Resource Allocation Formula for 2020/21

Introduction

The current formula, the "Townsend" direct needs formula, has been in use since 2003. In 2019/20 the formula was used to distribute discretionary hospital & community healthcare services allocation (HCHS) growth funding £137m – this equates to 2.1% of the total £6.6b allocation issued in the main allocation letter.

The "Townsend" direct needs formula has not been updated since 2014, and cannot be updated, as the main data source, the Welsh Health Survey has been replaced by the National Survey for Wales and changes mean that it is no longer suitable. In addition to the fundamental gap on the main data source to feed into the formula there were other concerns with the formula regarding variation, between survey samples, as well as capability to handle population changes, particularly relative changes. Accordingly a new needs based population formula is required.

Background

During 2018 and 2019, the Technical Advisory Group (TAG), jointly chaired by the Chief Medical Officer and Health and Social Services Group Director of Finance, has made significant progress in developing a new population needs based formula to support the equitable distribution of Discretionary Hospital, Community and Health Services and Prescribing (HCHS&P) growth allocation in 2020-21.

TAG membership include:

- Chief Medical Officer
- HSS Director of Finance
- Chair, HEIW
- DoF, Powys LHB
- Health Economist, Bangor University
- Programme Director, HSS Finance
- Head of Health, Social Services and Population Statistics, Knowledge and Analytical Services (KAS)

This report

- summarises the progress to date with the immediate priority for the Resource Allocation Review programme,
- details the work undertaken, and recommendations, on new needs based population formula to support the equitable distribution of Discretionary Hospital, Community and Health Services and Prescribing (HCHS&P) growth allocation in 2020-21.
- highlights key priorities to be considered in the next phase of the Resource Allocation Review programme

Resource Allocation Review Programme Priorities

TAG initially focused on the immediate programme priority, that is:

- to develop a new needs based population formula to replace the current "Townsend" direct needs formula, to support the equitable distribution of Discretionary Hospital, Community and Health Services and Prescribing (HCHS&P) growth allocation in 2020/21 & beyond

This addresses the commitment given to the Public Accounts Committee in July 2019

> "By the summer 2019 the Group will have developed, tested and engaged on a new population needs based weighted formula to distribute Discretionary Hospital, Community and Health Services and Prescribing (HCHS&P) growth allocation in 2020-21. This will be detailed in the published 2020-21 HSS MEG spending plans produced as part of the Welsh Government Budget 2020-21."

Within this immediate priority the work has been based on data for the 22 Local Authorities (LA) to develop a formula that Health Boards can use, at a sub health board level, both at the 22 LA level and the 64 primary care cluster level, to support their requirement to focus on population health through linking resource allocation, resource consumption and outcomes achieved across their communities.

TAG are clear that, post this immediate priority for 2020/21, the future programme includes:

- to consider Target Formula and Distance from Target - an area of great interest and sensitivity given that Local Health Boards may have views depending on whether they would "gain" or "lose".
- to review and develop the scope of the formula to cover non HCHS&P resources – e.g. GMS, GDS etc.
- review of ring-fencing of allocations within integrated health organisations;
- aligning allocations and the formula around the key strategic objective to shift resources in line with the value-based healthcare agenda and towards earlier prevention and treatment;
- to develop an ongoing NHS Resource Allocation Review programme to maintain, update and further develop the formula to reflect latest evidence, population needs, financial and allocation data

This is in line with another commitment given to the Public Accounts Committee in July 2019:

"Following completion of the immediate priority for a formula to distribute growth allocation in 2020-21 the Group will continue with the Resource Allocation Review programme, to include distance from target assessment, evaluating potential application on other allocations, for example primary care allocations and ring fenced allocations, as well as use of formula to support key strategic objective to shift resources in line with the value-based healthcare agenda and towards earlier prevention and treatment.

