Data and evidence interpretation preparation for the AKT

AKT SOX Trainee Day

Testing on this has changed

- Less calculations
- More graphs
- Test of understanding
- If you are familiar with the graphs it will be easier
- Lots of resources
- Trainees usually do well on this section, but worry a lot about it.
- It is 10% of the exam only.
- the following slides are a flavour only.

Non – clinical topics feedback April 21

With regard to non-clinical areas of the exam, most candidates do well in questions on data interpretation and general practice administration.

We use a range of resources to test data interpretation, including the types of graphs and tables regularly sent to practices from local primary care organisations and health boards.

Resources

- RCGP curriculum
- Preparation document on RCGP website – under how to prepare for AKT
- Google AKT statistics
- Fourteen fish video – this is very informative.
- PHE fingertips
- Practice meds management and other correspondence

HEE Connect | Curriculum-Topic-Guides-300819

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Apps | Gmail | YouTube | Maps | Index | All in One Credit Ca... | Invest online | NSan... | New Tab

Curriculum-Topic-Guides-300819.ashx 3 / 287

Contents

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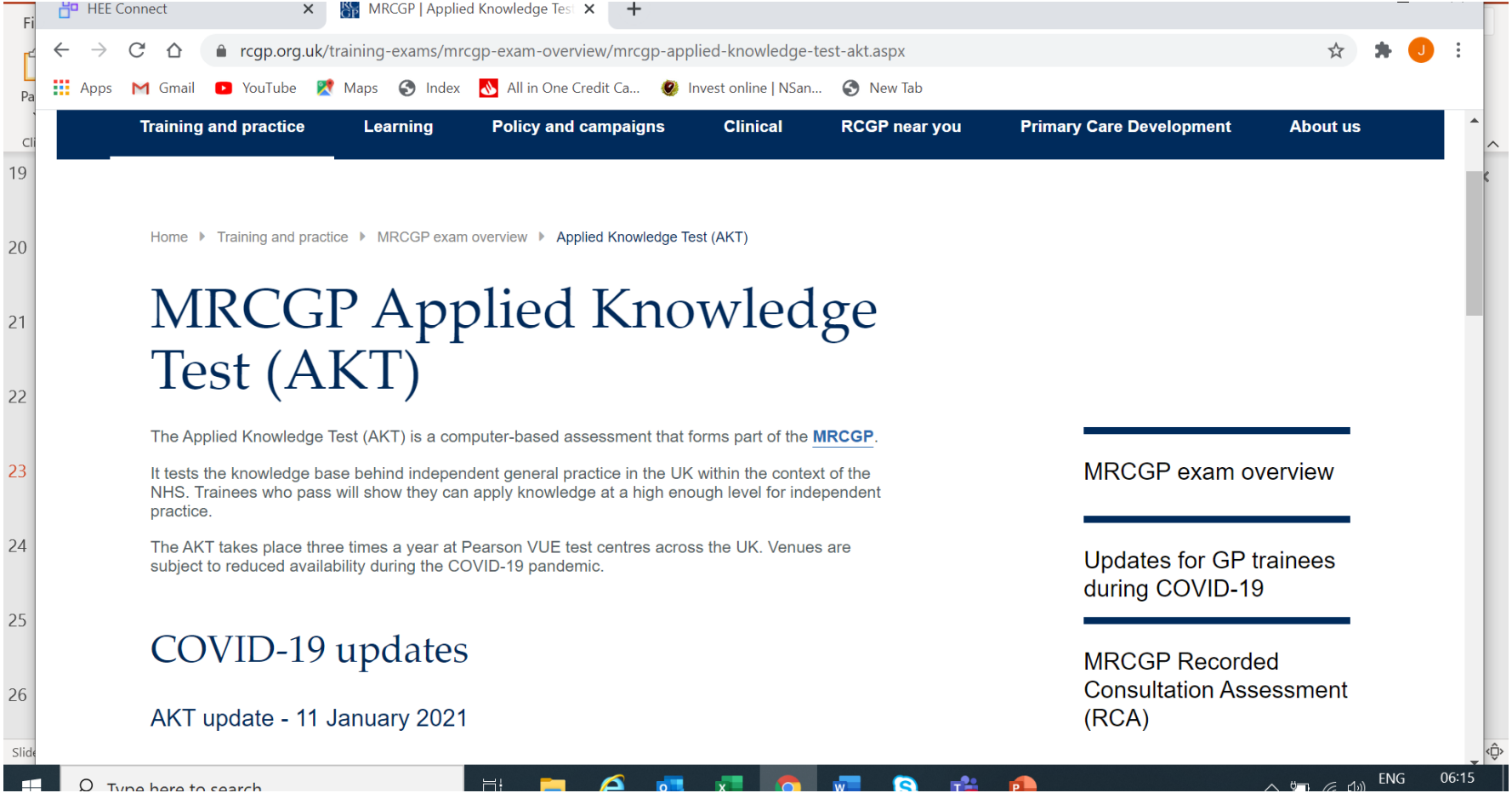
Curriculum-Topic-Guides-300819.ashx 24 / 287

journals. Further knowledge in this area includes:

- Clinical interpretation of results from common statistical tests, for example:

