Capturing complexity and implementing funding models in palliative care: Emerging evidence

Workshop hosted by Cicely Saunders Institute and the C-CHANGE Project team and attended by 55 delegates from around the UK, including national leaders in this area

30 October 2014, Governor’s Hall, St Thomas’ Hospital

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14.15-15.30  ROUND TABLE DISCUSSIONS
1. Complexity and case mix
2. Outcomes
3. Resource use and funding models

15:30-16:15  FEEDBACK FROM ROUND TABLE

16.15-16:30  CLOSE AND EVALUATION
Dr Fliss Murtagh

WELCOME AND INTRODUCTION

Dr Fliss Murtagh, Reader in Palliative Medicine, welcomed all contributors and attendees to the workshop and encouraged all present to take part actively.

The seminar was well-attended by more than 40 people from both the Cicely Saunders Institute and external organisations.

PRESENTATIONS

‘Complexity, case-mix and outcomes in palliative care – emerging evidence and experience’ (Dr Fliss Murtagh)

‘Implementation of case-mix classification and funding model into palliative care in Australia’ (Professor Kathy Eagar, Professor and Director of the Australian Health Services Research Institute)

Key points:

In the original AN-SNAP work, ‘functional status’ included both physical and cognitive dimensions of function. It is important to consider cognitive function as well as physical aspects.

Some variables are not included in the case-mix classes but are dealt with through adding a ‘loading factor’ across all classes when they occur. An example of such variables are:

- bereavement - recently added as a loading factor, after it had been removed from the case-mix class in the latest (version 4) case-mix classification for Australia
- ethnicity
- urban – rural
‘Outcome measurement and national datasets – the value of outcomes data’
(Professor David Casarett, Associate Professor of Medicine, University of Pennsylvania, Perelman School of Medicine)

‘Hospice’ in the US is very different from the concept of hospice in the UK.

- hospice consists of 3,500 organisations across USA
- cuts across all settings
- median length of stay 18 days (is reducing)
- referred very late – 1/3rd the last week of life and 10% in the last 24 hours of life
- more details about the choice programme at www.choicehospices.org
- CHOICE has N=164,000 at present
- pulls data direct out of clinical electronic systems
- no data linkage (anonymous data)
- care is not provided by several palliative care providers like in the UK, largely because of the short length of stay (it is essentially terminal care)
- only the VA system so far has had some success with a similar approach
- frontline clinical providers enter the data
- some consideration of ‘what the patient brings’ versus ‘what we bring to the patient’ - relating to Professor Kathy Eagar’s explanation of the two types of variation; variation because of differences in the patients, and variation because of differences in what the services deliver/achieve
- CHOICE has some consideration of case-mix adjustment - see Harrold 2014
- how do you know you are adjusting for the right variables and how do you select them?
- challenges of getting the right numerator/right denominator/norm
- importance of matching processes with achieved outcomes
- over time, are there changes in the population being seen by the CHOICE hospice services?
- the benchmarking relates mostly to process measures

Questions at the end of the talk related to reporting out of the CHOICE system (clinical teams and managers can run and access their own reports as they require), to whether there was any perceived conflict between research papers and clinical requirements (this was regarded as a ‘bell shaped curve’ where some papers were more generic and less relevant to hospice, and other papers were more practice related and not generalisable. It was perceived that there was a good balance in the middle, and certainly a good number of papers have been published within the first 18 months or so). Hospices have driven the research agenda and sometimes have vetoed areas fearing downstream consequences (for example study of DNAR orders). There were also questions about information governance and ethical concerns: it was estimated that 10% of time had been spent on papers and 90% of time on IT and
governance issues. Most hospices were willing to trade in value in sharing information against the ethical issues and constraints around governance.

**Useful CHOICE references**


**Specific notes and feedback on**

‘Palliative Care Funding Review - developing a palliative currency’ (Mr Dilwyn Sheers, Palliative Care Funding Review, NHS England)

**Notes:**

The data presented represented 10,000 spells of care (adults) and 2,000 spells of care (children).

The aim is for a mandated currency by 2017/18.

Key points from the presentation:

- The unstable phase predominates in hospital and inpatient hospice.
- Distribution of function by phase is consistent across provider types.
- It is not clear why there is variation in non-NHS hospices, particularly in relation to the stable phase of illness.
- There was considerable heterogeneity of costs, with a large variation in cost profiles; this was assumed to be due to the wide range of models of care across providers. Relative differences (ratios) were therefore calculated.
- It was particularly challenging to determine the best groupings of diagnosis for children.
Discussion following Dilwyn’s presentation:

- The was some discussion about the Australian approach which has been to amalgamate ‘adult community’ and ‘adult acute hospital’ into the same case-mix classes - this approach has not been adopted in the development currency for England, but it could be considered.
- There was also some debate about what inequities are being embedded into the system because of existing anomalies in provision. For example, it is known that older patients accessed palliative care less in relation to their needs for it. How can this be accounted for in the development of the case-mix classification?
- There was also some discussion about phase of illness; in the UK there has been:
  - some confusion over unstable and deteriorating (clinically reported e.g. through the OACC project, and from funding pilot sites)
  - some overlap between deteriorating and dying (emerging from the analysis of the funding pilots)

There was some discussion at the end of the talk about the place of ‘number of diagnoses’ in the case-mix classification. There was concern it did not make sense clinically, as most admitted to hospital have multiple diagnoses – one diagnosis alone would be unusual. It was not clear the extent to which recording of diagnosis varies between NHS and voluntary providers (NHS have been coding for some years). Also there was doubt about how well ‘diagnosis’ and ‘number of diagnoses’ was captured in the pilots. Is it the number of primary or secondary diagnoses, or comorbidity which is playing a part?

It was noted that there was considerable co-linearity between some of the variables; such as between the problem severity score and functional status.

It was also noted that family issues are a major concern for providers, and agreed to be clinically important component of resource use (escalating resource use markedly when they occur).

In discussion with Professor Kathy Eagar, it was agreed that both total phase cost and per diem phase cost were the right outcome variables. The concept of ‘bundling’ was
discussed - it is important to bundle to the right level in order to ensure that the risk is carefully balanced between purchaser and provider. It was agreed that in palliative care, phase is the right level at which to bundle to achieve this.

The (separate) funding or payment model was briefly discussed; in Australia they have a blended payment model. This means there is a per diem component (which represents the hotel costs) but also a phase payment, with low and high trim points. This ensures that care is delivered over the optimal time, with no incentives for overly rapid delivery of care (thus not achieving the outcomes required) or overly prolonged delivery of care (extending beyond the high trim point, i.e. longer stays).

It was emphasised that the funding model is separate from the case-mix classification but needs to be equally good. There was recognition that only the Development Currency was presented; the funding model is yet to be developed. However, it is crucial to remember that the reasons for the success of this approach in Australia are attributed to the collection and use of national outcomes data, as the main driver for change. Improved quality of care using outcomes have been the main focus; the development currency and funding system is merely a by-product. Incentives for gaming (e.g. to increase the number in the unstable phase to attract the higher payment) are counterbalanced by the difficulty of achieving good outcomes (including benchmarking) for those in the unstable phase. There has been no gaming of the system in Australia, perhaps for these reasons.

There was some discussion about whether Classification and Regression Tree Analysis (CART) would be a useful approach to adopt for the funding pilots. It was agreed that this would be invaluable but it would require collaboration between the funding team from NHS England and the academic team (Cicely Saunders Institute).

