



# **PRE**

## **Stats and facts**

### **Challenges and successes**

**Dr Katie Petty-Saphon**  
**Siobhan Fitzpatrick**  
**ISFP Project Team**

Medical Schools Council on behalf of the cross-stakeholder ISFP Project Group



# Aims of the PRE

1. To ensure the logistics are in place to:
  1. Deliver the SJT to c.8,000 applicants
  2. Produce an EPM Deciles point score
2. To pilot new SJT items
3. Raise awareness and understanding
4. Ongoing evaluation of the use of SJT & EPM



# Centrally coordinated

Central coordination by the Medical Schools Council on behalf of the cross-stakeholder ISFP Project Group

- National timetable
- National standards for delivery
- Centralised SJT paper development, printing and production
- Administrator's Guidance
- Communication tools for medical schools
- ISFP website, forum, illustrative examples
- Two meetings with PRE Teams (October and March)
- Liaised with medical schools, psychometricians and suppliers
- Quality checks and contingencies in place



# Delivered locally

PRE Teams at each medical school:

- PRE Lead
- EPM Lead
- SJT Lead
- Student Champion

**SJT** – communications with students, timetabling, venues booked, reasonable adjustments and extenuating circumstances

**EPM** – consultation with students on ‘basket of assessments’ and produced EPM Decile scores



# PRE Situational Judgement Test



# SJT summary

30 item, one hour SJT

6,842 medical students took part in the PRE



Participants included:

- Final year medical students
- Students who had been pre-allocated to the Defence Deanery
- Students who had chosen to take a year out post-graduate
- International students returning overseas after graduation

30 medical schools (plus two centres for Eligibility Office applicants) delivered the SJT in 72 venue

Psychometric analysis shows that a 60 item SJT is a reliable measurement methodology



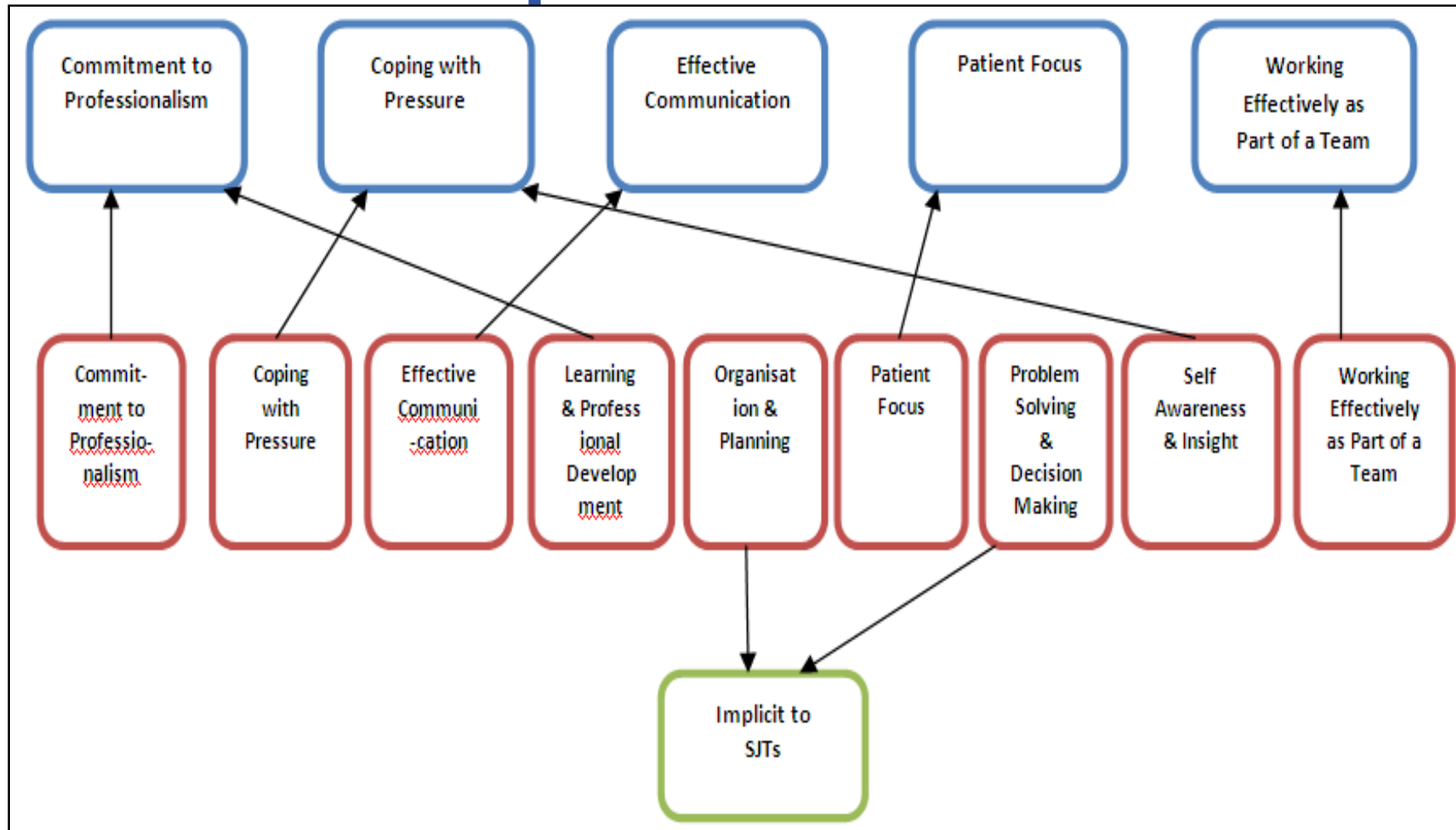
# SJT - Pilot Test Specification

- 7 papers of 30 items - half the length of live test
- 210 items (121 new items/ 89 amended)
- 19 ranking questions / 11 multiple choice questions
- Reflect the range of SJT domains