  - analysis of variance, multiple regression, t-tests and non-parametric data (e.g. chi squared, Mann-Whitney U); and
  - simple (symmetrical, skewed) distributions, scatter diagrams, box plots, forest plots, funnel plots, statistical process control charts, Cates diagrams, decision aids
- Difference between causation and correlation
- Types of bias, reliability, validity, and generalisability
- Influence of individual bias and social factors on interpretation of research results
- Evaluation of guidelines to determine how suitable they are for clinical practice (including methodology, evidence-base, validity, applicability, authorship and sponsorship)
- Strengths and limitations of surveys and local healthcare reviews.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MRCGP | Applied Knowledge Test
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Apps
Gmail
YouTube
Maps
Index
All in One Credit Ca...
Invest online | NSan...
New Tab
Training and practice
Learning
Policy and campaigns
Clinical
RCGP near you
Primary Care Development
About us
Home
Training and practice
MRCGP exam overview
Applied Knowledge Test (AKT)
MRCGP Applied Knowledge Test (AKT)
The Applied Knowledge Test (AKT) is a computer-based assessment that forms part of the MRCGP.
It tests the knowledge base behind independent general practice in the UK within the context of the NHS. Trainees who pass will show they can apply knowledge at a high enough level for independent practice.
The AKT takes place three times a year at Pearson VUE test centres across the UK. Venues are subject to reduced availability during the COVID-19 pandemic.
COVID-19 updates
AKT update - 11 January 2021
MRCGP exam overview
Updates for GP trainees during COVID-19
MRCGP Recorded Consultation Assessment (RCA)
ENG
06:15

HEE Connect | MRCGP | Applied Knowledge Test

rcgp.org.uk/training-exams/mrcgp-exam-overview/mrcgp-applied-knowledge-test-akt.aspx

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Disabilities and reasonable adjustments

How to prepare for the AKT

Resources for trainees and trainers

Preparing to take the MRCGP Applied Knowledge Test: A concise guide for trainees (578 KB PDF) - offers a clear overview of what is required.

What can Trainers do to help AiTs prepare for the AKT? (578 KB PDF) - outlines how trainers can help trainees prepare by identifying how day-to-day practice influences exam content.

Clinical evidence and data interpretation: 'Statistics' in the AKT (1.6 MB PDF) - for candidates and GP educators to use in tutorials and peer group learning. Aims to kick-start conversations about the importance of interpreting data we encounter in primary care.

MRCGP candidate presentation (1.1 MB PDF) - has detailed information about the AKT. Includes feedback and statistics from the most recent test, and examples of the types of questions you may be asked.

InnovAiT AKT Podcast (MP3) - contains helpful interviews with GP trainees, a programme director and the deputy lead for the AKT, in addition to top tips and answers to common questions about the exam.

Example AKT questions and answers

Download the following documents to see 50 AKT practice questions and the answers:

- **AKT Example Questions (681 KB PDF)**
- **AKT Example Questions With Answers (732 KB PDF)**

HEE Connect

Medical Statistics for akt exam

Not secure | boltongptraining.org.uk/wp-content/uploads/2013/10/Stats_Handout_2_MEHDI_FARD_ST3.pdf

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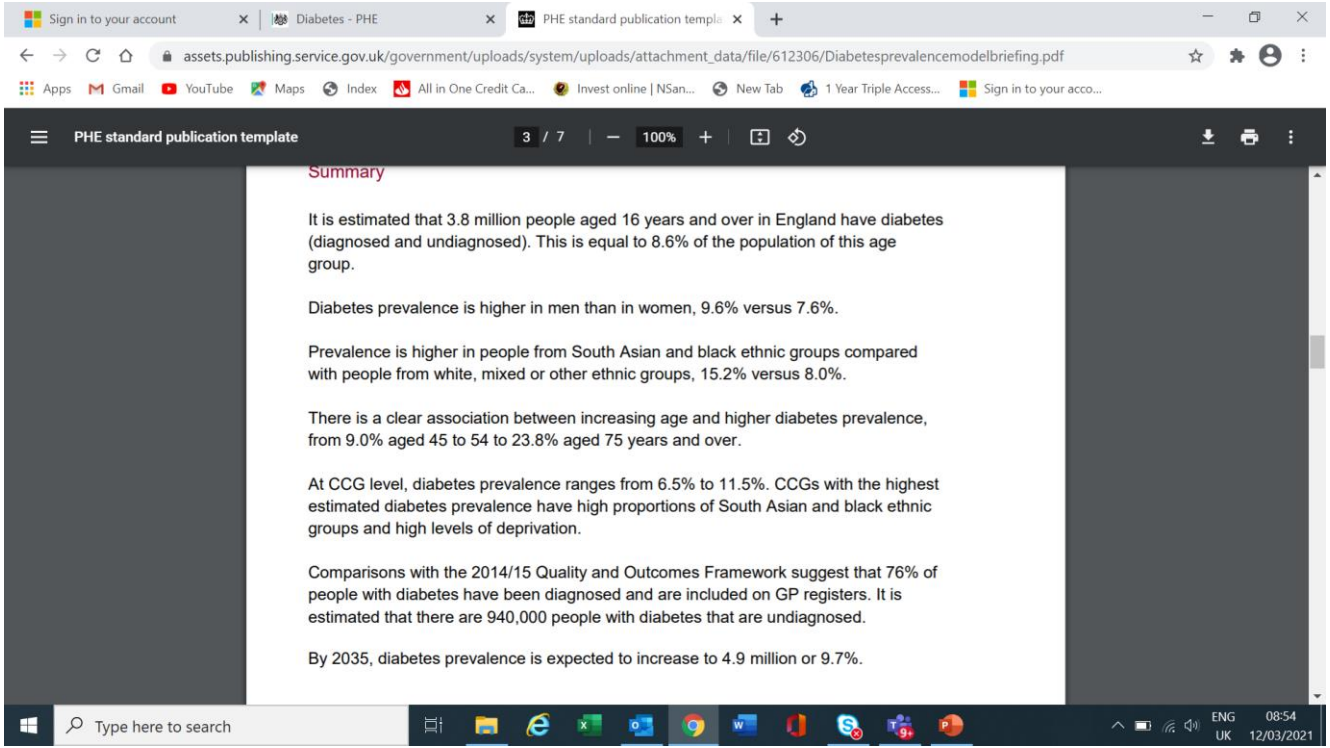
Medical Statistics for akt exam 1 / 24