There was further discussion about the importance of collecting outcomes data. In Australia, clinical assessment tools and outcomes have been the ‘engine’ to ensure that the clinical teams have been willing to collect appropriate measures to improve care. Most clinicians are keen to improve care (i.e. outcomes) but not interested in providing data for data’s sake. The tariff or funding data has simply been a by-product of the outcomes work, and this approach has been highly successful (with only five providers nationally not yet engaged in the voluntary collection of outcomes data).

More details of the Palliative Care Outcomes Collaboration for Australia (PCOC) are available at http://ahsri.uow.edu.au/pcoc/index.html

**Please note: the PowerPoint slides for the presentations are at the end of this report.**
FEEDBACK FROM ROUND TABLE DISCUSSION SESSION

Group feedback (issues raised by groups, and panel points in response)

Group 1:

- The proposed England development currency is a good starting place
- Questions were raised about diagnosis and comorbidity - is there scope to link groups of comorbidities, or possibly some other way to make sense of this? Currently it doesn’t make sense in the case-mix classes as it is presently.
- The Australian case-mix classification appears to be very good, and the corresponding funding model (blended payment model) also looks very sensible – would be keen to adopt a similar funding model for England.
- Outcome measures are very important for the UK, and this part at the moment seems to be missing.

Professor Kathy Eager commented that dividing case-mix classes into one or more than one diagnosis (in the current proposed Development Currency for England) does not appear to be intuitive or to make sense. Most patients admitted to hospital have several diagnoses (on average often about eight to 12) and one diagnosis only would be very unusual. There was then some debate about whether this had accurately been captured within the funding pilots. Within the NHS there is a distinction between primary and secondary diagnoses, and also co-morbidities. Was this distinction applied in the pilots? Was any definition equally applied /understood across voluntary sector and NHS providers? This should be reviewed, and clarity about the definitions / use should be sought. There was mention about using a comorbidity index - would this help? (Charlson Co-morbidity Index discussed briefly; Charlson M, Sztazowski TP, Peterson J, Gold J. Validation of a combined comorbidity index. J Clin Epidemiol 1994;47(11):1245–51). In Australia, the combination of phase, function, and problem severity worked better than any combination of diagnoses.

Group 2:

- Family carer distress needs to be included somehow (possibly load onto all case-mix classes, similar to bereavement?)
- How can we ensure that the case-mix classification is equitable for all patients (for instance in areas of little or no coverage)?
- How can we duplicate the Australian experience, when in England, primary care plays such a considerable part of care in the last days of life?
- Is there a good measure of family distress that we could use which captures the implications of family distress on resource use?
In response to some of these issues, the panel recognised the importance of capturing family distress; this will be explored further by the Cicely Saunders Institute team. It was also mentioned that services still need to be planned to ensure that there is good coverage around the country; the case-mix classification cannot substitute for this. There was further discussion by the panel of the importance of ensuring good-quality outcome measures are implemented into practice at the same time or even before the use of the case-mix classification. This would help ensure equity by ensuring that whatever care was delivered was achieving outcomes. There was also some concern expressed about the use of age over 75 in the case-mix classification and that this may represent unmet need in the older sector of the population.

**Group 3:**

- Is this a version 1 of the development currency? The group would like to see version 2 happening soon!
- Currency and outcome measures have to work together - it would be good to see the outcome measures developed and proposed too.
- How is the transition across phases captured? This seems to be key to the case-mix classes and yet how to capture this is not made clear.

Professor Kathy Eagar outlined the importance of introducing a new architecture in order to capture phase properly. If phases are to be captured, including the transitions between phases, then there needs to be a daily review of which phase the patient is in (for inpatient care), and then re-collection of the relevant case-mix data if the phase changes. In the community setting, this works by including a review of phase with every patient contact.

The information architecture, both for the understanding of phase of illness but more importantly for the IT capture of data, is absolutely critical. In Australia the experience has been that there is usually about two or three phases per spell of care (full details are in the Palliative Care Outcomes Collaborative reports).

The question was then raised as to whether the transitions between phases means something? Dilwyn Sheers is keen to look at this within the palliative care funding pilots dataset. Professor Eagar said that they have analysed those who are admitted in the unstable phase in comparison to those who become unstable in a subsequent phase; they have not seen any clear patterns of difference between these two groups. There has not been clear clinical consensus about the significance of phase transitions, and it is largely seen as a quality problem rather than impacting on case-mix classes per se.
Group 4:
- We need a standardised IT system, and the group emphasise the importance of collaboration with the IT providers/systems from the start.
- It is really important to ensure that we all collect the same measures, and that they are meaningful and valid.

Professor David Casarett emphasised that the hospices within the CHOICE programme all share the same IT platform; it is much easier if they share the same system, although there is then an issue of interoperability between the providers and other local health systems. There can often be a trade-off between a unified system for a region or area and local interoperability between hospice and other providers.

Group 5:
- The Australian system made the group optimistic, especially hearing about the outcome measures and the impact in modifying behaviours.
- They raised the question of whether the tariff will vary by geographical setting.
- Will there be any intended drivers to try and shift setting of care?

This was discussed by the panel, and by Adam from the funding team. There is a potential for a Market Forces Factor to be applied if this should become a national mandated tariff; however, it may only ever be locally adopted, in which case this would not be relevant. At the present time the proposed Development Currency tariff, or funding model attached to it, is still in the piloting phase.

Group 6:
- There was concern about the locking in of unmet need: was this ensuring under-resourcing was being perpetuated?
- There were also reflections on why the England system had adopted a 75-year-old age cut-off in contrast to the 53-year-old age cut-off in the Australian case-mix classification?
- The group raised concerns about implementation issues, especially with respect to IT systems, interoperability, how to build it into a clinical system, and the multiple providers of clinical databases within the UK.
- There was concern about ensuring wider dissemination of the Development Currency, and in particular the data and analysis underpinning it. Did the panel think there was a risk of misunderstanding or simplification based on the limited information so far put out in the public document?

Dilwyn Sheers on the panel explained that the use of age is a continuous variable, such that it was not constrained by any particular cut-off point. Age had not been categorised. The analysis is therefore showing that 75 and above is driving costs distinctly differently from younger ages, and this is why it has been included in the
case-mix classification for some classes. In general there was a linear relationship between age and costs.

Professor Eagar added that younger age in the Australian context has acted as a proxy for psychosocial issues.

Best practice pricing is a possible route to be adopted later in the process in England. It was agreed that it is not that older people need less palliative care, but it may be that older people’s families need less resource to help them deal with the issues of advancing illness in their loved one. Among older people, advanced illness is less unexpected, and there may therefore be, in general, less distress. Clearly this does not relate to individual families where distress may be unrelated to age.

Professor Eagar also outlined some of the ways that, in Australia, they have tackled the IT issues. The team has developed a specification for IT companies, and has also provided ‘PCOC compliant’ approval. Some parts of Australia (such as New South Wales) have a statewide IT system, which also helps. It is still a major issue and should not be underestimated. There have been some cultural challenges to embedding outcomes into practice, but the IT issues are more dominant.

With respect to the risk of misinterpretation of the funding pilots, this was acknowledged, and further explanation of how the case-mix classes are derived was recognised as being helpful. Professor Eagar outlined the position in Australia: the Palliative Care Outcomes Collaborative has from the outset been opposed to public reporting of findings at service level. They have published two international literature reviews (on public reporting), which show that if you give feedback of outcomes data to clinicians directly, then they are very proactive in seeking to address any issues and improve care. On the other hand if you feedback this information publicly, then clinical teams become very defensive, rather than devoting their energies to seeking effective change. This was stressed as a really important point. The PCOC team has always taken the approach that services can themselves disseminate their outcomes data, but it is not done centrally.

