

# Finding flexibility: a semi-algorithmic approach to anaesthetic self-rostering in South Yorkshire

Dr Jon Emberey & Dr Hannah Winder, Barnsley and Rotherham Hospitals

## Introduction:

- Increasing numbers of less than full time (LTFT) trainees, frequent rotations and changing competencies at non-traditional times has led to rolling rota systems no longer being fit for purpose.
- We set out to assess proof of concept of a flexible rota system, quantify trainee and departmental benefits and address the impact on quality of life and cost saving potential.

## Illustration of the problem:

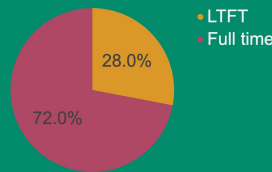


## Barnsley first on call rota:

- February 2023:  
7 trainees, 5 x 100% trainees, 2 x 80% trainees = 6.6 FTEs (Full Time Equivalents)
- August 2024:  
9 trainees, 6 x 100% trainees, 3 x 80% trainees = 8.4 FTEs
- Same number of on call shifts needed to be filled in a given period

## National statistics:

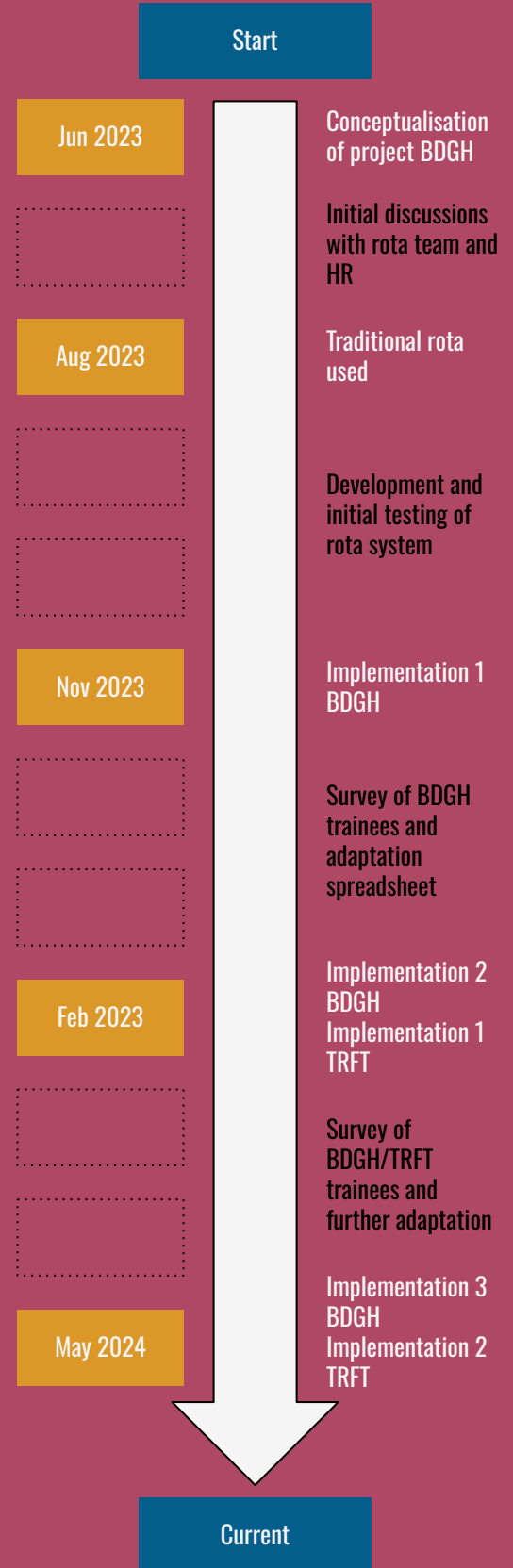
- 28% of anaesthetists in training working LTFT [1]



## Methods and implementation

- Google sheets used to create prototype cloud based system.
- Accessible remotely by trainees to block out shifts and rota co-ordinator to assign on call commitment.
- June 2023: initial meetings and demonstration with College Tutor, HR representative and rota team.
- Suggestions taken on board and implemented.
- Rule based system to ensure compliant rotas and minimise human error.
- 'Radio silence' from HR until implementation November 2023.

## Timeline:



[1] LTFT: life and training without categories, RCoA Bulletin 2024  
<https://rcoa.ac.uk/bulletin/winter-2024/lftf-life-training-without-categories>



**Barnsley Hospital**  
NHS Foundation Trust



**The Rotherham**  
NHS Foundation Trust

With thanks to Dr James Turnbull (College Tutor, BDGH) and Dr Rob Charles (Rota Consultant, TRFT)

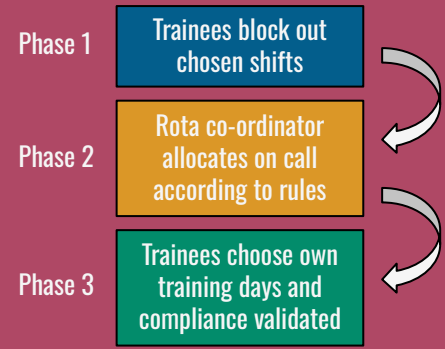
# Finding flexibility: a semi-algorithmic approach to anaesthetic self-rostering in South Yorkshire