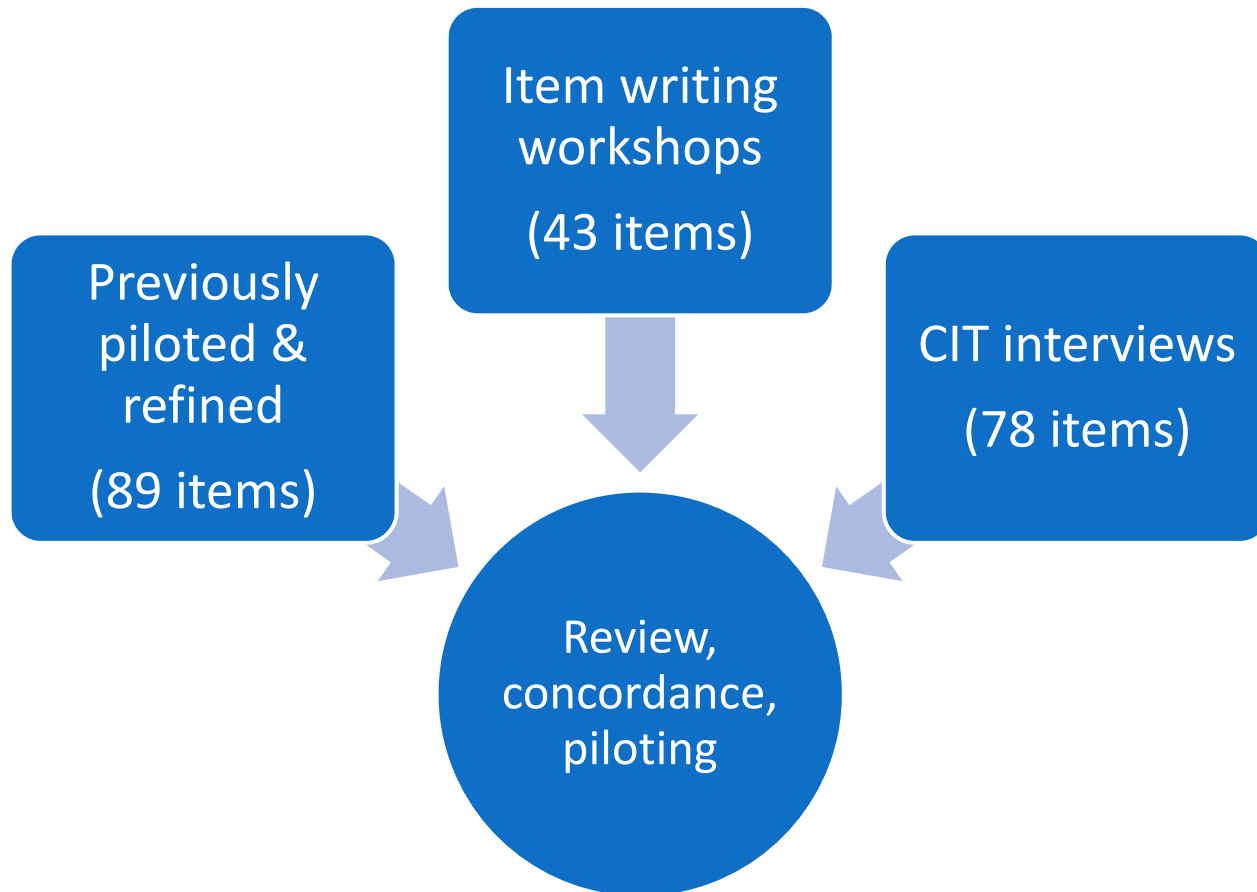
# Item Development

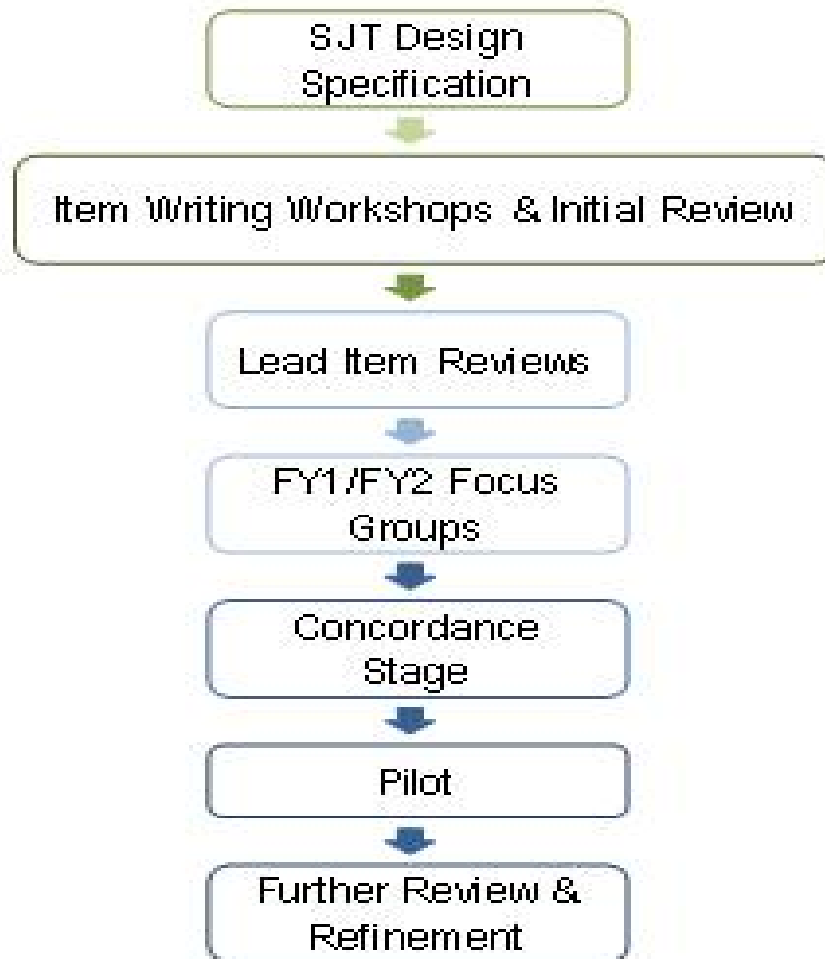






# Item development







# Applicant participation in SJT

- Shortened paper (30 items, 1 hour)
- Communicate benefits of taking part
- Provide feedback
- Offer incentives
- Medical school staff managed participation

## **Success:**

6,772 final year students, 70 EO applicants



# Demographics

## Age:

- Mean age                    24.7 years
- Range                        21 to 56 years

## Gender:

- Slightly more females (54.4%) than males (38.8%), but roughly equal across all papers
- 6.7% did not declare their gender

## Ethnicity:

- Categories: White, Asian, Black, Chinese, Mixed, and Other
- Majority reported being “White British” (60.8%),
- 30.3% classified as “Black and Minority Ethnic” (BME) participants
- 8.9% did not declare their ethnicity



# Descriptive Statistics

## Internal Reliability:

- Adjusted for a 60 - item test that included only robust items (such as would be used in an operational paper), all papers had an estimated reliability of  $\alpha = 0.80$  or above ( $\alpha = 0.80$  to  $\alpha = 0.87$ ) – so items inter-correlate but not so much that some are redundant
- Demonstrates that the SJT is a reliable test in this context with items testing different things



# Descriptive Statistics

## Mean:

- **Overall Mean = 79.5%**; Range from 78.0% to 80.6%.

So not too easy – differentiating appropriately

## Standard deviations:

- **Mean SD = 18.6**; Range from 17.3 to 20.0.

## Distributions:

- **305 to 468** (out of a maximum of 512) – as expected given length of paper
- Appears to be slightly negatively skewed, (more people towards top end) although results do show a close to normal distribution