Medical Statistics

AKT revision guide

Dr Mehdi Fard

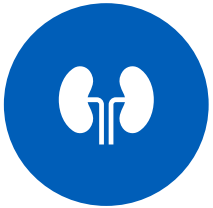
PHE fingertips



Calculations

AVERAGES

IS A TEST ANY GOOD – SENSITIVITY, SPECIFICITY, PPV, NPV



IS A TREATMENT ANY GOOD/HARM – RELATIVE RISK, ARR, RRR, NNT, NNH.

ODDS RATIO

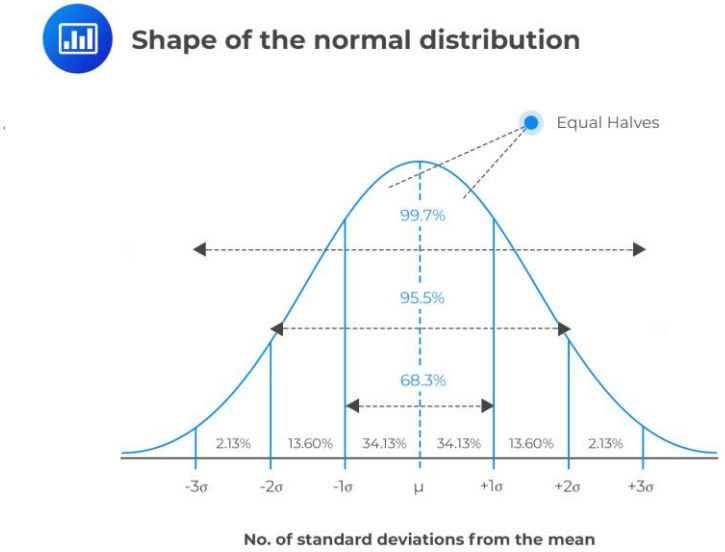
Averages – Mean, median, mode

- Mean – add all readings up and divide by number of readings.
- Median – put readings in order and it's the middle one
- Mode – Most often (MOde)

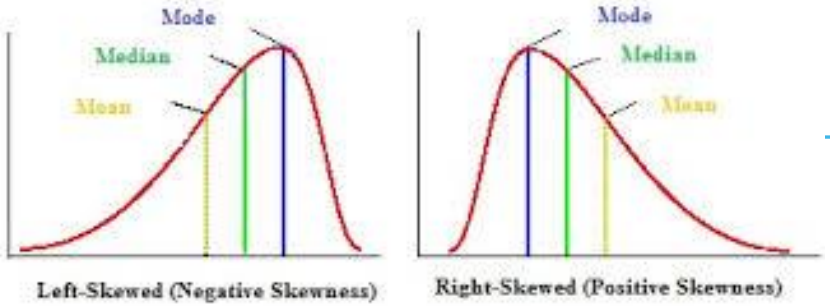
Example

- 1,2,3,3,6,6,8,9,9,9,10
- Mean = 66/11 = 6
- Median = 6^{th} number = 6
- Mode = 9

Normal distribution



- Mean, median and mode are same
- 95% of readings lie within 2 SD of the mean – above or below.
- Think about examples such as height in men.



Skewed distributions

You just need to know what they look like and that mean, median mode are not the same.

Be careful with which is which.

2 x 2 tables

- Is this a good test or is this a good/better treatment.
- Its so much easier if you understand what things are?
- The tables may be a different way round

Is this a good test?
(Sensitivity, specificity,PPV,NPV)

	Has disease	Doesn't have disease	Total
Test is positive	TRUE POSITIVE	FALSE POSITIVE	Total testing positive
Test is negative	FALSE NEGATIVE	TRUE NEGATIVE	Total testing negative
	Total with disease	Total without disease	Overall tested

Sensitivity

- Those with disease correctly identified or picked up by test.
- (Bowel cancer screening is sensitive test ie it doesn’t miss many patients with bowel cancer)
- Calculation is true positives/persons with condition

Specificity

- Those without disease correctly identified by the test.
- (bowel cancer screening is not very specific)
- Calculation is true negatives/ all who don’t have disease.