It was proposed that the same approach would be adopted in England.

**Group 7:**

- Concerns were raised about the lack of opportunity to assess the underlying data and analysis and it was proposed that a partnership between the funding team and university teams might be helpful in ensuring more peer review and publication of these important findings.
- There were concerns about the challenges of capturing complex community-based data, especially in relation to the overlap with primary provision of end-of-life care.
- Are there markers for different models of care, and could these be explored and explained? This might help ensure understanding of better models of care, and which are most effective/cost-effective.
- There was also concern raised about whether the different initiatives currently happening in England are connected together effectively? This would include the palliative care funding pilots and any centres to test the Development Currency, but also the pilots which are proposed for a National Data and Outcomes set for palliative care.

In response to this, the panel suggested that collaborations between the funding team and university partner would be an excellent idea.

Dilwyn Sheers went on to report that service level descriptors were included in the funding pilots, and he did explore patterns of data emerging by different service level descriptors. However, it was extremely difficult to make sense of this in any consistent way, and it may be that we need a broader range of descriptors to help understand this. As Dr Murtagh outlined in her talk, there needs to be some iteration between the patterns of case-mix classes and criteria that emerge, and the providers of care to those groups; only in this way is their real understanding of how the models of care and the ways of working correspond with the case-mix classes and other patterns seen.

All the panel recognised the importance of linking up the work of the funding pilots (and any subsequent testing of the Development Currency) with the National Data and Outcomes Set for Palliative Care.

The panel also agreed that a standard set of measures was needed, and that it would be helpful if there was some scope for international comparison. Professor Eagar suggested that phase of illness, functional status using the Australian KPS, and IPOS or a similar problem severity measure would be helpful. When the original AN-SNAP work was undertaken about 18 years ago, there were no suitable measures available, particularly for problem severity; if the work was being undertaken now, then IPOS would be a first choice.

- A final issue was raised about primary care; how this will fit in to the evolving era of integrated care (integration between health and social care, but also integration between providers across the acute and community boundaries).

The panel recognised this as an issue, and they recognise the importance of evaluating new and innovative models of care. The C-CHANGE project has built in a component to particularly include non-cancer conditions and older people with frailty and complex comorbidities. Professor Eagar also reflected on the fact that in Australia, phase of illness has been adopted widely by general practitioners and community nurses in 10 regions of the country. It is part of their referral process and has been very successfully adopted into primary care.
Content was clear and understandable

- Strongly disagree: 5
- Disagree: 20
- Not sure
- Agree
- Strongly agree

The workshop was valuable

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree: 3
- Agree: 22
The workshop was the correct length

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

Content was the correct pitch

- Strongly Disagree
- Disagree
- Not sure
- Agree
- Strongly agree
Complexity, case-mix and outcomes – emerging UK evidence

Dr Fliss Murtagh

Cicely Saunders Institute
What will you hear over next 30 mins?

• What are the challenges?
• Potential solutions (this and other talks)
• Progress on two UK-based projects:
  – C-CHANGE & OACC
• About some early UK findings:
  – Complexity – how we can measure it?
  – Case-mix – how might it work?
  – Outcomes – where do they fit in?
  – How to implement outcomes?
Palliative care works...

Consistent and comprehensive evidence for better outcomes following palliative care:

• Better symptom control
• Improved communication
• Better emotional well-being, less depression (both patients and families)
• More satisfaction with care (patients and families)
• Higher quality of life (patients and families)

Defining the challenges …

• Palliative care is, on the whole, doing a good job, but:
  – Is it *consistently* doing a good job? We don’t know
  – Can we demonstrate the difference it makes? No
  – Are those with the most complex needs and problems the ones who get most input? No
  – Do we understand the variations in the difference it makes?
    – because of the differences between people No
    – because of the differences between services No

(both are needed!)
Who gets what care at present?

MOST COMPLEX NEEDS
Primary care plus SPC teams & hospice inpatient

INTERMEDIATE NEEDS
Primary care with some SPC support

LESS COMPLEX NEEDS
Primary care team

changes over time

uncertainty
Models of care are important...

- (Specialist) Palliative care teams deliver holistic care to those with life-limiting progressive disease
  - as their **core daily work**
  - using **specialist skills and expertise**
  - in **multidisciplinary teams**
- explicitly provide care to both **patients** and **families**
- deliver both:
  - **direct care** to patients and families
  - **indirect care** by supporting other professionals to deliver direct care
C-CHANGE – what is it?

• A research programme funded by the National Institute for Health Research (Programme Grants for Applied Research funding stream)
• Purpose: to discover the best ways to ensure patient-level funding matches individual patient and family needs and achieves optimal outcomes
• Will achieve this through a 5 year programme to develop/test case-mix classification in UK and understand best models of care and outcomes
• 1 year into the programme
  – testing and validation of measures
  – preliminary data - to be presented …
What we think determines patient need

Which indicators are the best predictors of patient need?

Use predictors to group people with similar levels of need and link to resources

Understand the outcomes achieved for patients and families

Domain 1A: Background information
Domain 1B: Patient preferences and priorities
Domain 2: Physical well-being
Domain 3: Social and occupational well-being
Domain 4: Psychological well-being
Domain 5: Spiritual well-being and life goals

Age?
Symptoms?
Phase of illness?
Family?
Worries or anxiety?
At peace?

Highest complexity
High complexity
Intermediate complexity
Low complexity
Lowest complexity

Better symptom control
Improved quality of life
Patient and family satisfaction
Preferences met when feasible
Advance care planning to anticipate needs
Defining the language...

- Case-mix criteria
- Combined into classes
- ‘Currency’ ≠ money!
- ‘Currency’ = case-mix classes

- Episode of care = spell of care
Why describe complexity?

• Why try to describe complexity of palliative care needs?
  – So we can compare ‘like’ with ‘like’ (understand and adjust for patient variation)
  – Clinical, quality improvement, commissioning communication
  – Delivering “right care at the right time in the right place” (Five Year Forward View, Oct 2014)
  – Matching resources to needs

• How can we describe complexity?
What is complexity?

