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"The Study Guides provide aspiring doctors, dentists and vets with a free long-distance learning programme to develop wider knowledge and transferrable skills. Each month's study guide is paired with a free webinar that is taught online on Medic Mentor's Youtube channel.

The guides can be worked through individually, or as a group and can form the basis for meetings run by school medics societies. You can even invite Mentors to your school to help set up a society! "



FORWARD

HOW TO USE THE STUDY GUIDE

Work through it individually or as part of a medics society in your school!



SEPSIS - MMVD - PULPITIS

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Dr Quinn

President of Medic Mentor

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23 **CRITICAL ANALYSIS** HOW TO SET UP A OF AN ARTICLE

Autonomy, the ability to make your own decisions - or is it?

> MENTOR MAGAZINE, **AUTUMN/WINTER 2020**

MOTIVATING MEDICAL MINDS



MEDICS SOCIETY



UCAT & **BMAT**

Quick questions, you have 60 seconds!

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THE DEBATE 16 Where do you stand?

SCIENCE IN THE **SPOTLIGHT**

Ethics to live by HICAL SCENARIOS



Suitable for students from Year 10 or S3 upwards (parents welcome!)

Multiple locations across the UK this January

TAKE YOUR FIRST STEPS TOWARDS A CAREER IN

Medicine

Vet Med

Dentistry

Believe me, as a Doctor myself, having been through the journey of medical school applications and all the way through to working life, I know it is not an easy path, but it is most certainly an enjoyable, diverse and rewarding one!

First and foremost, congratulations! To be even considering the prospect of a career in medicine, dentistry or veterinary is an incredible accolade.

Getting into a competitive healthcare course requires a great degree of dedication, in addition to showing an early aptitude for the profession, i.e. a few sparks of potential that will one day make a healthcare professional.

We hope you enjoy the study guide and encourage you to read the reviews and thoughts published in the Medic Mentor magazine.

Good luck!

FOREWARD

BY DR LAUREN QUINN, MBChB, BMedSci, PRESIDENT OF MEDIC MENTOR. EMAIL: PRESIDENT@MEDICMENTOR.INFO TWITTER: @MMDRQUINN

monthly •his study quide provides the ingredients to build your early aptitude, helping you to develop your skills in problem learning, based debate, critical appraisal and ethical reasoning, which form the very foundations of successful a the career health sciences, from medicine, dentistry

veterinary medicine. Harnessing these skills early will not only equip you well for the application process and make stand out you from the crowd, but will serve you all through your degree and future careers. The more you put into this study guide, the more you will get out. We strongly encourage to use this study guide in a group

setting, to work together through the chapters and build on your skills as a team. However, monthly study guide will also be accompanied by a monthly webinar professionals the sectors medicine, of dentistry and veterinary medicine, to broaden your horizons and provide context the cases. The most successful Medic Mentor students get involved in everything! Don't hesistate; put yourself outside of your comfort zone and your confidence will grow! Apply for competitions, attend events, read as much as you can, and follow the **Study Series!**

Problem Based Learning Case:

Problem based learning (PBL) is a popular method, currently used by most health professional courses in the UK, in one form or another. The aim of PBL is for the learner to read through a complex and broad series of information, to identify areas of interest and areas they would like to explore further, in order to enhance their knowledge of specific topics, in a self-directed fashion. Through this series, we encourage prospective students to gain their first insights of PBL; read the case individually or as a group, look up what you don't know and scrutinise topics of interest. The questions provided offer ideas of topics to explore and are written in three streams for aspiring medics, dentists and veterinarians; focus on all three or simply what interests you!

THE **MEDIC** PBL CASE

ENDOCARDITIS

Mr Jenkins is a 32-year-old man who lives in a small flat with his parents in one of the most deprived areas of Manchester. He had been experiencing a cough for 3 months and had been losing some weight during that time. He also found that his appetite had been decreasing and he had been experiencing some breathlessness. One morning, he woke to severe, pleuritic pain on the left side of his chest. There was no radiation, and this was made worse by coughing. He also realised that his phlegm was now tinged red. Although the pain was severe, he decided not to mention it to his parents, who he barely saw due to them both working long hours. Three days later, when they were all in the front room together at the weekend, Mr Jenkins found that his heart was racing, and he felt feverish and weak. His mother noticed the evidence of blood in one of his tissues and drove him to A&E. Mr Jenkins' mother had a colleague who had recently been diagnosed with lung cancer, she was worried that her son might have the same condition due to his symptoms, as Mr Jenkins was an ex-smoker of 10 years.

On admission to hospital, the doctor who was about to examine Mr Jenkins got annoyed with him as he appeared drunk and the doctor hadn't yet had chance to have a break at the end of a long shift. The doctor made him wait longer and it was only when Mr Jenkins collapsed a few minutes later that medical professionals came running.

On examination, he had a respiratory rate of 22, a temperature of 39°C and a pulse of 120 BPM. His blood pressure was 60/50. He had a raised JVP and the doctor noticed some swelling in his lower legs, as well as conjunctival pallor. Mr Jenkins rated his chest pain to be 10/10.

A blood test showed the following abnormalities: Hb 8.9g/dl (12.0 - 16.0), CRP 145mg/dl (<0.5) and platelet count 60,000 (150,000 - 450,000). The doctors hooked him up to an IV drip attached to a few different bags. Blood cultures were sent off and found a bacterial colony of Staphylococcus aureus.

An echocardiogram showed large masses on the tricuspid valve, as well as tricuspid regurgitation. On auscultation, there was an ejection systolic murmur in the 5th intercostal space on the left sternal edge. His chest radiograph showed septic pulmonary emboli, and an enlarged right atrium.