PPV + NPV

- PPV - If the test is positive what proportion will have the condition ie test is correct
- Calculation is true positive/ all positives

- NPV – if test is negative what proportion will not have the condition ie test is correct
- Calculation is true negatives/ all negatives

- Could also have chart comparing test to gold standard test (which is really the same)

Graphs and charts

- List not exhaustive but
- 1) Forest plots
- 2) Funnel plots
- 3) Kaplan- meier
- 4) Cates diagrams
- 5) decision aids
- 6) Scatter diagrams

Which are the most powerful trials? Best to worst

- Experimental
- 1) meta-analyses
- 2) randomized controlled trials
- Observational
- 3) cohort studies – looks forwards and compares 2 groups
- 4) case control studies – looks back, often rare conditions
- 5) survey

Bias

- Selection bias or sampling bias
- Lead time bias – often seen in screening, screening picks things up earlier and then looks like improved survival but natural history may not be changed.
- Procedure bias – treated group may be managed differently leading to better compliance
- Publication bias – trials used which show desired outcome leading to possible skew of data.

What's a confidence interval?

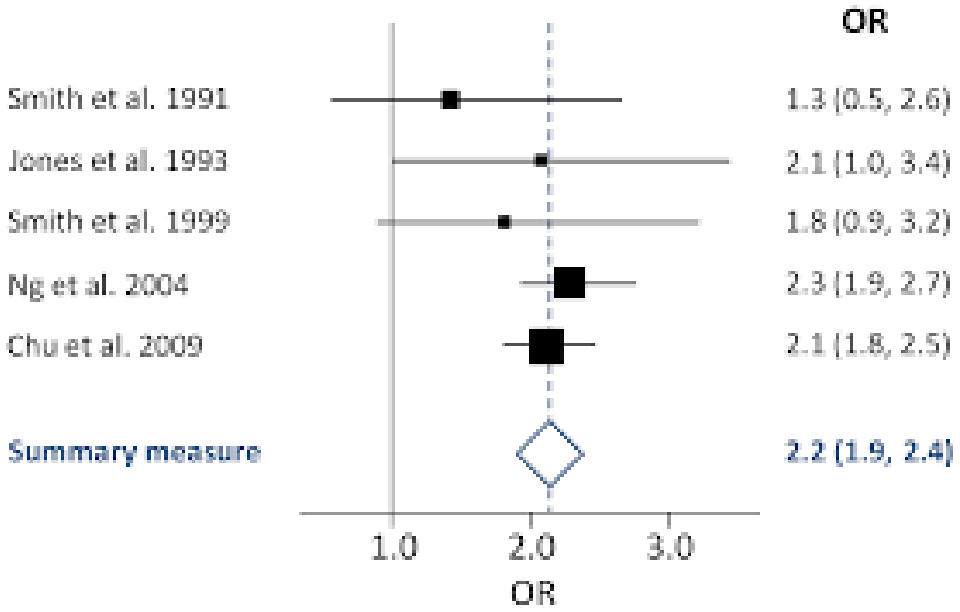
- Probability that a true value will fall between 2 values
- 95% confidence interval – 95% confident that true reading is between these values.
- Larger trials, smaller confidence interval.
- Think about rolling a dice and the average reading after a number of rolls (average will be 3.5)
- If you roll dice 5 times vs 1000 times.

P value

- The chance that an outcome has happened just by chance (null hypothesis)
- Lower p value more significant result
- So if P value 0.05 result is statistically significant.
- You will not need to calculate p value or confidence intervals just know what they mean.