**Table 2. Reliability and descriptive statistics for Papers 1-7**

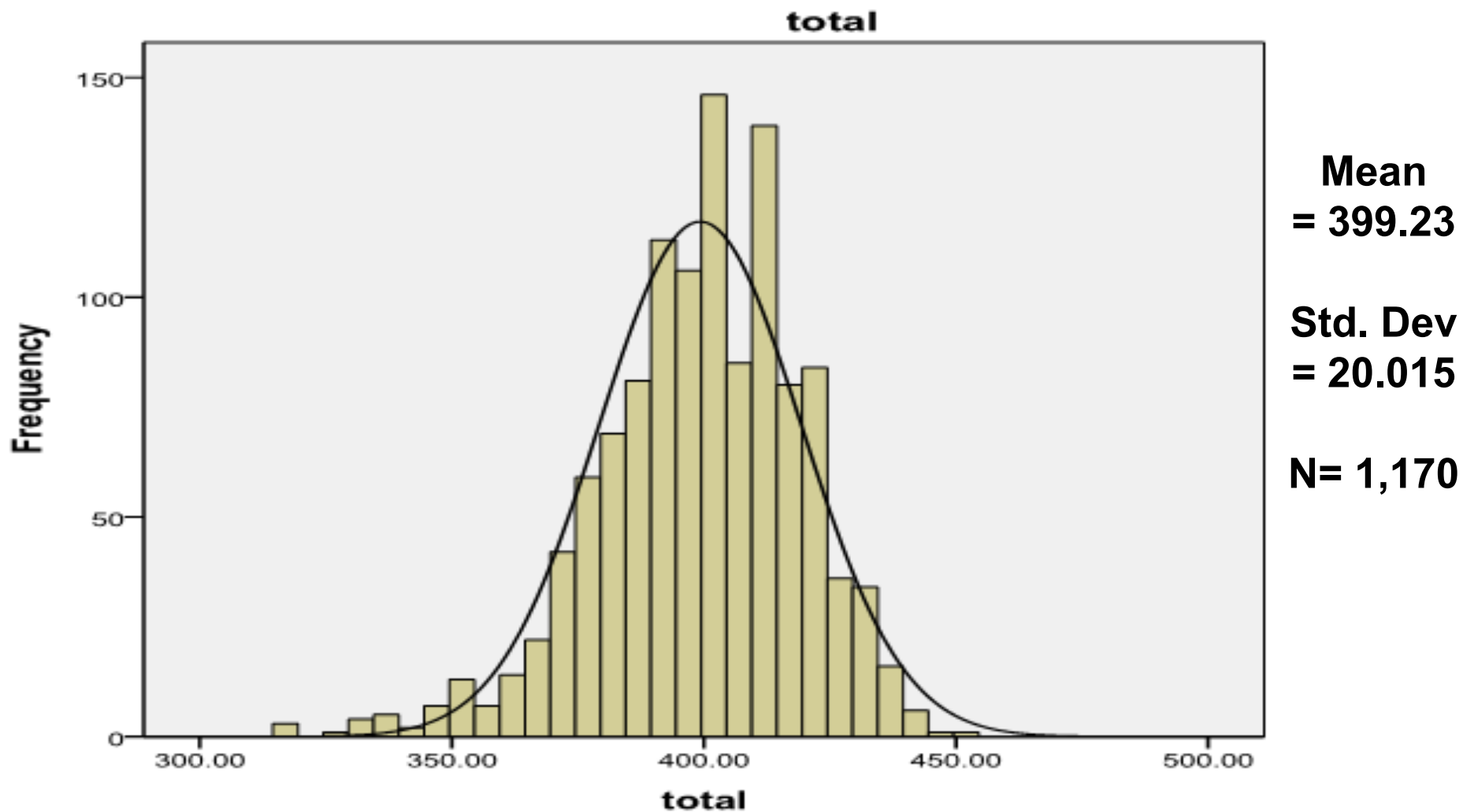
	N	Reliability ( $\alpha$ ) <sup>2</sup>	Mean	Mean %	SD	Min	Max
Paper One	1176	0.84	399.2	78.0%	20	317	452
Paper Two	867	0.85	399.5	78.0%	18.5	322	444
Paper Three	847	0.87	414.3	80.1%	18.9	305	454
Paper Four	1177	0.82	409.6	80.0%	18	312	468