• The number, severity and interaction of different domains of need

• Can we measure it using measures such as:
  – phase of illness
  – functional status/dependency
  – problem severity:
    – pain
    – other physical problems
    – psychological problems
    – family distress/needs
Phase of illness reported among patients seen by a UK hospital palliative care team
(N=232 spells of care, 512 phases)

Proportion of phases

- Stable: 11.9%
- Unstable: 37.5%
- Deteriorating: 26.0%
- Dying: 19.3%
- Not known: 5.1%
- Patient not seen: 0.2%
Comparison of phase distribution among inpatients; UK and Australia

*From: Palliative Care Outcomes Collaboration, Report Jan-Jun 2014*
Admission phase of illness reported among patients seen by a UK hospital advisory palliative care team (N=232 spells of care, 512 phases)
Functional status at admission
(N=200 phases, 32 unknown removed)

10% - Comatose or barely arousable
20% - Totally bedfast and requiring nursing care by professionals and/or family
30% - Almost completely bedfast
40% - In bed more than 50% of the time
50% - Requires considerable assistance and frequent medical activity
60% - Occasional assistance but is able to care for most of own needs
70% - care for self, unable to carry on normal activity or to do active work
Distribution of problem severity score (0-12) at admission
(N=149 phases, 83 unknown removed)
Functional status distribution by phase
(N= 457 phases, 28 unknown removed)
Dependency distribution by phase
(N=233 phases, 252 unknown removed)
For each phase, proportion by duration among patients seen by a UK hospital advisory PC team.
(N=442 phases of illness)
Combined problem severity score distribution
(N=232 phases, 253 unknown removed)
Dependency distribution (N=233 phases, 252 unknown removed)
## Total phase costs (direct, indirect, corporate)

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<tr>
<th></th>
<th>Stable</th>
<th>Unstable</th>
<th>Deteriorating</th>
<th>Dying</th>
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<tbody>
<tr>
<td>Mean total cost</td>
<td>£184.30</td>
<td>£319.80</td>
<td>£221.02</td>
<td>£211.83</td>
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<tr>
<td>(SD)</td>
<td>(£157.71)</td>
<td>(£313.06)</td>
<td>(£245.60)</td>
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<td>Max</td>
<td>£909.65</td>
<td>£2,354.63</td>
<td>£1,818.83</td>
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Mean total phase costs among patients seen by a UK hospital advisory palliative care team (N=489 phases)
Mean phase costs per day among patients seen by a UK hospital advisory palliative care team (N=489 phases)
Where do outcomes fit in?

• Outcome = “the change in a patient’s (and family’s) current and future health status that can be attributed to preceding healthcare” (Donabedian 1980)
• The measures of complexity of needs, if repeated, provide outcomes:
  – change in pain score
  – duration of unstable phase
  – change in family distress
  – etc, etc
Defining the challenges …

• Palliative care is, on the whole, doing a good job, but:
  – Is it consistently doing a good job? We don’t know
  – Can we demonstrate the difference it makes? No
  – Are those with the most complex needs and problems the ones who get most input? No
  – Do we understand the variations?
    – because of the differences between people No
    – because of the differences between services No
  (both are needed!)
The Outcomes Assessment & Complexity Collaborative (OACC) – what is it?

• A collaboration across South East London to implement outcome measures into palliative care practice:
  – develop and provide staff training to support the implementation of these outcome measures
  – integrate health information technology to establish workable ways of capturing and processing data
  – provide regular feedback of results to the teams, using Quality Improvement Facilitators to directly improve patient and family care
  – Study what works in implementing measures and what doesn’t
OACC – what is it?

- Extending across London and nationally
- Very much in partnership
  - Directly with Help the Hospices
  - Also working with:
    - Dr Bee Wee, National Clinical Director
    - NHS England & Public Health England
    - Palliative Care Funding Pilots
    - NCPC, Marie Curie and other partners
- An ‘open’ collaborative
Introducing the Outcome Assessment Complexity Collaborative (OACC) Suite of Measures

A Brief Introduction

Witt J, Murtagh FEM, de Wolf-Linder S, Higginson IJ, Daveson BA
OACC – what have we learnt so far?

• Never assume anything
• Implementation of outcome measures into routine clinical care is a change process – needs time, resource and planning
• Education in correct use of measures
• Don’t implement over the summer holidays!
• Those most influential are not always the obvious people
• Implement stepwise – not all at once
• Use a ‘bottom up’ approach but with senior leadership too
OACC – what have we learnt so far?

- Engagement at all levels is critical
- Quality Improvement Facilitator role critical for ongoing support
- Building trust and rapport
- Deadlines change
- Flexible and responsive to needs of clinical teams
- Clinicians need evidence to be convinced something works …
In summary:

• Can we address the challenges?
  – Demonstrate the difference palliative care makes
  – Ensure resources match complexity of needs
  – Distinguish variations between people and between services

• Yes, with the help of the Palliative Care Funding Pilots team, NHS England & Public Health England team, and our international partners

• Outcome measurement is the key
Thank you

The C-CHANGE project is funded by the National Institute for Health Research – Programme Grants for Applied Research (project number RP-PG-1210-12015).

OACC is funded by Guy’s & St Thomas Charity

Further information available at: http://www.csi.kcl.ac.uk/c-change.html

The views and opinions expressed by authors in this video are those of the authors and do not necessarily reflect those of the NHS, the NIHR, MRC, CCF, NETSCC, the NIHR Programme Grants for Applied Research programme or the Department of Health.
Implementation of a national casemix classification and funding model into palliative care in Australia

Professor Kathy Eagar
Director, Australian Health Services Research Institute

Capturing complexity and implementing funding models in palliative care: emerging evidence,
Governor’s Hall, St Thomas’s Hospital London 30 October 2014
But first, a brief introduction to where I come from
Area size comparison of Australia and Europe

Australia's area = 7,706,168 sq km
Europe's area as shown = 3,483,066 sq km
The Australian health care system

Background context
The starting point for the Australian western health care system

New South Wales became a (penal) colony in 1788, followed progressively by the other Australian States. Australia didn’t become a country until 1901.
A federation

- Commonwealth (national) government
- 6 State (previously colony) and 2 Territory governments
- Constitution (1901) - health is the responsibility of the States
  - Except quarantine matters
- Amended in 1946
  - Commonwealth can provide health benefits for returned soldiers
  - More broadly - “but not so as to authorise any form of civil conscription”
- Commonwealth didn’t have a formal role in health care until 1972 (Medibank)
  - Except for war veterans
- States and territories own all public health facilities and infrastructure
Public hospital funding

- Commonwealth agreed in 1972 to contribute 50% of public hospital funding (with inception of Medibank)
- 5 year Commonwealth-State agreements from 1983
  - Last agreement was 2008-2013
  - Ended 30 June 2013
- 2011 National Health Reform Agreement
  - Signed by all governments 31 July 2011
Key elements of 2011 hospital reform

- Hospitals remain a State responsibility
- Commonwealth funding contribution to States now Activity Based Funding (ABF)
- Establishment of an Independent Hospital Pricing Authority (IHPA)
- Establishment of a National Health Performance Authority (NHPA)
Commonwealth role from 2012

◆ Pay a ‘National Efficient Price’ for every public hospital “activity”
  – Funding at historic levels (around 38%) until 2014
  – 2014-2017 - fund 45% of efficient growth in public hospitals
  – 2017 on - fund 50% of efficient growth in public hospitals

◆ Fund States a contribution for:
  – teaching, training and research
  – block funding for small hospitals

◆ Agreement has detailed arrangements for defining a ‘hospital’ service for Commonwealth funding purposes
Activity Based Funding (ABF)

Also known as ‘casemix’ funding and Payment by Results (PbR)
IHPA role

◆ Define activity units and set the price that the Commonwealth will pay for a unit of activity (National Weighted Activity Unit - NWAU)

◆ IHPA determines the price paid to States

◆ IHPA does not determine the price paid by a State or Territory to a hospital network or hospital
  – Although States and Territories are free to adopt the IHPA price if they want

◆ IHPA does not determine the funding for individual palliative care services
“National Efficient Price”

- Five different classifications for different streams of activity:
  - acute admitted
  - subacute (including palliative care)
  - outpatient services
  - emergency department
  - mental health

- One ‘national efficient price’ for a ‘national weighted activity unit’ (cost weight)

- Cost weights equalised across classifications
National ABF activity classifications