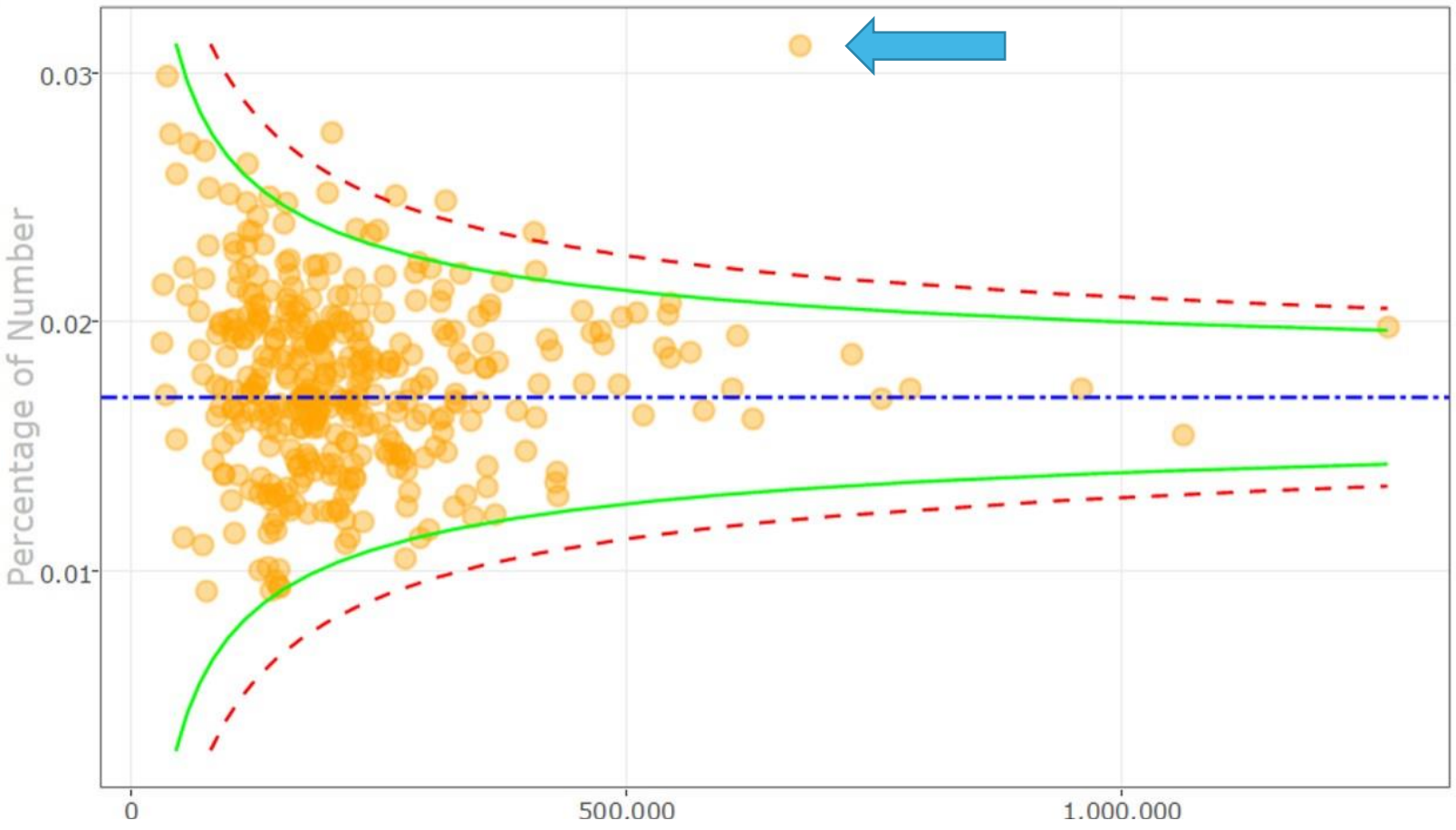
Forest plot (meta-analysis)

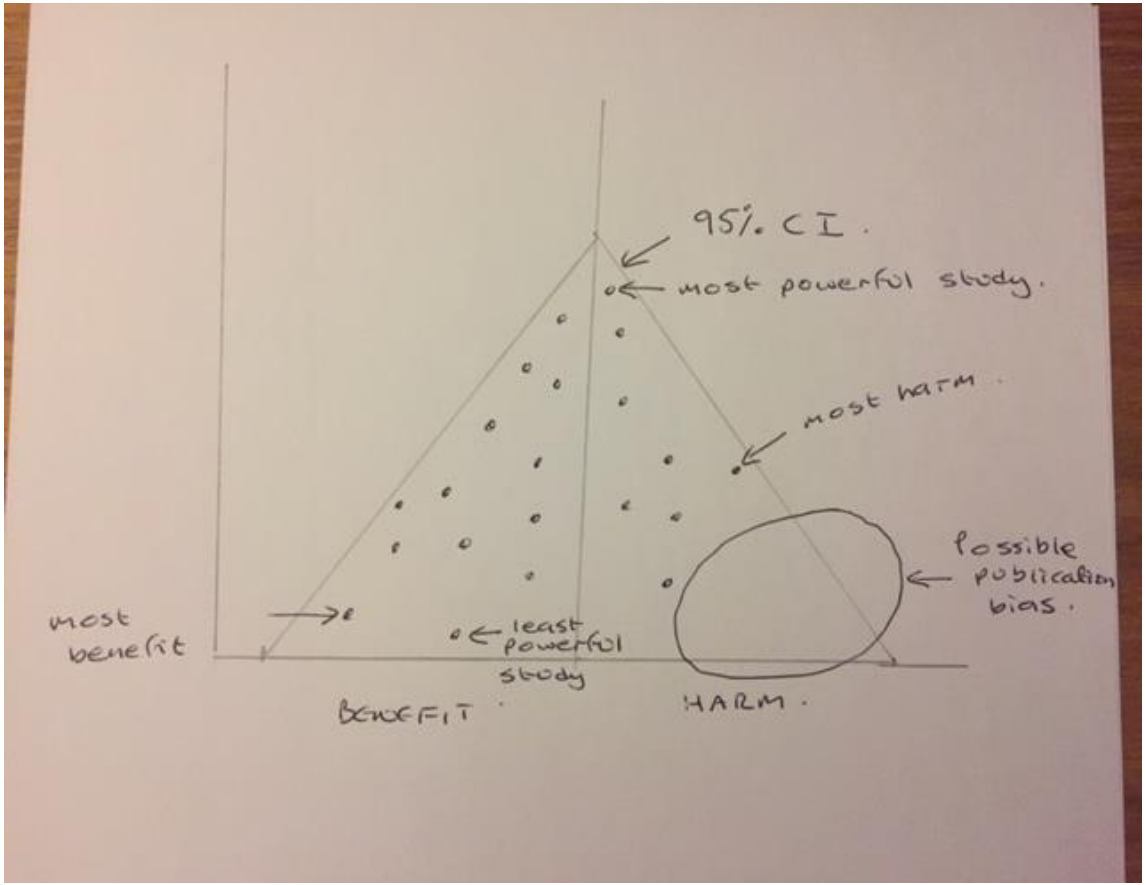
- Big blocks= bigger studies
- Bigger studies have smaller CI
- Diamond = summary of all studies
- OR = Odds ratio (1 = no difference with Rx)
- Left side of this line = possible harm with rx.



