

UK Foundation Programme 2021

Review of Total Application Score and Algorithm

Purpose

The purpose of this paper is to explore the possibilities for review of the algorithm used to allocate trainees to the UK Foundation Programme (UKFP) in line with recommendation 9 of Health Education England's (HEE's) review of foundation training.

The implementation group would like to propose a change in the composition and weighting of the component parts of the application score, and two possible options for consideration by the national Recruitment Delivery Group (RDG) in regard to the algorithm. The intention is to ensure the aims of the recommendation are supported by seeking alternate ways of working to promote fill and retention in areas which typically experience workforce shortages.

In an addition to the recommendations and feedback from the review, the NHS Well-being Commission also includes a recommendation about making recruitment more 'humane'. The UKFPO has a responsibility to consider its processes in regard to the allocation of applicants to foundation training in the context of wider mental health agendas (<https://www.hee.nhs.uk/sites/default/files/documents/NHS%20%28HEE%29%20-%20Mental%20Wellbeing%20Commission%20Report.pdf>).

Recommendation 9

HEE will work with the relevant UK bodies to introduce and evaluate adaptations to specialty and foundation programme application and allocation processes to help address geographic variations in fill rates.

Current Delivery

Applicants for UKFP are given a total application score, which comprises their Educational Performance Measure (EPM) and Situational Judgement Test (SJT) score.

The EPM is made up of the academic decile score assigned by the applicants' graduating medical school (maximum of 43 points) and any points awarded for additional educational achievements (maximum of 7 points; 5 for degrees and 2 for publications).

Both component parts of the total application score are weighted equally and can attract a maximum of 50 points each (maximum total of 100 points).

All applicants are given a unique rank based on their total application score. Where there are tied score, the EPM decile score is used to break the tie in the first instance. If ties persist, the SJT score is then used to try and break the tie. Finally, if ties still exist, they are broken randomly by the system.

Applicants are allocated to foundation school places using a meritocratic algorithm. Applicants are then matched to specific groups and programmes using the same algorithm and their initial rank and preference information.

At present, applicants can apply for pre-allocation to a particular foundation school on the grounds of special circumstances if they have parental / guardian responsibilities, primary carer responsibilities, a medical condition(s) or unique circumstances.

Initial Recommendations

Research that has evaluated the validity of selection methods, and specifically whether the component parts of the application score were predictive of successful outcomes in foundation, suggests that the EPM decile demonstrates the most predictive validity when compared to the SJT score, and that additional educational achievements do not add any value to the selection methodology.¹

In light of these findings, the group would like to propose a number of suggestions in regard to the composition and weighting of the components parts of the application score.

- 1) Removal of additional educational achievements as an option for applicants to obtain extra points on their Foundation Programme (FP) application. This would also save a tremendous amount of resource across foundation and medical schools in terms of verifying evidence of additional achievements.
- 2) To adjust the weighting afforded to each of the existing component parts of the application score; EPM and SJT. Revise of the weighting for the EPM decile score and the SJT from 50:50 to 60:40.
- 3) With the removal of the score for additional educational achievements, it is recommended for the scale for the EPM decile score to be revised and for this to cover a wider spread of scores to allow for greater differentiation between applicants.

The suggestion would be for applicants to be awarded a score between 42 and 60 for the academic decile and for there to be a difference of two points between each decile, as per the table below: -

Decile	Points
1	60
2	58
3	56
4	54
5	52
6	50
7	48
8	46
9	44
10	42

Discussion / Recommendation

The implementation group considered a range of options intended to support the aims of the recommendation in line with wider political derivatives and research around the predictive value of the component parts of the current application score. The following two options were considered to be the most appropriate ways of seeking to bring about change to overcome some of the issues in regard to workforce planning and supporting the training system as a whole.

Option 1 – Switch from Meritocratic to First Preference Algorithm

An option would be to review the current method of allocation and to move away from allocating applicants in order of rank based on their application score and preference data using the meritocratic algorithm, and to employ a first preference algorithm intended to promote fill in undersubscribed areas.

¹ Smith DT, Tiffin PA Evaluating the validity of the selection measures used for the UK's foundation medical training programme: a national cohort study BMJ Open 2018;8:e021918. doi: 10.1136/bmjopen-2018-021918

The objective of the first preference algorithm is to maximise the number of first choice allocations, then subject to that, to maximise the number of second choice allocations, then the number of third choice allocations, and so on. This algorithm would consider foundation school preferences before actual application score. It is intended to find a globally optimal solution. This works extremely well when there are more vacancies than applicants. Whilst there are limitations, namely around the increase in the number applicants receiving a lower choice preference, and the potential for applicants to 'game' the system and increased anxiety, previous modelling work shows that foundation schools would have received a higher number and percentage of first preference allocations when running the first preference algorithm in previous years, thus supporting the intended outcomes of this recommendation.

Option 2 – Points Awarded for Preferencing Geographical Hotspots

The alternative to option 1 would be to continue using a meritocratic algorithm, but for there to be an option for points to be awarded to those applicants who preference geographical hotspots, i.e. regions that are identified as experiencing workforce challenges. This approach could be applied at foundation school level and / or when matching to hard to fill programmes within individual foundation schools.

The table below provides a comparison of competition ratios for each foundation school from 2016 to 2019. From 2018, applicants have had the option to amend their preference choices following the close of the application window until the point of primary list allocations.