Dr Jon Emberey & Dr Hannah Winder, Barnsley and Rotherham Hospitals

## Methods:

	A	B	D	E	F	G
1	<b>FIRST ON CALL</b>					
2	Type N into any shift pattern preferred not to work		SHIFT	TOTAL	PER 100%	PER 80%
3	on call		LD req	65	8.00	6.40
4	Box should turn red		WD req	26	3.00	2.40
5			N req	52	6.00	4.80
6			WE N req	39	5.00	4.00
7	On calls by shift type per 13 weeks		LD round down?	<input type="checkbox"/>	LD round down?	<input type="checkbox"/>
8	Rounding for LTFT Defaults to round up		WD round down?	<input type="checkbox"/>	WD round down?	<input type="checkbox"/>
9			N round down?	<input type="checkbox"/>	N round down?	<input type="checkbox"/>
10			WE N round down?	<input type="checkbox"/>	WE N round down?	<input type="checkbox"/>
11			A Trainee	100	B Trainee	80
12			LONG	NIGHT	LONG	NIGHT
13	Week 1	Monday	05/02/24	ROTATION	ROTATION	ROTATION
14		Tuesday	06/02/24	ROTATION	ROTATION	ROTATION
15		Wednesday	07/02/24	n	n	
16		Thursday	08/02/24	n	n	
17		Friday	09/02/24	n	n	
18		Saturday	10/02/24	n	n	
19		Sunday	11/02/24	n	n	
20	Week 2	Monday	12/02/24			
21		Tuesday	3/02/24		n	n
22		Wednesday	4/02/24		n	n
23		Thursday	5/02/24		n	n
24		Friday	6/02/24			
25		Saturday	7/02/24			
26		Sunday	18/02/24			

- Cloud based rota spreadsheet created online using Google drive.
- Names and % full time commitment input by rota co-ordinator.
- Number of on call shifts automatically calculated depending on total number trainees (n) and % LTFT commitment i.e. full time equivalents (FTEs).
- Trainees given access to sheet 1 of spreadsheet.
- Trainees able to block out shifts they do not wish to be scheduled for on call commitment by day and shift type.



			LONG	LONG DOUBLE	NIGHT	NIGHT DOUBLE	A Trainee	B Trainee
<b>Suggestions</b>		Week 1						0
WED-THU N	C Trainee	C Trainee						
FRI-SUN N	C Trainee	C Trainee						
WEEKEND D	C Trainee							
MON-THU N	A Trainee	Trainee						
		Week 2						
		Monday	06/05/24					
		Tuesday	07/05/24					
		Wednesday	08/05/24					
		Thursday	09/05/24					
		Friday	10/05/24					
		Saturday						
		Sunday						
		Monday	11/05/24					

- Rota co-ordinator able to use drop down boxes to select on-call trainee for each shift.
- Unable to select trainees who: have blocked given shift (e.g. A), already selected for shift on given day (e.g. B selected for nights), unable to work due to compliance restrictions (e.g. 72 hours reached), on enforced 'off' day post nights or weekend.
- Suggestions made per shift type = trainee who has worked lowest % of that shift type and is 'legal' choice.

- Re-circulated to trainees to input predetermined number of training day (TDs) around a populated on-call rota.
- Constantly updating count of TDs and compliance checks (as outlined in most recent version of 2016 Junior Doctors contract). Prompts trainees to alter selection of TDs if become non-compliant.
- Final rota able to distributed to medical HR to facilitate generation of work schedules.

TD	Training day	TD USED	2	3	2
Highest daily TDs		MAX 4 CONS LONG	COMPLIANT	COMPLIANT	COMPLIANT
		MAX 7 SHIFTS	COMPLIANT	COMPLIANT	COMPLIANT
		MAX 72 HOURS	COMPLIANT	COMPLIANT	COMPLIANT
		WEEKLY HOURS	5.384615385	5.192307692	5.384615385
		WEEKEND FREQ	<1 in 8	<1 in 8	<1 in 8
	Date	A Trainee	B Trainee	C Trainee	
	On calls		4	3	4
Week 1					
	Wednesday	06/05/24	TD	NIGHT	LONG
	Thursday	07/05/24	TD	NIGHT	
	Friday	08/05/24		OFF	WE NIGHT
	Saturday	09/05/24		OFF	WE NIGHT
	Sunday	10/05/24			WE NIGHT
Week 2					
	Monday	11/05/24	NIGHT		OFF
	Tuesday	12/05/24	NIGHT	TD	OFF