- Acute - AR-DRG
- Subacute and non-acute - AN-SNAP
- Outpatients and community care - Tier 2 outpatient clinic list of Service Events
- ED - Urgency Related Groups - URGs or Urgency Disposition Groups - UDGs
- Mental health – new classification to be developed
- Teaching and research – block funded for now
## AN-SNAP v2 & v3
### Palliative Care Inpatient Classes

<table>
<thead>
<tr>
<th>ClassNo</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>S2-101</td>
<td>Assessment only</td>
</tr>
<tr>
<td>S2-102</td>
<td>Stable, RUG-ADL 4</td>
</tr>
<tr>
<td>S2-103</td>
<td>Stable, RUG-ADL 5-17</td>
</tr>
<tr>
<td>S2-104</td>
<td>Stable, RUG-ADL 18</td>
</tr>
<tr>
<td>S2-105</td>
<td>Unstable, RUG-ADL 4-17</td>
</tr>
<tr>
<td>S2-106</td>
<td>Unstable, RUG-ADL 18</td>
</tr>
<tr>
<td>S2-107</td>
<td>Deteriorating, RUG-ADL 4-14</td>
</tr>
<tr>
<td>S2-108</td>
<td>Deteriorating, RUG-ADL 15-18, age &lt;=52</td>
</tr>
<tr>
<td>S2-109</td>
<td>Deteriorating, RUG-ADL 15-18, age &gt;=53</td>
</tr>
<tr>
<td>S2-110</td>
<td>Terminal, RUG-ADL 4-16</td>
</tr>
<tr>
<td>S2-111</td>
<td>Terminal, RUG-ADL 17-18</td>
</tr>
<tr>
<td>S2-112</td>
<td>Bereavement</td>
</tr>
</tbody>
</table>
Calculation of National Efficient Price

- Based on the “cost of the efficient delivery of public hospital services”
- Adjusted for ‘legitimate and unavoidable variations in wage costs and other inputs which affect the costs of service delivery, including:
  - hospital type and size
  - hospital location, including regional and remote status
  - patient complexity, including Indigenous status’
2014 Commonwealth budget included big changes

Bye bye IHPA, NHPA etc.
Hello (maybe) National Productivity and Performance Authority
A few 2014 budget headlines

◆ White paper on the future of the federation:
  – Hospitals and schools are a state, not a federal, responsibility

◆ National Health Reform Agreement in place till 2017, won’t be renewed. From July 2017:
  – Commonwealth revert to block payments and
  – abandons commitment to 50% of growth funding
  – Commonwealth growth funding reduces from 9% pa to 6.5%.

◆ States and territories have agreed to continue with ABF funding at the state level regardless
ABF is here to stay in Australia regardless of what happens at the Commonwealth level

Task now is to progressively develop and implement the best model possible
AN-SNAP

Australian National Subacute and Non-Acute Patient classification
AN-SNAP

- Version 1 based on a study of 30,057 episodes in 104 services in Australia and New Zealand
- 124 classes in Version 4
  - Version 4 to be implemented nationally from 1 July 2015
Scope

- Care in which diagnosis is not the main cost driver

- **Subacute Care**
  - enhancement of quality of life and/or function

- **Non-Acute Care**
  - supportive care where goal is maintenance of current health status if possible
AN-SNAP classification

5 Care Types:
- Palliative care
- Rehabilitation
- Psychogeriatrics
- Geriatric Evaluation and Management (GEM)
- Non-acute
AN-SNAP classification

4 episode types:

- Overnight admitted inpatient
- Same day admitted
- Outpatient
- Community (home)
Key Cost Drivers - 1

- **Care Type** - characteristics of the person and the goal of treatment
- **Function** (motor and cognition) - all Care Types
- **Phase** (stage of illness) - palliative care
- **Impairment** – rehabilitation
- **Behaviour** – psychogeriatric
- **Age** - palliative care, rehab, GEM and non-acute

Complexity factors?
There are additional cost drivers in ambulatory care:

- **problem severity - palliative care**
- **phase - psychogeriatric**
- **usage of other health and community services**

and probably:

- **availability of Carer**
- **instrumental ADLs (eg. medication management, food preparation)**

Complexity factors?
AN-SNAP Version 4

Hot off the press!
# AN-SNAP Version 4

<table>
<thead>
<tr>
<th>Care Type</th>
<th>Overnight</th>
<th>Ambulatory</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult Palliative Care</td>
<td>12</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td>Paediatric Palliative Care</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Adult Rehabilitation</td>
<td>50</td>
<td>8</td>
<td>58</td>
</tr>
<tr>
<td>Paediatric Rehabilitation</td>
<td>5</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>GEM</td>
<td>6</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Psychogeriatric Care</td>
<td>6</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Non-acute Care</td>
<td>6</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>89</strong></td>
<td><strong>35</strong></td>
<td><strong>124</strong></td>
</tr>
</tbody>
</table>
AN-SNAP Versions 4 and 5

Paediatrics

- 8 classes – 4 inpatient, 4 ambulatory
- Based on clinical consensus, not data
- Uses adult Phase definitions for now
- Costing and pricing yet to occur
- Further consideration of moving to three Phases for paediatrics – Stable, Complex (Unstable and Deteriorating together) and Terminal
### AN-SNAP v4 - paediatric classes

<table>
<thead>
<tr>
<th>Class</th>
<th>Descriptor</th>
</tr>
</thead>
<tbody>
<tr>
<td>4FB1</td>
<td>Palliative Care, Stable phase, Age ≥ 1 year</td>
</tr>
<tr>
<td>4FB2</td>
<td>Palliative Care, Unstable or Deteriorating phase, Age ≥ 1 year</td>
</tr>
<tr>
<td>4FB3</td>
<td>Palliative Care, Not Terminal phase, Age &lt; 1 year</td>
</tr>
<tr>
<td>4FB4</td>
<td>Palliative Care, Terminal phase</td>
</tr>
<tr>
<td>4SO1</td>
<td>Palliative Care, Stable phase, Age ≥ 1 year</td>
</tr>
<tr>
<td>4SO2</td>
<td>Palliative Care, Unstable or Deteriorating phase, Age ≥ 1 year</td>
</tr>
<tr>
<td>4SO3</td>
<td>Palliative Care, Not Terminal phase, Age &lt; 1 year</td>
</tr>
<tr>
<td>4SO4</td>
<td>Palliative Care, Terminal phase</td>
</tr>
</tbody>
</table>

4 identical classes, 2 settings – FB (inpatient) and SO (ambulatory)
AN-SNAP Version 4

**INPATIENT** – basic structure maintained but differences in detail of classes

- No “Assessment only” class
- Unstable split into “First phase this episode” versus “Not first phase this episode”
- Splits on function (measured by the RUG-ADL) revised for Stable and Unstable and removed from Terminal
- Age split in Deteriorating phase modified
- No bereavement class
AN-SNAP Version 4

**AMBULATORY** – same day admitted, outpatient, outreach and day program

- Now only for multidisciplinary palliative care
  - 12 classes (8 adult, 4 paediatric), down from 22 adult classes in last version
  - Splits on Phase, problem severity (PCPSS) and function (RUG-ADL)

- Single discipline care classified as Tier 2 outpatient clinic classification
AN-SNAP Versions 4 and 5

CONSULTATION-LIAISON / INREACH

- Patient is the medico-legal responsibility of another stream
- Not recognised by IHPA as separate ‘activity’ for ABF purposes
- But considered best practice
- In AN-SNAP V4 we have treated for classification purposes as ambulatory care. States can then price
Implementation issues