Foundation School	2016	2017	2018	2019
East Anglia	0.65	0.47	0.66	0.63
Essex, Bedfordshire & Hertfordshire (EBH)	N / A	0.25	0.61	0.55
Leicestershire, Northamptonshire & Rutland (LNR)	0.75	0.54	0.85	0.80
North Central and East London	N / A	N / A	0.64	2.10
North Central Thames	1.62	3.48	N / A	N / A
North East Thames	1.02	1.64	N / A	N / A
North West London	3.25	2.65	2.46	3.10
North West of England	1.08	0.99	3.07	0.90
Northern	0.84	0.77	1.11	1.05
Northern Ireland	0.97	1.00	1.24	0.94
Oxford	1.48	0.99	0.95	0.59
Peninsula	0.98	0.77	1.11	1.56
Scotland	1.12	0.99	1.49	1.06
Severn	1.54	1.47	0.71	1.72
South Thames	1.06	0.95	1.12	0.92
Trent	0.71	0.75	1.10	0.67
Wales	0.93	0.84	0.90	0.79
Wessex	1.01	1.00	0.74	0.78
West Midlands Central	1.58	1.31	1.67	1.48
West Midlands North	0.46	0.32	0.52	0.72
West Midlands South	0.52	0.54	0.56	0.49
Yorkshire and Humber	0.90	0.90	0.96	1.03

The data shows that foundation schools in the East of England, Trent, Wales, West Midlands North and South are the least popular.

It is possible that different approaches to supporting trainees entering hard to fill areas may be suitable depending on the foundation school. Foundation schools that receive a high percentage of first preference allocations, may struggle to retain trainees based on the desirability of local allocations.

For example, Northern Foundation School has been identified as a geographical hotspot that typically struggles to recruit and retain doctors. However, competition ratios from previous application cycles show that the foundation school itself is actually quite popular. Analysis of the preference data also shows that Northern receives a high percentage of first preference allocations, i.e. applicants who preferenced the foundation school first. The issue therefore seems to be at programme level in this instance, whereas in the case of West Midlands South, for example, the foundation school itself would appear to be less desirable, and so support for allocations at school level might be helpful. There is also the issue of low scorers to consider, as data from other working groups (please see appendix 1) has shown that although some schools may be popular, a high proportion of applicants allocated are low scorers, who subsequently fail medical school final exams or struggle to obtain the right to work in the UK, thereby resulting in vacancies at foundation level or poor retention post-foundation.

The table below shows the percentage of applicants allocated to each foundation school who ranked the allocated foundation school first each year from 2016 to 2019.

Foundation School	First Preference Allocations – 2016	First Preference Allocations – 2017	First Preference Allocations – 2018	First Preference Allocations – 2019
East Anglia	50%	46%	50%	52%
Essex, Bedfordshire & Hertfordshire (EBH)	N / A	19%	37%	35%
Leicestershire, Northamptonshire & Rutland (LNR)	58%	53%	64%	65%
North Central and East London	N / A	N / A	97%	94%
North Central Thames	71%	100%	N / A	N / A
North East Thames	63%	62%	N / A	N / A
North West London	100%	87%	100%	100%
North West of England	88%	86%	93%	83%
Northern	80%	76%	77%	93%
Northern Ireland	90%	93%	97%	90%
Oxford	84%	70%	81%	61%
Peninsula	78%	69%	62%	77%
Scotland	96%	93%	93%	95%
Severn	97%	96%	84%	98%
South Thames	76%	64%	70%	65%
Trent	65%	73%	55%	65%
Wales	80%	80%	82%	73%
Wessex	78%	75%	56%	60%
West Midlands Central	92%	82%	93%	89%
West Midlands North	42%	32%	48%	66%
West Midlands South	46%	53%	47%	45%
Yorkshire and Humber	78%	85%	83%	93%

The data above shows that a low proportion of applicants allocated to the East of England, Leicestershire, Northamptonshire & Rutland (LNR) and West Midlands North and South preferenced their allocated schools first. The majority of applicants allocated therefore did not choose to go to these foundation schools and may not commence in post, or subsequently continue to train in those areas post-foundation.

APPENDIX 1 – Low Scorer Allocations 2019

The table below shows the number of applicants who scored in the bottom quartile of all applicants based on the total FP application score allocated to each foundation school, the percentage of the cohort who were allocated and also the percentage of the allocation to each foundation school that included applicants from the bottom quartile of the cohort based on the total FP application score.

Foundation School	FP Places	Number of Applicants Allocated from the Bottom 25% (FP Score)	Percentage of Bottom 25% (FP Score)	Percentage of Foundation School Allocation in Bottom 25% (FP Score)
East Anglia	254	123	6.65%	48.43%
Essex, Bedfordshire & Hertfordshire (EBH)	310	4	0.22%	1.29%
Leicestershire, Northamptonshire & Rutland (LNR)	150	57	3.08%	38.00%
North Central and East London	335	4	0.22%	1.19%
North West London	230	8	0.43%	3.48%
North West of England	784	188	10.16%	23.98%
Northern	379	85	4.59%	22.43%
Northern Ireland	241	59	3.19%	24.48%
Oxford	209	3	0.16%	1.44%
Peninsula	188	90	4.86%	47.87%
Scotland	788	149	8.05%	18.91%
Severn	264	3	0.16%	1.14%
South Thames	778	13	0.70%	1.67%
Trent	288	133	7.19%	46.18%
Wales	328	123	6.65%	37.50%
Wessex	293	70	3.78%	23.89%
West Midlands Central	180	4	0.22%	2.22%
West Midlands North	250	130	7.03%	52.00%
West Midlands South	164	88	4.76%	53.66%
Yorkshire and Humber	561	123	6.65%	21.93%
Reserve List	425	393	21.24%	92.47%
Total Number of Applicants	7,399	1,850	N/A	25.00%