Paper Five	880	0.8	413.1	80.6%	19.3	316	468
Paper Six	814	0.8	411.7	80.4%	17.3	326.5	461
Paper Seven	1021	0.8	401.6	78.4%	17.9	334	450

<sup>2</sup> Based on a 60-item test, corrected for those that items that were psychometrically robust





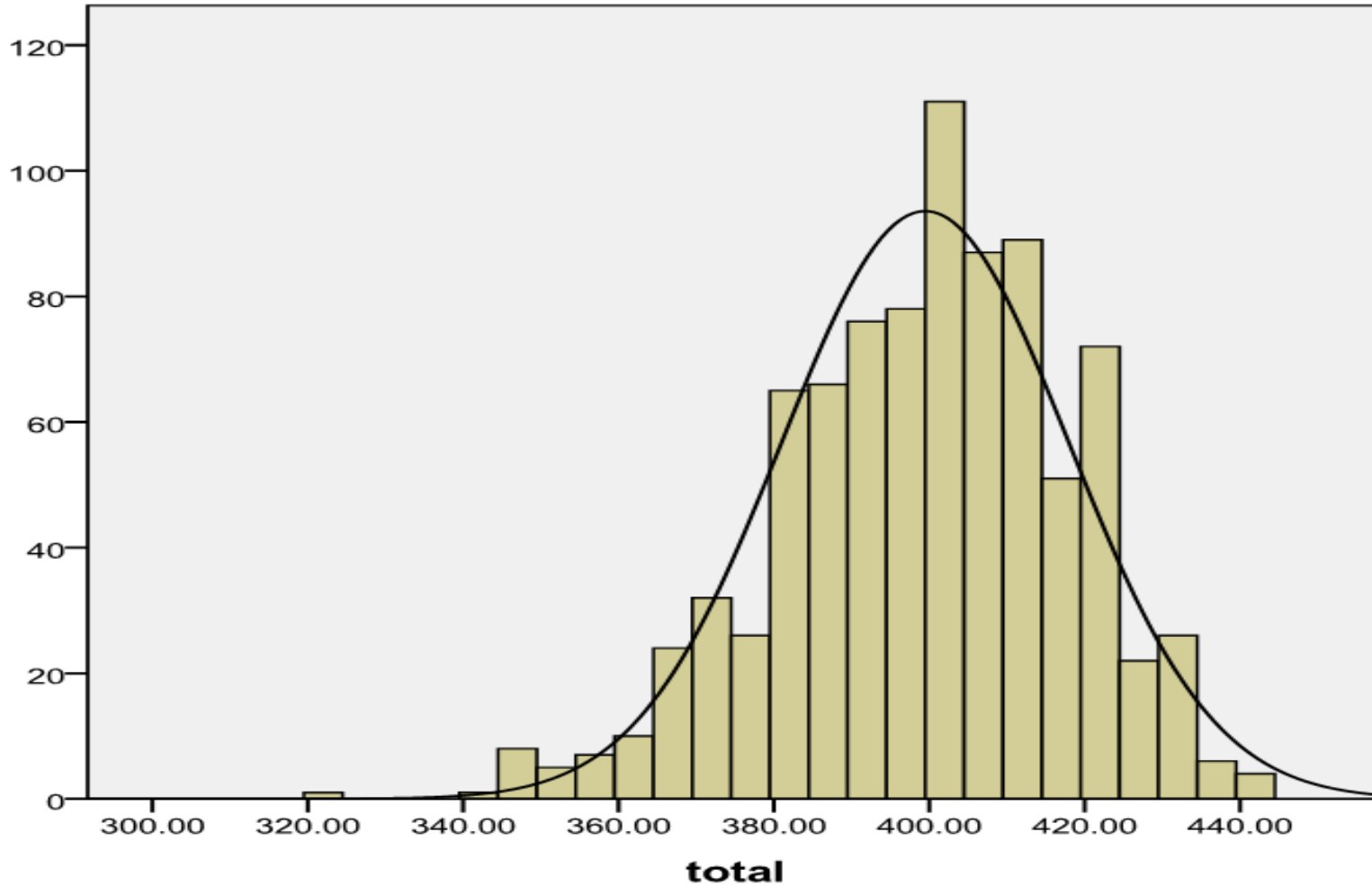
## Histogram showing the distribution of scores for Paper One





