only score highly if they have specific impairment or disability affecting their care or they may score highly in the 'oral risk factor' section. A high score is not justified on the basis of high treatment need. This system is intended to identify issues relating to the impairment and/or disability of the patient and not to the complexity of their individual dental problems.

## Q. How would I score a very quick examination in a patient with profound learning disability or dementia which is difficult but may not take long?

A. Such a patient is likely to score highly because of their lack of co-operation, and possibly would also score highly in the categories of Communication (need to communicate with carers) and Law and Ethics (issues around capacity to consent).

#### Q. Some patients are easy to examine but not so easy to treat! How would we record this?

A. Since we are recording episodes of care any lack of co-operation for treatment would be recorded. Such a patient may also score in other categories e.g. need to communicate through carers or difficulties obtaining consent/medical history. If no treatment is required it may be that a low score would be appropriate since the impairment /disability has not affected that particular episode of care.

#### Q. What about inpatients with who need to be treated in a hospital environment where there is no surgery?

Anyone treated outside a 'surgery' environment should be seen as a 'domiciliary' visit and scored accordingly. Any medical condition should be scored using the appropriate 'medical status' score.

#### Q. How would you score a child who can communicate but the parents cannot?

A. Generally, the communication of the child would be scored as normal. However, if the communication /understanding of the parent is impaired this may well affect the 'legal/ethical' score relating to consent or provision of medical/social history.

#### Q. Some of our patients need to visit more frequently and need more input e.g. dental care professional support

A. These patients would presumably receive more than the average number of episodes of care which would be scored as any other episode. The system does not measure the length of episodes. Separate systems should monitor this.

# Q. Many of our patients are only treated after years of seeing the same clinician or because of the experience of that clinician. A new dentist may see a patient differently. How can we score this?

A. The score most affected in this scenario, is that of co-operation and perhaps communication in some cases. The score should be related to the clinician treating the patient. It may be that more experienced clinicians would have different individual profiles from those with less experience. This might be expected within individual services but also depends on the complexity of the patients, i.e. more experienced clinicians may care for more complex cases.

#### Q. We have no reception staff at our clinic. How can we record the increased time needed in such a situation?

A. This does not relate to the impairment and disability of the patient and would not be recorded using this system.

#### Q. I have a patient who wears a fixed orthodontic appliance and finds it difficult to keep it clean because of his disability. How should I record this?

A. The score which should describe the problem here relates to the oral hygiene and thus the oral risk factors but not to the appliance itself since there is no indication that the patient's disability affects the appliance therapy.

## Q. I need to talk to someone else before I can proceed with treatment. How should I code this?

A. Each code relates to one episode of care so once the episode is complete a decision can be made about how much consultation was required. If it was about the impact of the medical/disabling condition and multidisciplinary review was required, the appropriate Code C would be used under medical status. If, however, consultation is about consent or a looked after child the appropriate code would be found under legal and ethical barriers.

#### Q. How would I score a GA referral?

A. The code used relates to one episode of care. Once a patient is referred for a GA this becomes a new episode of care. The examination would be scored normally and the appropriate code (C) under Ability to Co-operate would be used.

#### Q Can case mix be used by GDP's?

By utilising case mix GDP's have the opportunity to use a nationally accepted scoring system that enables them to present to commissioner's genuine evidence as to the complexity of their patient cadre and as such negotiate for appropriate funding for such patients.

#### Q What is case mix not?

A Case mix is not a contract currency or a referral acceptance criterion. It is intended to be one of a number of indicators to be used to monitor and ensure adequate provision of dental services for disabled children and adults

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## Acknowledgements

The initial BDA working group responsible for developing and testing the model comprised;

Peter Bateman	Clinical director, Sheffield SPDCS		
Christine Arnold	Senior community dentist, Halton SPDCS		
Louise Foster	Senior community dentist, Cotswold and Vale SPDCS		
Sue Greening	Specialist in paediatric dentistry, Gwent CDS		
Nigel Monaghan	Consultant in Dental Public Health, NPHS Wales		
Liana Zoitopoulos	Consultant in special care dentistry, Kings School of Clinical Dentistry		

#### The group would like to thank:

- Janet Clarke and members of CCCPHD for commissioning the work.
- Karen Gordon for advice on the legal and ethical criteria as they pertain to Scotland
- Members of the following societies for their invaluable comments and suggestions during development of the model:
  - British Society for Disability and Oral Health
  - o British Association for the Study of Community Dentistry
  - BDA CDS Group Management committee.
- The staff of the following salaried primary dental care services who participated in the field trial and contributed to the subsequent evaluation- Airedale; Vale of Aylesbury; Blackwater Valley and Hart; Bradford; Bromley; Calderdale and Kirklees; Cotswold and Vale; Doncaster; East Elmbridge and Mid Surrey; Gwent; Halton; Hambledon and Richmond; Mid Hampshire; Leeds; Lincolnshire; North Derbyshire; North Lincolnshire; Oxfordshire; Sheffield; Shropshire; Solihull; Southampton; Surrey Heath and Woking; Wiltshire; Wycombe.