Funnel Plot

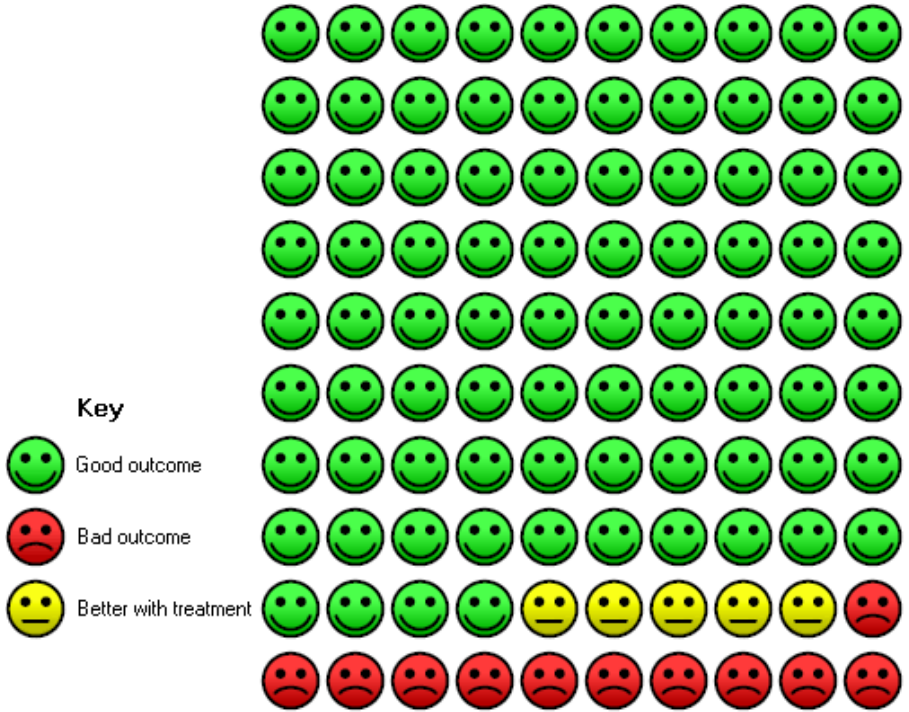
- Comparison of trials
- Looks specifically for publication bias
- Or for outliers in data
- examples


0.03
0.02
0.01
Percentage of Number
0
500.000
1.000.000


95% CI.
most powerful study.
most HARM.
possible publication bias.
most benefit
least powerful study
BENEFIT.
HARM.

Cates plot

- Compares treatment with placebo
- Antibiotics outcome of treatment in children with OM
- Green – good outcome anyway
- Red still ill even with rx
- Yellow better because of treatment
- Will usually ask NNT
- Here for every 100 treated 5 will get benefit.
- ARR = 5/100 = 0.05
- NNT = 1/ARR
- NNT = 1/0.05 = 20



Pancreatic Cancer - "symptom-based" early diagnosis?

New onset diabetes	Diarrhoea	Constipation	Malaise	Nausea or vomiting	Abdominal pain	Loss of weight	Jaundice	
0.2 (0.2, 0.2)	0.2 (0.2, 0.2)	0.2 (0.2, 0.2)	0.2 (0.2, 0.3)	0.3 (0.3, 0.4)	0.3 (0.3, 0.4)	0.8 (0.7, 1.0)	21.6 (14,52)	PPV as a single symptom
0.3 (0.2, 0.4)	0.2 (0.1, 0.3)	0.3 (0.2, 0.4)	0.3 (0.2, 0.6)	0.3 (0.2, 0.5)	0.4 (0.3, 0.5)	2.0 (1.0, 4.3)	8.9 –	Back pain
	0.4 (0.3, 0.5)	0.4 (0.3, 0.6)	0.5 (0.3, 0.9)	0.7 (0.5, 1.0)	0.9 (0.7, 1.1)	1.6 (1.0, 2.9)	22.3 –	New onset diabetes
		0.2 (0.1, 0.3)	0.3 (0.1, 0.5)	0.2 (0.2, 0.3)	0.4 (0.3, 0.5)	2.7 –	>10 –	Diarrhoea
			0.3 (0.2, 0.5)	0.6 (0.4, 0.8)	0.5 (0.4, 0.7)	1.5 (0.8, 3.0)	>10 –	Constipation
				0.5 (0.3, 0.8)	0.6 (0.4, 0.8)	0.9 (0.4, 2.1)	>10 –	Malaise
					0.9 (0.7, 1.2)	2.2 (1.1, 4.6)	14.6 –	Nausea or vomiting
					1.0 (0.8, 1.2)	2.5 (1.5, 4.4)	15.0 –	Abdominal pain
							>10 –	Loss of weight
							31.6 –	Jaundice

Answering these questions.