Palliative care, AN-SNAP and PCOC
Implementation at hospital level

◆ Made much easier because of participation in the national Palliative Care Outcomes Collaboration (PCOC)
  – A national program that utilises standardised clinical assessment tools to measure and benchmark patient outcomes in palliative care
  – The data required for AN-SNAP have been collected by PCOC since 2006
  – Data quality is excellent because the information is used for clinical assessment, to measure patient outcomes and for clinical benchmarking
PCOC quality and outcome measures

- Phase movements
- Change in function
  - RUG-ADL and AKPS
- Change in problem severity
  - PC Problem Severity Scale and SAS
- Mode of start/end
- ALOS (days seen) x phase
- Place of death x Level of support
- Access measures
  - Postcode
  - ATSI
  - Language / country of birth
- Time between being ready for care and episode start
- Time in Unstable Phase
Casemix-adjusted improvements over time

PCOC national data – adjusted for changes in phase and symptom start scores over time
Change in symptoms relative to the baseline national average

- Pain
- Nausea
- Breathing problems
- Bowel problems
Change in symptoms relative to the baseline national average
Bigger design issues

Counting and funding models for palliative care
Cost drivers

◆ Need to distinguish between the classification, the funding model and the price

◆ What classification variables are required to explain differences between patients?

◆ What variables are better dealt with as a price loading rather than a classification variable?
  – Eg, bereavement, indigenous, remoteness

◆ Are there other factors that explain legitimate cost differences between providers and how to use this information in pricing?
A classification is not a funding model (and vice versa)

 First you develop a classification

 Then you design a funding model that contains the right incentives
  – How high up to bundle? What is the unit of counting?
    ♦ Per diem, per phase, per episode of care, per episode of illness
  – What incentives?
    ♦ Technical, allocative and dynamic efficiency
  – What’s possible?
    ♦ Now, soon, later? What transition strategy?
Blended Payment Model

◆ 3 elements:
  - Per Phase (rate varies by AN-SNAP class)
  - Per day (rate is the same across all classes) and
  - Outlier days (rate varies by AN-SNAP class)

◆ These 3 elements converted to total cost weights

◆ Average rate per bed day is similar to the rate for acute medical admissions
  – based on annual national hospital cost study
Future developments?

◆ New models of care?
  – Consultation liaison?

◆ Price for quality and outcomes, not based on current average cost?
  – Pay for Performance (P4P)?

◆ How to deal with gaming?
  – Manipulating data so patients are assigned to higher-paying classes
  – This is not in the interests of quality care
  – How do we get the message through?
Australia is keen to collaborate and learn from experience internationally.
CHOICE
Coalition of Hospices Organized to Investigate Comparative Effectiveness

David Casarett MD MA
Professor of Medicine
University of Pennsylvania
Director, Penn Hospice and Palliative Care
“We want a research network that…”

- Gives us input into research priorities.
- Minimizes or eliminates burdens on staff.
- Avoids intrusive recruitment of patients/families.
- Offers real time clinical/operations data
- Tells us how we’re doing (benchmarking)
“That’s just the way we do it”
Outline

❖ CHOICE overview and structure
❖ Benchmarking
  » Pain management
  » Staff visit frequency
❖ A learning healthcare system
The CHOICE mission:

- To define pathways for safe, effective, and efficient hospice care

www.choicehospices.org
CHOICE hospices (Phase I)

- Suncoast
- Hospice of the Bluegrass
- Mesilla Valley
- Community Hospice of Texas
- Agrace Hospice
- Western Reserve
- Arbor Hospice
- Faith Presbyterian Hospice
- Hosparus
- Hospice and Community Care
- Hospice by the Bay
- Hospice of Austin
CHOICE dataset

- N=164,314
- 5 years of data from 12 hospices
- Geography: Midwest, Northeast, West, Southeast
- Size: average daily census range 200-2,000
How CHOICE works:

University of Pennsylvania analyzes merged data, identified by linking code.*

Solutions merges FEHC and EHR data and replaces unique identifier with a code.

CHOICE hospices contribute FEHC data and EHR data with unique EHR identifier.

Data analysis (Data with indirect identifiers—codes)

FEHC data for merge

EHR data for merge

Family Evaluation of Hospice Care data
Clinical data
Outcomes/survival
Site of care
Quality indicators

*Codes remain on hospice server
CHOICE projects so far (selected)

- Which patients are likely to need inpatient care?
- Which patients will need the most visits?
- Does continuous care reduce the likelihood of an inpatient death?
- Do advance directives change the trajectory of hospice care and site of death?
- What factors help patients to die in the setting of their choice?
- Which patients are likely to ‘fail’ the #0209 (comfortable dying) measure?
- Which patients are likely to die in <1 week?
What we’ve learned

- We can extract data reliably from Solutions hospices
- We can develop accurate predictive models that predict important events (inpatient care, visits, site of death, mortality)
- We can identify and adjust for patient characteristics that influence key outcomes to create meaningful benchmarks
  - Comfortable dying scores
  - Visits
Not just benchmarks…

- **Meaningful benchmarks**
  - Patient-level data
  - Comparisons among similar populations

- **Two areas:**
  - Operations/cost
  - Clinical outcomes

- **Aggregate benchmarks (whole hospice/all patients)** are easy…and misleading
What my CFO tells me:

“At the hospice I used to work for, nurses did 5 visits/day. Ours only do 3.9. We need to be more efficient.”

Really? Are we “less efficient” or are we taking care of different patients?
Hospice visit frequency is associated with patient characteristics

All Hospice Patients Are Not Equal:
Development of a Visit-Based Acuity Index

Joan Harrold, MD, Elena Byhoff, MD, Pamela Harris, MD, Robertina Szolarova, RN, MS,
Laura Bender, BA, Teresa Craig, CPA, and David Casarett, MD, MA
Meaningful benchmarks: Visits

- Hospice A has more visits/day on average than hospice B (1.12 vs. 0.94/day)
- Hospice B seems to be less efficient
- But:
  - Even though Hospice A has more visits, those patients are younger, with lower PPS scores, shorter prognosis, and more likely to have IV opioids at the time of referral. (These patients generally get more visits)
- Adjusted visits: Hospice A is actually lower than Hospice B (0.99 vs. 1.10)
What my CEO tells me:

“At the hospice I consult for, the average comfortable dying score is 85%.* We need to do better.”

Really? Do we need to “do better” or are we taking care of different patients?

*Proportion of patients with pain that makes them uncomfortable on admission, whose pain is controlled within 48 hours. (National Quality Forum; #0209)
Comfortable dying (#0209) scores are associated with patient characteristics.