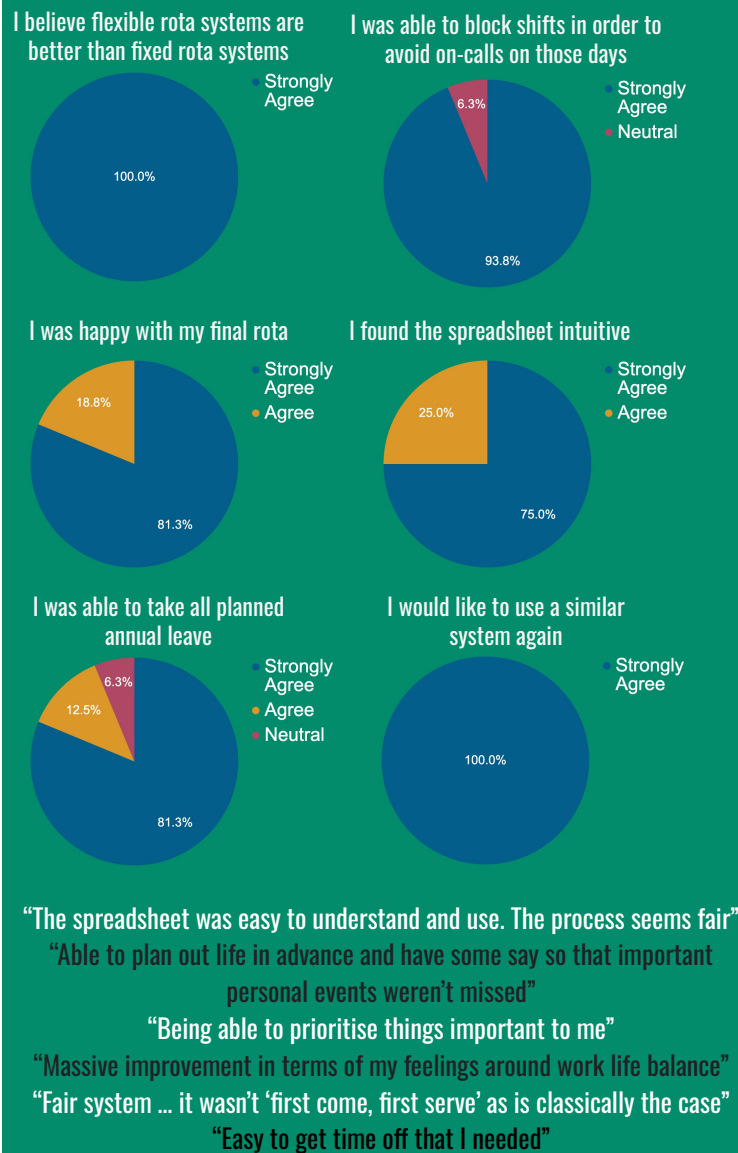
- Compliance checks run as rota populates
- Average weekly hours and weekend frequency update for work schedule
- On call shifts populate automatically from on-call selection sheet

Trainees able to input TDs around their on-call commitment

# Finding flexibility: a semi-algorithmic approach to anaesthetic self-rostering in South Yorkshire

Dr Jon Emberey & Dr Hannah Winder, Barnsley and Rotherham Hospitals

## Results and trainee feedback:



## The challenge of human resources:

- Non-attendance at planning/conceptualisation meetings despite invitation.
- Scepticism regarding change of system.
- Perceived increase of workload for understaffed team.
- Unnecessary duplication of work.
- Imperfect use of Allocate rota software:
  - Average hours calculated over 14 weeks not 13 (Wednesday - Wednesday).
  - Little understanding of ‘prospective cover’ adjustment of hours.
  - Disparity of work schedule generated via Allocate locally (Barnsley) vs centrally (Sheffield) vs actual average hours and enhanced hours leading to delays in work schedules being issued.
- Delay in trainees getting paid correctly as a result of the above.
- **Breakdown in communication** (trainee comments re HR):

“Poorly worded emails with a dismissive tone when concerns raised”  
 “Late work schedules at every stage. Incorrect pay, poor communication...”  
 “Failure to respond to concerns re. Wrong work schedule”  
 “Lack of communication from Barnsley HR - not replying to emails ... being uncooperative in conversations.”

## The reality:

- Imperfect use of Allocate predating this system - likely inaccuracies in work schedules since introduction of this years previously.
- Rota allocation performed by anaesthetic trainee or consultant coordinator > 6-8 weeks pre rotation - HR role limited to transcription of rota to work schedule generator and distribution.
- Despite the above trainees still keen to continue with self-rostering.

## Conclusions:

- Overall positive impact on trainee wellbeing despite documented difficulties in implementation.
- Increased trainee satisfaction with rotas - emphasis on improved work life balance and ability to prioritise important life events.
- Swap requests minimised over comparative period with rolling rota system.
- Large amount of work to re-establish channels of communication with HR.
- 100% of survey respondents wish to continue with self-rostering.

## Future work:

- Aim to improve intuitiveness of system and automation.
- Aim for uniform self-rostering process throughout South Yorkshire deanery.
- Question whether investment in professional self-rostering software is appropriate following proof of concept.