- Look at the graph and consider what may be asked
- Question will usually ask
- “which of the following statements are true?”
- Do not make assumptions, stick to facts, graphs show the what and not the why.

Practice management - preparation for the AKT

AKT SOX Trainee Day

Practice management resources

Curriculum outlines what you need to know

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Curriculum-Topic-Guides-300819.ashx 3 / 287

Contents

ENG 06:00

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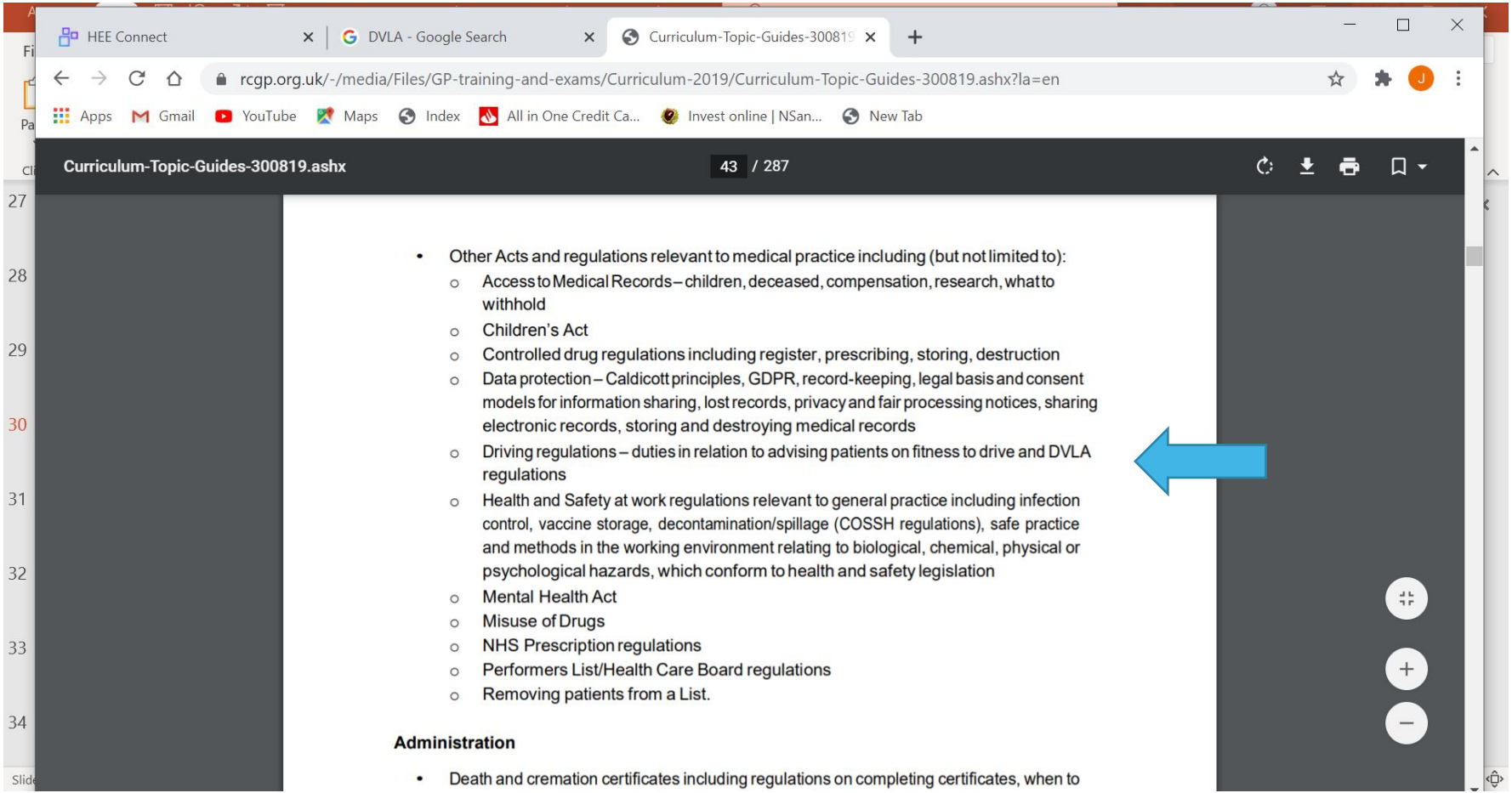
Curriculum-Topic-Guides-300819.ashx 43 / 287

- Death and cremation certificates including regulations on completing certificates, when to refer to the Coroner/Procurator Fiscal
- Insurance certificates including for life insurance, critical illness insurance (Personal Medical Attendant's reports), travel insurance
- Notification of infectious diseases (see RCGP Topic Guide *Infectious Disease and Travel Health*)
- Private certificates/medicals – principles such as disclosure of information e.g. firearms, insurance cancellation, probation, adoption, critical illness cover, fitness to fly/travel
- Registration including visual impairment, disability
- Relevant benefits and allowances (e.g. DS1500, maternity benefits /MAT B1 forms)
- Relevant regulations for Mental Capacity and Mental Health Acts
- Statements of Fitness to Work certificates and related sickness regulations such as Statutory Sick Pay, Employment Support Allowance, principles of returning to work.