The “Comfortable Dying” Measure: How Patient Characteristics Affect Hospice Pain Management Quality Scores

Lauren Kelly, MS¹, Laura Bender, BA¹, Pamela Harris, MD,² and David Casarett, MD, MA³
Meaningful benchmarks: Pain scores (#0209 measure)

- Hospice A has worse scores on average than hospice B (63% vs. 75%)
- Actually Hospice A does better at pain management
  - Even though Hospice A has worse scores, those patients are younger, less likely to have spouse caregivers, and more likely to have cancer
  - Adjusted scores: Hospice A actually has better than Hospice B (74% vs. 66%)
Goal: **Maintain** research, **add** benchmarking
CHOICE phase II

- Open to all software clients
- No cost
- Advantages:
  - Builds a large benchmarking network
  - Makes meaningful comparisons possible
    - By type of hospice
    - By type of patient
Benchmarking priorities (draft)

- Hospice information set items
- Hospice visits
- (Cost/day)
- ER visits
- Revocation rates
- Use of continuous care at the time of death
- Delay from referral to admission
- Evening/weekend calls and emergent visits
How CHOICE benchmarking works

De-identified and compiled

University of Pennsylvania; Analysis

Added value/reports
- Benchmarks
- Trends

Data

CHOICE hospices
What hospices will see

- Reports in EMR
- User-run (any time)
- Reports include:
  - My hospice’s data
  - Community means, medians, and percentiles
  - Overall, and for patient subgroups
One example (#0209 measure: Pain control in 48 hours)

- Your average: 65%
- Mean (150 hospices): 76%
- Subgroups (your score vs. mean; # of patients)
  - Cancer: 66% vs. 64% (n=3,609)
  - Heart failure: 75% vs. 74% (n=1,132)
  - Parkinsons: 74% vs. 73% (n=323)
- Conclusion:
  - Scores are in line with other hospices
  - But: High proportion of patients with cancer is decreasing hospice score
CHOICE: A “learning healthcare system”

- Natural variations in care
- Measure changes in care
- Tools/Training/Triggers
- What is best?

- “Background” data collection
- Patient-level data
- Sophisticated analysis
- Speed/rapid turnaround
Identifying best practices

“The future is here now. It’s just not very evenly distributed.”

-William Gibson
Developing a palliative care currency

Dilwyn Sheers
Palliative Care Funding Team
NHS England

October 2014
Overview

- Background
- Analytical approach
- Data collection
- Testing the data
- Defining the currency
- The currency units
Background

- In summer 2010, the independent Palliative Care Funding Review set up to make recommendations for a new palliative care funding system.

- In July 2011 the Review published its final report, which set out a series of recommendations to create a fair and transparent funding system for palliative care.

- A key recommendation was to set up a pilots to collect the data needed to understand which criteria best predict patient needs and drive costs in order to develop a currency.

Consistently defined way of grouping healthcare into units that are clinically similar and have broadly similar resource needs.
The Palliative Care Funding Pilots

- Seven adult pilot sites and four children sites started data collection in autumn 2012
- Pilots covered both NHS and voluntary providers and inpatient and community settings
- Each organisation collected detailed data on complexity of patient need, resource use and costs
- Data collection was completed in May 2014 and totalled 10,000 adult spells and over 2,000 children spells
Timeline

- Palliative Care Funding Review recommendations (July 2011)
- Palliative Care Funding Pilots
  - Data collection
- Data analysis
  - Design currency
- Consultation (23 Oct – 22 Nov)
- Publish a second draft (December)
- Further testing in 2015/16

Aim is to have robust mandated currency for 2017/18
Currency design: Analytical Approach

1. Data collection & quality checks
2. Testing the data: Are findings clinically meaningful?
3. Defining the currency: Methodology, Challenges
4. The currency units
Data collection: phase of illness

- **Phase of illness** – clinical assessment of a patient’s condition using a casemix classification for palliative care, adapted from Australia, describing four distinct phases: *stable, unstable, deteriorating and dying*. Pilot sites collected data for each phase of illness.

- **Palliative Care Spell** – the period of contact between a patient and provider in one setting. Patients may have multiple phases within a spell, moving to a new phase of illness when a clinical decision is made that the patient’s condition has changed.
## Data collection: variables

Over 100 data items collected for each phase of care

### Patient characteristics
- Age
- Gender
- Ethnicity
- Postcode (4 digits)
- Living circumstances
- Carer availability

### Case-mix information
- Primary diagnosis
- Other diagnoses
- Phase of illness
- **Functional status**
- Dependency score (IP only)
- **Physical severity score**
- Other severity score

### Resource use and costs
- Activity by professional group
- Test & imaging costs
- Costs by professional group
- Total direct costs for phase
- Total indirect costs for phase
- Total corporate costs for phase

### Administrative data
- Patient ID
- Provider ID
- Care Setting
- Unique phase ID
- Spell start & end date
- Phase start & end date
- Discharge destination
Data collection: Feedback

Pilot sites have reported that collecting data has:

- Improved understanding of patient needs and outcomes
- Improved understanding of caseload and care pathways
- Supported patient risk stratification and predicted need
- Enabled early identification of transition points & phase changes
- Allowed monitoring of patient care across different services and settings
Data collection: Quality assurance

Data collection from autumn 2012 – March 2014. Quality and validity checks undertaken throughout. Included:

• Monthly pilot sites meetings - before and during data collection

• Clinical sense checks – multi-disciplinary meetings to test consistency of interpreting phase of illness using case studies

• Feedback reports to each pilot site

• Technical Working Group - provided expert technical advice to support data analysis and currency design
Testing the data

Are findings from the data broadly consistent with what would be expected (given existing knowledge on palliative care epidemiology)?

For example:

• Does analysis of case-mix data produce clinically meaningful results?

• Has ‘phase of illness’ been interpreted consistently?

• Does ‘phase of illness’ discriminate between differences in palliative care need?

• Is there evidence of differing interpretation of some variables?
Phase of illness & Provider Category

Adults

![Bar chart showing the percentage of phases for different types of providers.](chart.png)
Phase of illness & Provider Category

Children

- **Stable**
- **Unstable**
- **Deteriorating**
- **Dying**

**Percentage of phases**

<table>
<thead>
<tr>
<th>Type of provider</th>
<th>Acute inpatient</th>
<th>Hospice inpatient</th>
<th>Community</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stable</td>
<td>50%</td>
<td>60%</td>
<td>60%</td>
</tr>
<tr>
<td>Unstable</td>
<td>40%</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Deteriorating</td>
<td>30%</td>
<td>40%</td>
<td>40%</td>
</tr>
<tr>
<td>Dying</td>
<td>20%</td>
<td>30%</td>
<td>30%</td>
</tr>
</tbody>
</table>

www.england.nhs.uk
Adults Inpatients: Functional status by phase

Has ‘phase of illness’ been interpreted consistently across providers and pilot sites?
Adult Community: Functional status by phase

Has ‘phase of illness’ been interpreted consistently across providers and pilot sites?
Adults: Functional status distributions by provider category

How well does ‘phase of illness’ differentiate palliative care need?
Children: Physical severity by care setting

How well does ‘phase of illness’ differentiate palliative care need?

**Children Inpatients**

**Children Community**

![Graph showing cumulative phases (%)](image)

Combined physical severity score
The fall in functional status between ‘unstable’ and ‘deteriorating’ may be an important marker for the transition between these two phases.
Adults: Mean physical severity score by phase

Mean functional status and interquartile range by phase of illness

‘Stable’ phases, with a comparatively low average physical severity score, are distinct from other phases of illness.
Defining the currency (1)

Aim
To develop a palliative care currency for adults and children using criteria which best predict patient needs and drive costs

Method
• Regression analysis to identify cost drivers, using direct cost per day and direct cost per phase as dependant variables
• Independent variables were patient attribute and casemix data and provider characteristics that were measurable, consistently reported and demonstrated to be predictive of cost
• Potential grouping of variables for currency units tested iteratively using regression approaches and descriptive statistics
Defining the currency (2)

Design rules

• As far as possible, currency units will reflect variations in the complexity of palliative care need, rather than provider type.

• The currency should minimise direct cost variation within each unit and maximise direct cost variation between units.

• Variables used to define each currency unit need to be measurable, clearly defined and clinically meaningful.