Principles & Aims

Underlying the work has been key principles and aims:

- The formula would need to be transparent, simple to maintain and to update, and based on available, accurate and consistent population, needs and financial information.
- The aim would be for the formula to operate on a number of population levels:
    - 7 Local Health Boards
    - 22 Local Authority / Public Services Boards boundaries
    - 64 Locality Networks / Primary Care Clusters
- This will support LHBs, RPBs, PSBs and Clusters to internally review, challenge and prioritise spends against the needs of their respective population sub groups and localities. This approach, at sub LHB level, supports Townsend's recommendations of targeting funding at areas of greatest need through a revised focus on improving the allocation of resources within Health Boards.

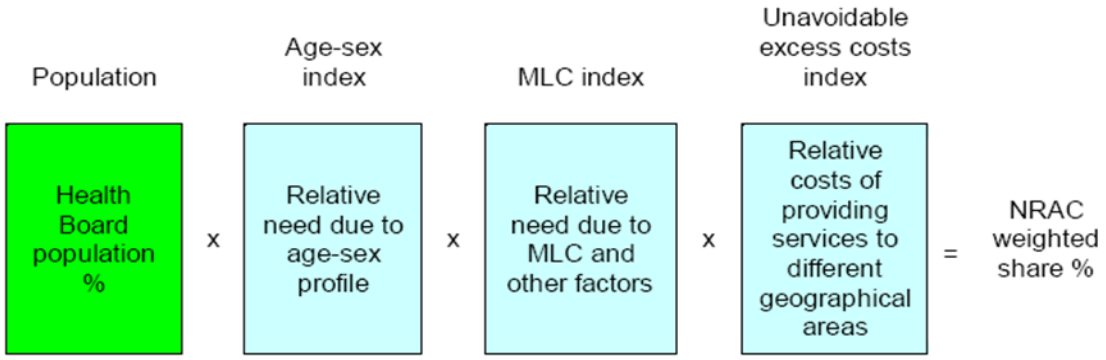
Formula for 2020/21 Growth Allocation

The group initially reviewed and considered formulas used in other countries – recognising a number of common features in most formulas, such as population, demography, additional needs and excess cost, while there were also non universal features such as rurality, ethnicity and market forces that were unique to those individual countries. Following a review of those various formulas TAG have endorsed a recommendation to develop a formula based on the Scottish NHS formula. There were a number of reasons for the recommendation, including

- Wales and Scotland have a similar system of integrated health boards (with broadly similar mix of population and geographical characteristics)
- Their formula is built up from smaller geographical units and is aggregated to health board level – this supports our aim to develop a formula that operates on a number of population levels (LHBs, LAs & PCCs)
- The Scottish formula is both transparent and modular – this allows both a clear transparent structure while at the same time allows flexibility to modify formula components to reflect welsh data, or equivalent, and any issues unique to Wales
- The Scottish formula is well established and developed

The four elements of the Scottish formula are:

- Population
- Age/Sex adjustment
- Morbidity and Life Circumstances adjustment (often referred to as MLC) – accounts for additional needs of the population over and above those due to age and sex
- Unavoidable Excess Costs of Supply adjustment (often referred to as Excess Costs) – accounts for unavoidable additional costs of delivering services due to remoteness and rurality.



Following a successful high level testing of the Scottish Resource Allocation formula the Group developed and tested the formula, elements and components of the formula, in detail. The formula that has been developed is an evidenced based, transparent and modular formula, based on available, accurate and consistent population, needs and financial information. The weighted formula, to apply to the discretionary HCHS&P growth allocation, is based on care programmes elements weighted using the All Wales Costing Returns:

- Acute Healthcare Services (72.0%)
- Community Healthcare Services (13.5%)
- Maternity Services (3.3%)
- GP Prescribing (11.1%)

Scotland also has components for

- Mental health. This was not considered for inclusion due to the mental health ring-fence
- Care of the Elderly. This was not considered for inclusion either due to the costing returns which cannot be broken down for this category

Each element is then made up of the following modular components:

- Population – the primary component of the formula
- Demographic weighting – age/sex weighting reflecting the differing cost by age and sex