Histogram showing the distribution of scores for Paper Two

**total**



**Mean  
= 399.46**

**Std. Dev  
= 18.479**

**N= 867**



# Item Facility (difficulty)

## Ranked Items

Maximum score 20

Score 18 = 'very easy';

Score 11.6 = 'very hard'

Mean facility similar across all papers (approx 16)

Range of facility values differed across papers

SD range similar for all papers, except for Paper One where one item had a very high SD

## Multiple Choice Items

Maximum score 12

Score 10.8 = 'very easy';

Score 3.6 = 'very hard'

Mean facility across papers ranged from 7.9-9.0

Range of facility values differed across papers

SD range was similar for all papers



# Group Differences

## Age:

- One positive correlation found between age and Paper 3, with older scoring significantly better than younger candidates.
- No further significant correlations were found.

## Gender:

- Across all papers females scored slightly higher than males, although differences not significant.
- 29% of the items flagged for sex differences, although proportions were similar (30 favoured males; 31 favoured females)



# Group Differences

## Ethnicity:

- Across all papers “white” participants scored higher than “BME” participants
- This difference statistically significant for all seven papers and particularly high in Paper Five
- 27% of items flagged for ethnicity differences, although proportions were roughly equal (31 favoured white candidates; 26 favoured BME candidates)



# Correlations with established methods

SJT items were compared with current FP methods (quartiles and competency-based 'white space' questions).

## Quartiles:

- Significant correlations found between SJT scores and quartile scores for all seven papers
- (range 0.16 – 0.31, Spearman's Rho at  $p < 0.01$  level)

## White Space Questions:

- Small but significant correlations found between SJT scores and white space questions for five papers
- (range 0.11 – 0.17, Pearson R at  $p < 0.05$  level)



# Summary of SJT performance

**Psychometric analysis shows that a 60 item SJT is a reliable measurement methodology**

Test level analysis was consistent with findings from previous reports and was as expected based on a 30 item test: half the length of the operational test

Item-level analysis showed that a large proportion of the SJT items worked well

- 111 (**53%**) of the items were deemed to have sufficient quality, 42 moderate, 57 require review
- A more in depth review of these items will take place with a view to improving them before use in live selection





# **PRE Situational Judgement Test Logistics**



# Applicant participation in SJT

- Shortened paper (30 items, 1 hour)
- Communicate benefits of taking part
- Provide feedback
- Offer incentives
- Medical school staff managed participation

## **Success:**

6,772 final year students, 70 EO applicants



# Identifying national dates for SJT

- EO 1-3 November
- Friday 11 November
- Monday 28 November
- Friday 9 December
- Monday 9 January

## **FP 2013:**

Friday 7 December, 2pm

Monday 7 January, 10am



dreamstime.com



# Booking rooms

- Quality criteria
- Dates outside of exam period... or during!