Practice management and business matters

You should have a working knowledge of:

- Contract requirements such as clinical outcome frameworks and enhanced services.
- External assessment and inspections (e.g. CQC, training inspections, Care Inspectorate)
- Federations and GP networks
- Financial aspects of a medical practice (e.g. interpreting simple profit and loss accounts, a balance sheet, sources of income and expenditure)



- Other Acts and regulations relevant to medical practice including (but not limited to):
  - Access to Medical Records – children, deceased, compensation, research, what to withhold
  - Children's Act
  - Controlled drug regulations including register, prescribing, storing, destruction
  - Data protection – Caldicott principles, GDPR, record-keeping, legal basis and consent models for information sharing, lost records, privacy and fair processing notices, sharing electronic records, storing and destroying medical records
  - Driving regulations – duties in relation to advising patients on fitness to drive and DVLA regulations
  - Health and Safety at work regulations relevant to general practice including infection control, vaccine storage, decontamination/spillage (COSSH regulations), safe practice and methods in the working environment relating to biological, chemical, physical or psychological hazards, which conform to health and safety legislation
  - Mental Health Act
  - Misuse of Drugs
  - NHS Prescription regulations
  - Performers List/Health Care Board regulations
  - Removing patients from a List.

Administration

- Death and cremation certificates including regulations on completing certificates, when to

Practice management resources

Curriculum outlines what you need to know

Feedback from previous sittings

Video on fourteen fish

Oxford handbook

Go to meetings, get involved.

DVLA

Fitness to drive and fly – quick win

- DM
- Cardiovascular
- Epilepsy
- Drugs and alcohol

- Fitness to fly?
- There is a video on 14 fish
- https://www.caa.co.uk/passengers/before-you-fly/am-i-fit-to-fly/guidance-for-health-professionals/assessing-fitness-to-fly/

Practice management resources

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Oxford handbook

DVLA

Nigels surgery CQC

GP mythbusters

Categories: Organisations we regulate

GP Mythbusters clear up some common myths about our inspections of GP services, independent doctors and clinics and out-of-hours services and share agreed guidance to best practice.

These are listed under the five key questions that we ask about services in our inspections (open the title to see the mythbusters):

Safe

GP mythbuster 1: Resuscitation in GP surgeries
GP mythbuster 2: Who should have a disclosure and barring service (DBS) check?
GP mythbuster 3: Significant event analysis (SEA)

GP mythbusters: new

GP mythbuster 103: Complaints management

More from GP mythbusters

You can view the list of all issues in three ways:

- GP mythbusters: latest updates
- GP mythbusters: listed by key question
- GP mythbusters: numerical list

Feedback from 2020

In AKT 40, candidates had difficulty with pre-employment vaccination requirements, and knowledge had not improved in AKT 41. GPs have responsibilities for the health and safety of staff whom they employ, and this includes some vaccinations. We stated after AKT 38 that we expect candidates to have a broad overview of childhood immunisations, but we do not require very detailed knowledge, for example, of infant schedules. We similarly expect candidates to be familiar with general requirements and recommendations for adult vaccinations, including pre-employment.

GP mythbuster 37: Immunisation of healthcare staff

Categories: Organisations we regulate

Coronavirus (COVID-19)

The COVID-19 vaccine is an important protective measure for both staff and patients of the practice. All staff should be offered and encouraged to have any of the approved COVID-19 vaccines in line with the latest government guidance.

Guidance on COVID-19 vaccines can be found in the Green book chapter 14a. It states that the objective aim of occupational immunisation of health and social care staff is to

GP mythbusters:

Clearing up some common myths about our inspections of GP and out-of-hours services and sharing agreed guidance to best practice.

More from GP mythbusters

- all employees should be able to have an occupational health assessment
- new employees should have a pre-employment health assessment.

These assessments should include a review of their immunisation needs.

The 'Green Book' Immunisation Against Infectious Diseases gives information on immunisation for staff in general practice. Guidance is provided on the immunisations that may be appropriate for different groups of staff. This depends on their role and place of work.

Vaccinations for all staff in contact with patients

Everyone who has direct contact with patients, including reception staff, should be up to date with their routine immunisations:

- tetanus
- polio
- diptheria
- measles, mumps and rubella (MMR). This is particularly important to avoid transmission to vulnerable groups. Evidence of satisfactory immunity to MMR is either:
  - a positive antibody test to measles and rubella or
  - having two doses of the MMR vaccine.

Some staff may need further vaccinations:

- Bacillus Calmette–Guérin (BCG): if they have close contact with infectious tuberculosis (TB) patients.
- Hepatitis B: if they:
  - have direct contact with patients' blood or blood-stained body fluids, such as from sharps
  - are at risk of being injured or bitten by patients

Talk to your PM – get involved!

Any questions?