- Additional Needs - the factors that predict the need for healthcare over and above age and sex (eg higher morbidity)
- Unavoidable excess costs – for example the costs of supplying healthcare in remote and rural areas

Using the Acute element (72.0%) the following sets out how the components are developed:

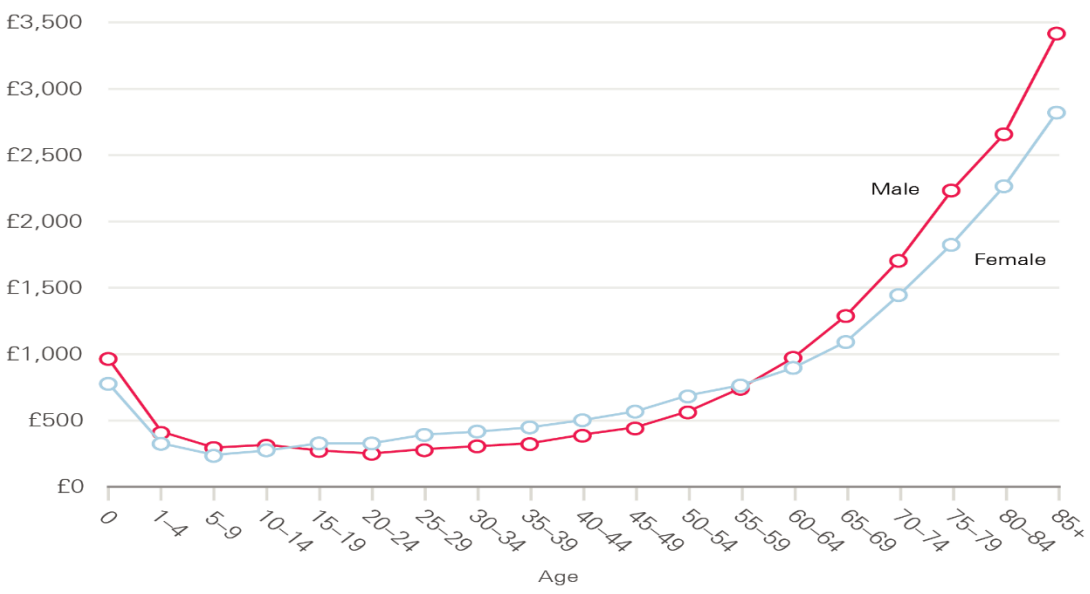
- Population

  The initial work was based on published 2017 population estimates

- Demographic Weighting

  For the acute component this is based on the work underpinning the Health Foundation 2016 report "The path to sustainability"

Average annual cost by age and sex 2014/15



Source: ONS

- Additional Needs

  A number of potential needs measures were considered and developed into individual indices as detailed in Annex A. In view of the choice of measures the Group considered the approach within the Scottish formula where a combination of measures were used:

  - all-cause standardised mortality rate (SMR) ages 0-74 and
  - limiting long-term illness rate (age-sex standardised)

These measures had been used in Scotland since 2009 and subsequently reviewed and compared again with alternatives in 2016 and concluded:

> "The selection process led to a conclusion that the best option for the Acute MLC index remains the two-variable option selected in the 2007 NHS Scotland Resource Allocation Committee (NRAC) review"

These two measures have been combined into the recommended formula.

- Excess Cost

  For the acute element there was no clear evidence of excess cost to build into the population based formula, but the group recognised that this may need to be considered in the future programme when Target Allocations and Distance from Target are assessed.

A similar approach in populating the components was then undertaken for the following elements:

- Community Healthcare Services (13.5%)

  Excess cost was considered and included within this element as set out in the rurality section of this paper.

- Maternity Services (3.3%)

  Alternatives considered to the house price as a measure of deprivation, as used in Scotland, included data on smoking and obesity prevalence for pregnant women, in addition further consideration was given to low birth weight. Group agreed to use low birth weight alongside birth rates, not the smoking and obesity indicators, as the additional needs components.