- External venues
- Split sites
- multiple rooms on same site



# National rules, local delivery

National requirements, national guidance

“...you must trust us to facilitate these tests in line with our experience and good practice”

72 venues – 18 were new to assessments

“The written information appears to be aimed at those who have never run an examination before, and... this could be over the top”





# Printing

	Number of venues					TOTAL	Modified papers								
	1-3 Nov	11 Nov	28 Nov	9 Dec	9 Jan		Cream	Yellow	Green	Blue	Beige	Pink	Single side	A3 - yellow	A3 - white
1		1	18			1495	57	11							
2		1	2			1040								1	
3	1		12			1150							12		
4				6		1390	4	6		9	20	1			1
5			1	9		1095									
6				1	7	1090									
7					10	1305	3		15						
TOTAL	1	2	33	16	17	8565	64	17	15	9	20	1	12	1	1



# Printing (2)

## PRE:

- SJT Lead estimated print needs and date
- Plus 5% contingency
- SJT paper; OMR form; evaluation; glossary
- All papers printed and boxed before 1<sup>st</sup> SJT
- Sent a reminder 10 days in advance of SJT
- 18 of 22 late requests were addressed
- Delivery to 72 venues 3 days in advance





# Printing (3)

## FP 2013:

- SJT Lead to confirm print needs per applicant via secure online database
- No coloured printing – use of acetates
- SJT paper and OMR form only
- RA placecards provided by venue
- Will deliver + 5% for contingency
- Delivery to school not to venue
  - 3 days in advance (negotiable)
- Consideration of online delivery for future



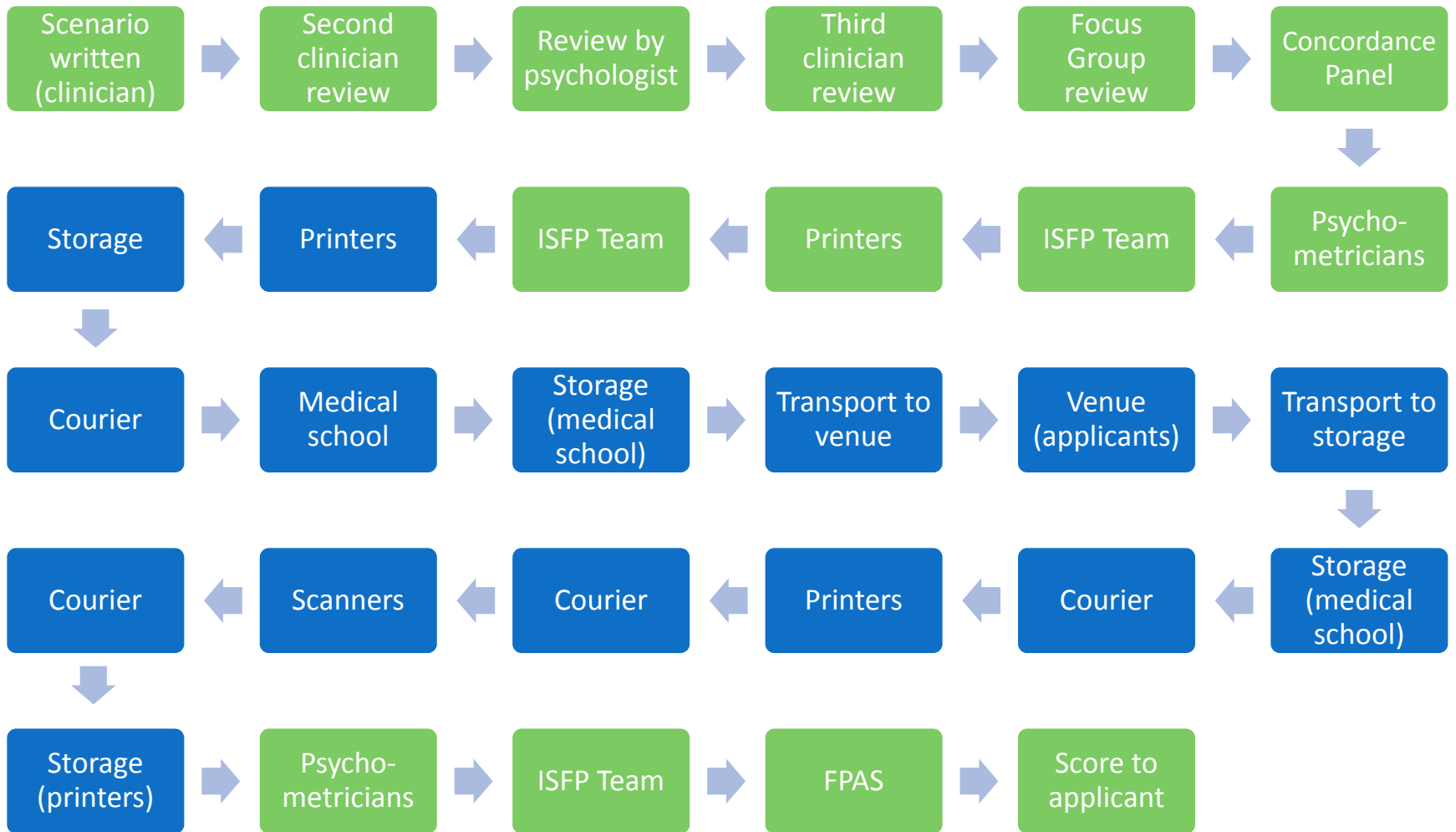
# Courier delivery

- SJT Lead confirmed name and address
- Schools advised when to expect delivery
- Boxes labelled 'confidential – telephone immediately on receipt'
- 15 (of 72) delivered to postroom or colleague
- All were located, no security breach
- Took up to 2 days to locate – and in one case this coincided with gale force 11 winds
- Confusion with 'Stephen Austin & Sons Ltd'