• The set of variables used to derive currency units are as consistent as possible across different types of provider to facilitate the development of a single minimum dataset for palliative care.

• Within each provider category (e.g. adult acute inpatient or adult community), the variation in cost ratios for currency units is similar across providers, irrespective of differences in service models and ways of working.
Defining the currency (3)

Challenges

• Large variation in direct cost profiles across providers in pilot sites

• Differing models of care, shared care arrangements – how best to categorise types of provider and different services?

• What is the most appropriate funding model? Costs per diem or per phase? Or a combination of the two?
## Defining the currency (4)

### Results (summary)

- Currency units identified for three provider categories: *acute inpatient, hospice inpatient* and *community*
- ‘Phase of illness’ was predictive of direct costs for both adults and children
- ‘Functional status’ also important predictor for adults and ‘age’ for children

<table>
<thead>
<tr>
<th>Provider Category</th>
<th>No. of currency units</th>
<th>Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ADULTS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute Inpatient</td>
<td>10</td>
<td>Phase of illness, no. of diagnoses, age</td>
</tr>
<tr>
<td>Hospice Inpatient</td>
<td>8</td>
<td>Phase of illness, functional status</td>
</tr>
<tr>
<td>Community</td>
<td>10</td>
<td>Phase of illness, functional status</td>
</tr>
<tr>
<td><strong>CHILDREN</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute Inpatient</td>
<td>8</td>
<td>Phase of illness, age</td>
</tr>
<tr>
<td>Hospice Inpatient</td>
<td>8</td>
<td>Phase of illness, age</td>
</tr>
<tr>
<td>Community</td>
<td>12</td>
<td>Phase of illness, age, physical severity</td>
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</table>
# Adult Currency Units

## Acute Inpatients

<table>
<thead>
<tr>
<th>Currency unit</th>
<th>Phase</th>
<th>No. of diagnoses</th>
<th>Age group</th>
</tr>
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<tbody>
<tr>
<td>AW_1</td>
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<td>1</td>
<td></td>
</tr>
<tr>
<td>AW_2</td>
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<td>2+</td>
<td>&lt;75 years</td>
</tr>
<tr>
<td>AW_3</td>
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<td>75+ years</td>
</tr>
<tr>
<td>AW_4</td>
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</tr>
<tr>
<td>AW_5</td>
<td>Unstable</td>
<td>2+</td>
<td></td>
</tr>
<tr>
<td>AW_6</td>
<td>Deteriorating</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>AW_7</td>
<td>Deteriorating</td>
<td>2+</td>
<td>&lt;75 years</td>
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<td>AW_8</td>
<td>Deteriorating</td>
<td>2+</td>
<td>75+ years</td>
</tr>
<tr>
<td>AW_9</td>
<td>Dying</td>
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</tr>
<tr>
<td>AW_10</td>
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</table>

![Indicative cost weight chart](chart.png)

**Note:** Per phase cost weights
## Adult Currency Units
### Hospice Inpatients

<table>
<thead>
<tr>
<th>Currency unit</th>
<th>Phase</th>
<th>Functional status</th>
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<tbody>
<tr>
<td>AH_1</td>
<td>Stable</td>
<td>Low function</td>
</tr>
<tr>
<td>AH_2</td>
<td>Stable</td>
<td>Med/high function</td>
</tr>
<tr>
<td>AH_3</td>
<td>Unstable</td>
<td>Low function</td>
</tr>
<tr>
<td>AH_4</td>
<td>Unstable</td>
<td>Med/high function</td>
</tr>
<tr>
<td>AH_5</td>
<td>Deter’ting</td>
<td>Low function</td>
</tr>
<tr>
<td>AH_6</td>
<td>Deter’ting</td>
<td>Med/high function</td>
</tr>
<tr>
<td>AH_7</td>
<td>Dying</td>
<td>Low function</td>
</tr>
<tr>
<td>AH_8</td>
<td>Dying</td>
<td>Med/high function</td>
</tr>
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</table>

### Indicative cost weights

-1.0  -0.5  0.0  0.5  1.0

<table>
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<th>Cost weight</th>
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**Note:** Per phase cost weights
# Adult Currency Units

## Community

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<thead>
<tr>
<th>Currency unit</th>
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<td>Med function</td>
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<td>AC_7</td>
<td>Deter'ing</td>
<td>Low function</td>
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### Indicative cost weight

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Note: *Per diem* cost weights
# Children Currency Units

## Acute Inpatients

<table>
<thead>
<tr>
<th>Currency unit</th>
<th>Age group</th>
<th>Phase</th>
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</thead>
<tbody>
<tr>
<td>CW_1</td>
<td>&lt;1</td>
<td></td>
</tr>
<tr>
<td>CW_2</td>
<td>1-4</td>
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</tr>
<tr>
<td>CW_3</td>
<td>5-9</td>
<td>Stable</td>
</tr>
<tr>
<td>CW_4</td>
<td>5-9</td>
<td>Unstable</td>
</tr>
<tr>
<td>CW_5</td>
<td>5-9</td>
<td>Det/dying</td>
</tr>
<tr>
<td>CW_6</td>
<td>10+</td>
<td>Stable</td>
</tr>
<tr>
<td>CW_7</td>
<td>10+</td>
<td>Unstable</td>
</tr>
<tr>
<td>CW_8</td>
<td>10+</td>
<td>Det/dying</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indicative cost weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1.0</td>
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</table>

Note: *Per phase* cost weights
### Children Currency Units

#### Children Hospice Inpatients

<table>
<thead>
<tr>
<th>Currency unit</th>
<th>Age group</th>
<th>Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH_1</td>
<td>&lt;1</td>
<td></td>
</tr>
<tr>
<td>CH_2</td>
<td>1-4</td>
<td></td>
</tr>
<tr>
<td>CH_3</td>
<td>5-9</td>
<td>Stable</td>
</tr>
<tr>
<td>CH_4</td>
<td>5-9</td>
<td>Unstable</td>
</tr>
<tr>
<td>CH_5</td>
<td>5-9</td>
<td>Det/dying</td>
</tr>
<tr>
<td>CH_6</td>
<td>10+</td>
<td>Stable</td>
</tr>
<tr>
<td>CH_7</td>
<td>10+</td>
<td>Unstable</td>
</tr>
<tr>
<td>CH_8</td>
<td>10+</td>
<td>Det/dying</td>
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</tbody>
</table>

#### Indicative cost weight

Note: *Per phase* cost weights
# Children Currency Units

## Community

<table>
<thead>
<tr>
<th>Currency unit</th>
<th>Phase</th>
<th>Age group/other</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC_1</td>
<td>Stable</td>
<td>Low phy severity</td>
</tr>
<tr>
<td>CC_2</td>
<td>Stable</td>
<td>Med/high phy severity</td>
</tr>
<tr>
<td>CC_3</td>
<td>Unstable</td>
<td>&lt;1</td>
</tr>
<tr>
<td>CC_4</td>
<td>Unstable</td>
<td>1-4</td>
</tr>
<tr>
<td>CC_5</td>
<td>Unstable</td>
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<td>10+</td>
</tr>
<tr>
<td>CC_7</td>
<td>Deter'ting</td>
<td>&lt;1</td>
</tr>
<tr>
<td>CC_8</td>
<td>Deter'ting</td>
<td>1-4</td>
</tr>
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</tr>
<tr>
<td>CC_12</td>
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Note: Per diem cost weights
Any questions?