- GP Prescribing (11.1%)

However the Group noted the lack of Welsh data for some components. In this case the equivalent Scottish data was used as a proxy. For example while the age/sex weighting could be derived for the acute element this is not currently available for the other three elements. In this case the acute age/sex weighting for Wales and Scotland were compared and as there was a close fit it was reasonable to then use the Scottish age/sex weightings for the other elements. The Group recognise that developing age/sex weighting for other three elements will need to be undertaken for future formula updates.

During the development of the formula the group have considered a number of issues, both to improve the formula but, more importantly, to test and validate against key issues.

- Outcomes

  Outcome measures used by the Commonwealth Fund were evaluated to assess whether an Outcome component could be built into the formula. Unfortunately data limitations including data not available at All Wales level and/or data based on small numbers so potentially unreliable at a local authority level meant that this could not be taken forward at this stage.

  The Group agreed that outcomes will be considered within future programme priorities.

- Deprivation

  The use of Welsh Index of Multiple Deprivation (WIMD) data was considered to generate relative indices for each of the local authorities. However this was not taken forward due to the width of the relativity of the local authorities and the potential impact that would have on allocations.

- Additional Needs & Deprivation

  To provide assurances that the formula is adequately reflecting and taking account of deprivation further testing of the formula model at a small area level Lower Super Output Area (LSOA) was undertaken to assess how the formula is working for the more deprived areas. Testing provided assurance that the Additional Needs index of the formulae was indeed capturing deprivation and therefore no further adjustment or factors were required for the acute component.

- Rurality

  Rurality, particularly the excess cost, was built into the community element of the old Townsend direct needs formula. It is also built into both the Scottish and English formula. However, as highlighted in the Nuffield Trust report "Impact of Rurality on the Costs of Delivering Health Care", the evidence on unavoidable excess cost

  > "The research evidence on this is mixed: some sources suggest that these unavoidable costs are either minimal or non-existent, while others suggest varying degrees of unavoidable costs in certain contexts."

  While the evidence is not compelling the Group agreed that further work was required, in the future work programme, before discounting rurality from the formula. This was a pragmatic decision given that inclusion would only apply to part of the community element and was unlikely to materially impact on overall results of the formula. The Group were also mindful that rurality was still included in the Scottish and English formula even though evidence was weak. It should be noted that within the Scottish formula rurality is reflected by the premium paid to staff in the Highlands and Islands and the out of hours adjustment that exists in Scotland for very rural areas. In Wales we have neither of those.

External Advice

As part of the Resource Allocation Review programme external advice was commissioned and PA Consulting were appointed following open competition. Their immediate priority, under Part 1, of the contract was to:

- Review the formula development work to date and to provide assurance on its validity for use as distributive formula for growth in 2020/21
- Undertake on behalf of TAG "deep dives" on specific key issues

The agreed deep dives included:

- The data sources used to capture the population;
- The weight of the additional needs index; and
- The potential evidence around whether the costs of delivering community services are higher in rural settings.

Following the deep dives the Group have endorsed the following for inclusion in the formula to distribute growth in 2020/21:

- Population - to mirror the Scottish method with rescales the latest mid-year estimates to the population projections for the allocation year
- Additional Needs - combining ASMR & LLTI equally (50:50)
- Weighting Additional Needs – to include within a formula based on 0.6 weighting relative to costs (i.e. the additional needs element will have a lesser effect on the allocations than costs)

The latter issue was a key issue for Group consideration as the results could have a material impact on the distribution percentages. Five options were considered, including weightings of 1, 0.8, 0.6, 0.5 & 0.4, focusing on the evidence base and then validating against both Scotland and also England, as well as validating against WIMD as per previous validation. On the basis of evidence and validations the Group recommended a 0.6 weighting.