# Security

- Data Protection Act 1998
- SJT papers were live items (for future years)
- Security paramount
- Online storage and secure file exchange
- Confidentiality Agreements
- Service Level Agreements
- 4 potential breaches of security
- 1 breach of security – 30 items lost





Involved in item development and review	200
Psychometricians	5
Medical Schools Council	5
MSC Assessment Alliance (item banking)	5
Secure printers & scanners	10
Courier	60
Medical school staff	100
Invigilators	240
Applicants	8000
<b>TOTAL</b>	<b>c.8625</b>



# Applicant identification

- Unique application number, RA XXX-XXXXXX
- Applicants asked to bring RA number with them
- Date of Birth used if no RA number
  
- SJT Leads emailed with RA numbers in advance
- On the day, many students forgot their RA number, or had it written down or on their phone
- Invigilators used post-its during SJT
- One school (Belfast) created RA placecards



## Applicant identification (2)

- 6,371 completed their RA number correctly
- 471 incorrectly completed
- Manual quality checks

### **FP2013:**

- RA placecards on desks (need to know who will take the SJT in which venue on which dates)
- Sit in alphabetical order
- Exploring options of personalisation





# Reasonable Adjustments

- **PRE:** schools managed as with university policy
- **FP 2013:** Medical schools continue to manage in line with university policy; some parameters set centrally ie 25% standard extra time
- Review of existing guidelines in universities and exam bodies
- ISFP Team need to know in advance to inform printing, to manage appeals etc. Cut off date.



# Extenuating Circumstances

- **PRE:** schools managed as with university policy
- **FP 2013:** Medical schools continue to manage in line with central guidance (for discussion)
- In event of extenuating circumstances, will be able to take SJT on next available date – schools need to book venue as backup
- ISFP Team need to know on the day if ‘no show’



# Risk management for FP 2013

## Address the challenges from the PRE

- Early communications
- Courier deliveries to named recipient
- Incorrectly completed applicant numbers
- Security

**Contingencies** in place for bad weather, flight disruptions



# PRE FP 2013

- National timeline
- Continue direct comms with PRE Teams
- Early communication of timeline & requirements
- Central document repository (version control)
- SJT database at applicant level
- Deliveries to school (package per venue)
- RA placecards – alphabetical order
- Contingency planning
- Ongoing review and evaluation



# **PRE Educational Performance Measure (EPM)**



# PRE EPM

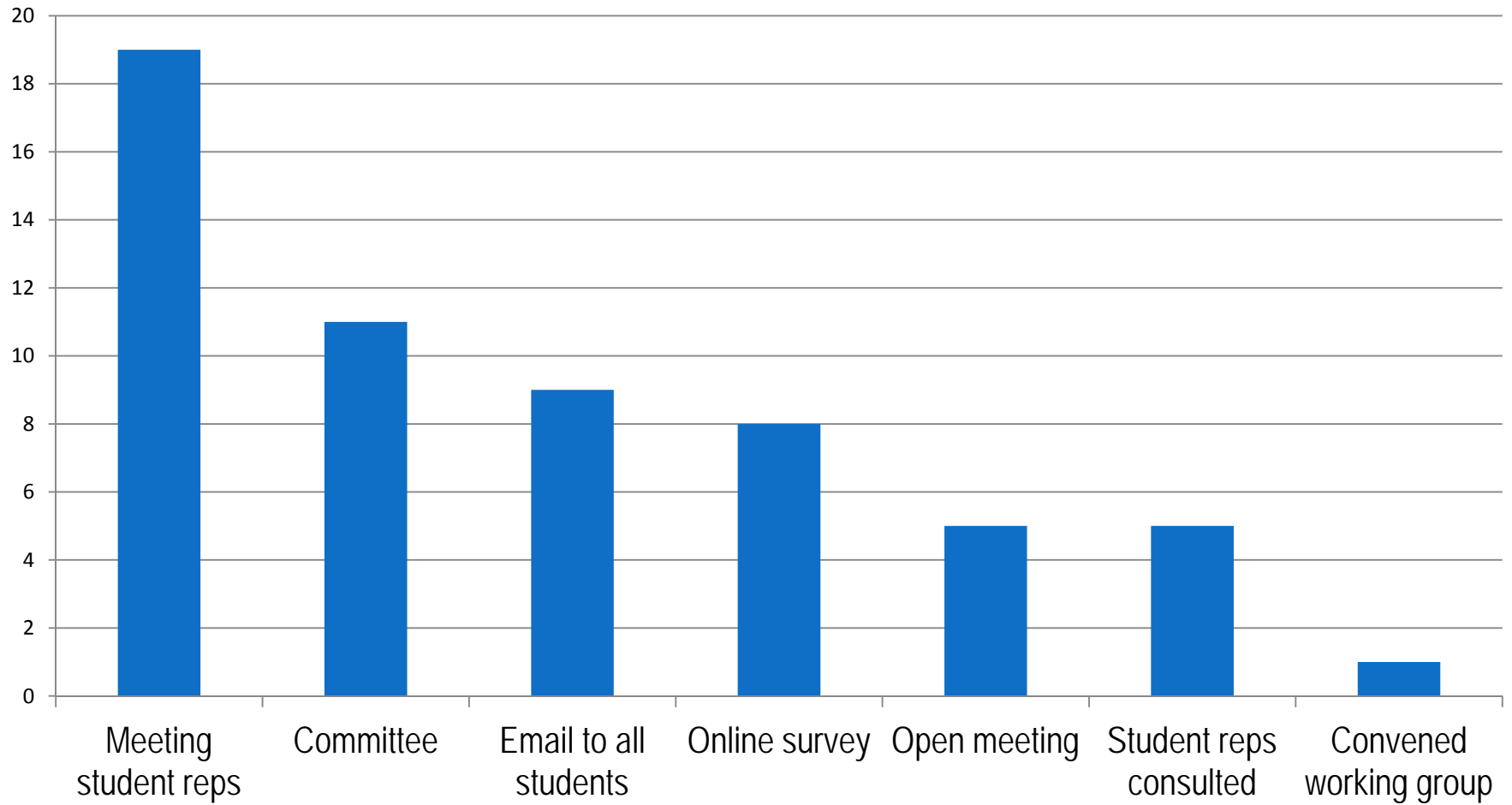
- EPM framework agreed by students, employers and all medical schools in spring 2011
- Agreed common principles for the ‘basket of assessments’ used to rank the cohort – but flexibility with composition
- Schools tasked with
  - consulting with students on the ‘basket of assessments’ to be used at their medical school
  - Aligning their framework with the common principles
  - Calculating EPM decile scores for FP 2012 applicants
- No change to method of verification for additional degrees or other educational achievements