#### **BDA Working group terms of reference**

- To develop and instrument for use in measuring the complexity of providing dental care for patients of the Salaried Primary Dental Care Services. (SPDCS).
- To field test the instrument in a range of SPDCS in England and Wales.
- To calibrate the instrument such that it recognises the range of complex patient management issues experienced by SPDCS practitioners.
- To make the instrument available to SPDCS for local use in commissioning, contracting, and performance monitoring situations.

#### Case mix 2019

The 2019 model was devised and formulated by the BDA's England community Dental Services Committee Executive;

Michael Cranfield, (Chair)	Clinical director		
Charlotte Waite (Vice-Chair)	Senior community dentist		
Peter Bateman	Clinical director		
Mark Johnstone	Clinical director		
Christine Arnold	Senior community dentist, Specialist in Special Care Dentistry		
Jancy Pope	Senior community dentist, Specialist in Paediatric Dentistry		

Following completion of the revisions they were shared with the;

British Society of Disability and Oral Health

British Society of Paediatric Dentistry

## **Guidance for Commissioners**

Commissioners of health care services are required to ensure that services are provided to meet the needs of all the population for whom they have responsibility. In 2007 the Department of Health in England published 'Valuing People's Oral health'; a good practice guide for improving the oral health of disabled children and adults. This guide highlighted the importance of incorporating oral care into all healthcare plans. It acknowledged that some disabled children and adults present barriers and challenges to primary and secondary care providers when providing dental care. It must be stated here that whilst case mix was the response to a set of English circumstances, it is not an England-only tool and hence is applicable across the UK

Included in 'Valuing Peoples Oral Health' is the requirement for 'an assessment of the degree of difficulty in carrying out dental treatment, based on the individual's impairment or disability and the impact this has on providing a responsive service.' The case mix model is included in the commissioning guidance for special care dentistry as the recommended measure of this additional complexity in providing dental care for disabled adults.

Whilst there is no equivalent recommendation with regard to children, the need to recognise such complexities is equally valid, and therefore the British Dental Association has developed the case mix tool further so that it can be applied equally to children as to adults.

The original model was developed at the British Dental Association by clinicians with many years' experience in providing special care dentistry. The model was widely field tested and remains a reasonable and rigorous tool.

The model describes the complexities presented by the patient across six parameters;

- Ability to communicate
- Ability to co-operate
- Medical status
- Oral risk factors
- Access to oral care
- Legal and ethical barriers to care

The complexities measured are those of the patient in respect of dental care provision and **not** of the actual dentistry to be provided. Each individual episode of care is measured separately, thus the model reflects the actual complexity experienced in providing a specific course of treatment. This ensures the model is realistic in describing resource needs- for example a patient requiring full operating general anaesthetic facilities for a simple dental filling may not require such facilities for those courses of treatment when only dental hygiene is undertaken.

The original case mix tool was designed for special care patients, these being adults and adolescents, and not for younger children. The BDA case mix tool has now been developed further involving clinicians with years of paediatric care experience so that the revised descriptors of the six parameters now include elements that are appropriate for children.

Special Care Dentistry is about the complexity of the patient rather than the dentistry and the speciality does not cover children. It should be noted that when commissioning Paediatric Dental Services, the case mix tool does not cover dental complexities that are included in the specialism of paediatric dentistry such as dental anomalies. Hence, some items of level 2 and 3 complexity in draft commissioning guides/standards are not covered by complexity in the case mix tool.

The model is not a contract currency per se, but is intended to be one of a number of indicators to be used to monitor and ensure adequate provision of dental services for disabled children and adults. A weighting system has been applied to the criteria, and this can be used to ensure comparison between, for example, different operator's caseloads or different clinics.

It is recognised that while some work has been published on using the tool as a predictor prior to treatment, the tool was specifically designed with the primary purpose of measuring complexity during and after a course of treatment. It is for example not always possible to predict how cooperative a patient is going to be when undertaking a certain procedure until it has been attempted. For these reasons caution should be used if the model were to be used to determine whether specific patients are eligible to be accepted for referral by special care dentistry services, especially as the tool was not designed for this use.

It is also recognised that the tool can aid decisions about patients being retained for continuing care by these services once the initial course of treatment is completed.

The scoring system obtained from the weightings has to be used with care. The easiest way to use case mix is to add the total scores for each criteria to determine the patient's overall complexity score.

However, this methodology will give those with multiple disabilities appropriate high scores but may also underscore the complexity of an individual with a single disability that has an equally profound impact on their ability to access treatment. To prevent this, we now recommend that if a patient scores a maximum in any one category that they are automatically regarded as high-scorers throughout and treated accordingly.



# **Case Mix Data Capture Form**

	1				
Comments					This can be a unique patient identifier for your service, or if no identifier exists, a simple numerical count 1, 2, 3, 4 etc.
	Legal & Ethical				for you
BC)	Access				ntifier
t (OA	Oral risk				int ide
resul	Medical				e patie
Case mix result (OABC)	Co-operation				unique
Case	Communication				n be a
	+2ð 9pA				his car
	49.91 9pA				
	СГ-ट эрА				Ē
Age	<del>ү</del> -0 эрА				identifi
Patient	code				Patient identifier

Please add any brief comments that you may wish to feedback to us regarding the scores given (Foom complex cases, see below). Using the narrative as a guide, please insert a score (0, A, B or C) against each of the six criteria Please tick the appropriate column.

> Case Mix score Comments

Age group