For the review and assurance element of the Part 1 report the conclusions, in summary, were:

- The Scottish formula is reasonable basis for developing the Growth Formula, but should be further considered in the wider review.
- The Growth Formula is an appropriate means to allocate growth money in 20/21.
- TAG has developed an evidence base to underpin the Growth Formula.
- A number of recommendations have been actioned to improve the formula.

The Part 1 report also suggested next steps were:

- In the short run, reach agreement with TAG and action outstanding work in the deep dive areas – e.g. around LLTI and ASMR;

- Developing Part 2, focussed on reconsidering more fully the overall methodology used to allocate funding post 2020/21;
- Developing the age-sex cost curves for each of the four Programmes of Care;
- Exploring drivers of healthcare costs more widely;
- Considering supply side factors; and
- Exploring the impact of multiple co-morbidity on additional needs.

Engagement

A key element of the Resource Allocation Review programme has been, and will continue to be, engagement with key stakeholders. This has included briefing to Minister, formal agenda item for the Minister's meeting with Chairs and Chief Executives as well as presentations to the following groups:

- HSS Executive Directors Team
- Directors of Finance
- HSS Deputy Directors
- Finance Delivery Unit
- Wales Audit Office
- Directors of Public Health
- DoPHs representatives
- Directors of Planning
- Deputy Directors of Finance
- Chairs
- Chief Executives

Formula Results & Recommendations

Based on the work undertaken by TAG and supplemented by the PA Consulting "deep dives" the following table summarises the overall results of the proposed formula:

Health Boards	Crude Population	Crude Population Shares	Final Index	Weighted Population Shares
Aneurin Bevan	593,147	18.795%	1.008	18.937%
Betsi Cadwaladr	701,607	22.232%	1.001	22.252%
Cardiff and Vale	503,456	15.953%	0.922	14.709%
Cwm Taf Morgannwg	447,029	14.165%	1.045	14.809%
Hywel Dda	386,933	12.261%	1.019	12.491%
Powys	132,039	4.184%	0.993	4.153%
Swansea Bay	391,660	12.411%	1.019	12.650%

Full details of the formula, elements and components are attached as Annex B (in a separate spreadsheet). A clear intent from the outset has been to support local health boards to use the formula to support their requirement to focus on population health. This would include linking resource allocation, resource consumption and outcomes and we will be making available the data at a 22 LA and 64 cluster level to support LHBS'.

Based on the results, and also the reassurance provided, **the Technical Advisory Group recommend that the formula be used to distribute Discretionary Hospital, Community and Health Services and Prescribing (HCHS&P) allocation in 2020-21**.

Future Resource Allocation Review Programme Priorities

TAG are currently considering the future work programme, priorities and timelines in line with the stated high level programme priorities of:

- to consider Target Formula and Distance from Target - an area of great interest and sensitivity given that Local Health Boards may have views depending on whether they would "gain" or "lose".
- to review and develop the scope of the formula to cover non HCHS&P resources – e.g. GMS, GDS etc.
- review of ring-fencing of allocations within integrated health organisations;
- aligning allocations and the formula around the key strategic objective to shift resources in line with the value-based healthcare agenda and towards earlier prevention and treatment;
- to develop an ongoing NHS Resource Allocation Review programme to maintain, update and further develop the formula to reflect latest evidence, population needs, financial and allocation data