# Consultation on frameworks

- 27 of 30 medical school initiated a new consultation and review of framework
  - (3 schools consult annually and framework aligns)
  - Other schools do consult annually – but undertook new consultation with students for the PRE
- Majority of schools pleased with student engagement, especially amongst later years
  - Benefit of raising awareness with students & staff
  - Students felt sense of ownership
  - Sense of ‘moving the goalposts’







# PRE EPM – Findings

- 22 medical schools made small, or no, adjustment to the method used for quartiles
- For the 8 schools who have made more substantial changes, feedback that it has been time consuming – but processes now in place
- Feedback that most challenging aspect is comparing students on non-typical path  
Standardisation? Use only common assessment?  
Z-scores? Rank separately



# PRE EPM – Decile Points

Decile/ Quartile	4th	3rd	2nd	1st
1st			2	604
2nd	1	3	18	646
3rd	1	5	341	334
4th	2	13	649	27
5th	10	52	606	8
6th	13	625	50	2
7th	37	629	19	3
8th	337	348	10	
9th	680	30	8	
10th	671	7	2	



## **PRE EPM – successes**

- All medical schools have agreed a ‘basket of assessments’ in consultation with students
- All medical schools aligned with EPM framework
- All medical schools calculated EPM deciles, with around 10% in each decile (some ties)
- All medical schools confident they can calculate EPM deciles in line with common principles



## PRE EPM – summary

No ‘correct’ way to calculate medical school performance – local flexibility is key

All medical schools circulated a copy of all EPM frameworks – to inform local review & discussion

Keep the size of deciles under review – but each medical school has ownership of own framework

Some comms challenges around ‘move the goalposts’ and that deciles are fairer



# PRE FP 2013

- EPM Deciles - medical school ownership
- Additional academic achievements - involve clinicians in verification of evidence
- Ongoing review and evaluation



# PRE Communications





# Communications

- Administrator's Guidance
  - Suggested action timeline
  - Draft emails to students
- Standard slide-set
- Poster publicising SJT
- ISFP website:
  - Forum
  - Illustrative SJT examples, scoring convention
- Facebook
- E-bulletin





# Communications - challenges

Students given feedback on PRE:

- EPM Decile
- SJT Decile

**FP 2012** applicants - applied using white space and quartiles, and also took SJT

**FP 2013** applicants - 'moving the goalposts'



# Communications - successes

Widely used by medical schools

- Adapted according to own needs – central *support*, central *guidance*

“ Speaking to students regarding the PRE I find that nearly all were satisfied with the level of communication from the medical school ”

“ From the beginning of the pilot PRE process, detailed and clear information about the EPM has been provided for us to work with developing our school’s ranking scheme. The support provided by (the ISFP Team) has been extremely helpful when we were in the development phase and beyond ”



# Communications - successes

## Website:

- SJT examples most visited page
- Traffic peaked around the dates of the SJT

## Forum and email queries:

- Students initially raised queries around ‘what is an SJT/EPM?’
- More recent queries around the detail ie eligibility, extra time

## Positive feedback from PRE Teams:

- Greater awareness amongst future applicants and staff



# Aims of the PRE

- ✓ 1. To ensure the logistics are in place to:
  - ✓ 1. Deliver the SJT to c.8,000 applicants
  - ✓ 2. Produce an EPM Deciles point score
- ✓ 2. To pilot new SJT items
- ✓ 3. Communications
- ✓ 4. Ongoing evaluation of the use of SJT & EPM