October 2019

Annex A

Potential Acute Component Additional Needs Measures that could be included

Measure	Description	Source	Notes
Age Standardised Mortality rate	Death rate adjusted for the distribution of the population in each area. Those aged under 75 only.	ONS	Doesn't cover those aged 75 or over. Can be derived at a small area level.
All cause death rate	Death rate adjusted for the distribution of the population in each area. All ages.	ONS	Can be derived at a small area level.
Long Term Limiting Illness	The proportion of people in each area reporting they have a LLTI	National Survey	Survey based, so likely to be volatile. Not possible at a small area.
Long Term Limiting Illness (census)	The proportion of people in each area reporting they have a LLTI	Census	Robust, but only every 10 years. Can be derived at a small area level.
Years of Life Lost	The number of years lost from premature death (<75)	PHW	Will be weighted more towards the young as death in early ages would weight this more. Not possible at a small area level unless many years are rolled together..
Cancer Incidence Rate	The rate of incidence of cancer in each area	WCISU	Can be derived at a small area level.
Low weight single births	The proportion of single births born less than 2.5Kg	NCCHD	Not clear evidence it is a needs measure for the acute component. Low Birth Weight may reflect some other factors though such as smoking. Can be derived at a small area level.
Avoidable Mortality	Deaths that are either preventable or amenable (NB: some are both)	ONS	Only applies for those aged <75 (except injuries (mostly)). Not possible at a small area level unless many years used.
Amenable Mortality	Deaths that could be avoided through timely and effective healthcare	ONS	As avoidable mortality.
Preventable Mortality	Deaths that could be avoided through public health interventions	ONS	As avoidable mortality

Potential measures for the Acute Component that were considered for inclusion as additional needs indicators

	Age Standardised Mortality rate	All cause death rate	Long Term Limiting Illness	Long Term Limiting Illness (census)	Years of Life Lost	Cancer incidence rate	Low weight single births	Avoidable Mortality	Amenable Mortality	Prevantable Mortality
	2016	2017	2016/17	2001	2014-2016	2017	2017	2015-2017	2015-2017	2015-2017
Isle of Anglesey	1.04	0.95	0.90	0.98	1.09	0.98	1.02	0.90	0.90	0.89
Gwynedd	0.85	0.93	0.95	0.97	0.90	0.98	0.89	0.93	0.91	0.91
Conwy	0.96	0.92	1.00	0.98	1.14	0.97	0.96	1.02	0.99	1.02
Denbighshire	1.13	1.05	1.00	0.99	1.09	1.04	1.11	1.01	1.01	1.03
Flintshire	0.98	0.96	0.96	0.97	0.95	1.05	0.96	0.95	0.93	0.97
Wrexham	1.03	1.03	0.97	0.99	0.96	1.04	1.11	1.05	1.03	1.05
Powys	0.82	0.87	0.98	0.96	0.91	0.94	0.84	0.79	0.77	0.81
Ceredigion	0.87	0.85	0.96	0.98	0.88	0.88	0.82	0.86	0.87	0.86
Pembrokeshire	0.89	0.93	0.99	0.98	0.93	1.00	0.95	0.91	0.89	0.93
Carmarthenshire	0.97	1.01	1.05	1.01	1.00	0.98	0.96	0.98	0.98	1.01
Swansea	1.09	1.02	1.09	1.01	1.03	0.98	0.98	1.08	1.04	1.10
Neath Port Talbot	1.10	1.09	1.06	1.05	1.16	0.98	0.93	1.16	1.10	1.19
Bridgend	0.98	1.07	0.96	1.02	1.08	0.99	0.98	1.03	1.01	1.04
Vale of Glamorgan	0.81	0.93	0.98	0.97	0.95	1.01	0.85	0.81	0.77	0.79
Cardiff	1.01	0.98	0.98	0.99	0.84	1.01	0.95	0.99	1.02	0.96
Rhondda Cynon Taf	1.11	1.14	1.03	1.04	1.11	1.03	1.22	1.15	1.20	1.12
Merthyr Tydfil	1.12	1.12	1.02	1.06	1.25	1.07	1.20	1.20	1.20	1.17
Caerphilly	1.11	1.08	0.98	1.04	1.04	1.03	1.04	1.11	1.15	1.09
Blaenau Gwent	1.24	1.19	1.09	1.05	1.17	1.01	1.13	1.19	1.30	1.17
Torfaen	1.08	1.04	1.06	1.02	1.05	1.04	1.00	1.06	1.04	1.08
Monmouthshire	0.81	0.84	0.95	0.96	0.87	0.95	0.85	0.81	0.79	0.82
Newport	1.05	1.03	1.03	0.99	0.95	1.03	1.09	1.09	1.13	1.06