One of the junior doctors took a thorough history and found that Mr Jenkins had a 12-year history of intravenous heroin use, which helped explain the primary diagnosis.

Email: engagement@medicmentor.info or call 01530417299

Set up a Medics Society!

If you would like Mentors to visit your school and set up a Medics Society get in touch with Alex Merritt, the School Lead for Medic Mentor

Medicine

Vet Med

Dentistry



SETTING UP A MEDICAL SOCIETY

STEP BY STEP

Find some like minded people, is there a school newsletter? Form-time anoucement? Your careers asviser might be able to help find other students?

Speak to a teacher who can help you get permission to start your society.

When is your society going to meet and how often?
Lunch time? After school?

Where are you going to meet? Common room, classroom, theatre?

Go those organised? Great! Next step contact us: schoolvisits@medicmentor.info or call 01530417299

One of our Mentors can visit you at school for an hour induction on how to set up and get the most out of your societies meetings.

HIERACHY

Who needs to be incharge?

You are going to need:

- President
- Vice President
- Secretary
- Treasurer
- Published
- Education secretary
- Fundraising
- Social administrator
- Teacher liaison

These are just a few.
Tailor positions to
what you need for you
society to run smoothly.

DO'S AND DON'TS

THE STATE OF THE S

DO LISTEN TO EVERYONE'S INPUT, TRY NOT TO UNINTENTIONALLY EXCLUDE ANYONE

DO REMEMBER TO INVITE ANY ASPIRING VETS AND DENTISTS INTO YOUR MED SOCIETY

DO INCLUDE A RANGE OF YEAR GROUPS HIGHER AND LOWER
DO HAVE PEOPLE SIGN UP FOR SCHOOL AMBASSADOR LEADERSHIP
PROGRAM ON THE MEDIC MENTOR WEBSITE, THE EVENTS THEY
CAN ATTEND AND INFORMATION THEY CAN BRING BACK WILL BE
INVALUABLE

ACTIVITIES

The resources at your disposal are limitless.

Our monthly study guides. Current events.

News articles.

Ethical debates.

Problem based learing cases.

Group reviews of the Mentor

Magzine articles.

New medical reasearch topics to read about and discusss.

UCAT/BMAT practice tests.
Group volounteering opertunitys.

Start up your own Medical Newsletter/Blog/Website.
Could your Med Society helpout your community with fundraising?

DON'T RELY ON YOUR TEACHER TOO MUCH, YOU NEED THEIR SUPPORT BUT STRIVE TO BE INDEPENDENT

DON'T FOCUS ON PURSUING DOCTORS AND MEDICAL PROFESSIONALS TO CONSTANTLY VISIT, YOU CAN LEARN MUCH MORE BY RESEARCHING TOGETHER

DON'T FIXATE ON THE AMOUNT OF RESEARCH AND ACTIVITIES YOU CAN PRESENT AT EACH MEETING, REMEMBER ITS ALL ABOUT QUALITY OVER QUANTITY!

HEREARESOMETHOUGHTS TO HELP YOU GUIDE YOUR DISCUSSION:

- 1. What is the inverse care hypothesis?
- 2. What are the different types of bias that may be present in healthcare, from patients and medical professionals?
- 3. What are the different ways of measuring pain and what would you use for different people?
- 4. What are the physical signs that someone may have an infection?
- 5. How can an infection be diagnosed clinically?
- 6. How is sepsis different to an infection and what are the warning signs?
- 7. How is sepsis treated in hospital? What are the IV bags likely to be that Mr Jenkins was hooked up to?

- 8. Where would you listen to the different heart valves with a stethoscope?
- 9. What does a murmur indicate?
- 10. Where was the primary site of infection in Mr Jenkins' case and what may have caused it?
- 11. Review the anatomy of the circulatory system. Why is the right side of his heart affected rather than the left?
- 12. What is the cause of Mr Jenkins' raised JVP and swollen legs?
- 13. What is a pulmonary embolus and what are its effects on the body?
- 14. Why is it that the lungs are the sticking point of the emboli and not the brain, for example?
- 15. What are the important clinical features of a chest radiograph?
- 16. What are the effects of heroin use on the body?



THE **VET** PBL CASE

MMVD

During a routine booster vaccination of a 9 year old Cavalier King Charles Spaniel (CKCS) named Ruby you perform thoracic auscultation as part of your clinical exam. On the left side of the chest, you auscultate a grade 4/6 heart murmur which sounds like 'lub-dub-shhh'. You ask the owners if Ruby has been coughing at all and they say she often clears her throat but don't think it is a cough. Ruby's Capillary refill time is normal (<2s), her mucous membranes are pink and moist and her femoral pulse matches her heartbeat. Ruby is otherwise healthy and the owners have no other concerns. To further investigate Ruby's heart murmur you advise chest radiographs as well as an echocardiograph scan. The following week Ruby is admitted for cardiology work up and a diagnosis of Myxomatous Mitral Valve Disease (MMVD) is reached based on:

- Enlarged heart noted on chest x-rays and measured using VHS (Vertebral Heart Score)
- Mitral Valve prolapse, Mitral valve regurgitation, LA + LV enlargement all noted on echocardiograph scan.

The findings are discussed with the owners and they opt to start Ruby on Pimobendan. A month later Ruby is re-examined and her clinical signs have much improved and her owners describe her as a different dog!

HEREARESOMETHOUGHTS TO HELP YOU GUIDE YOUR DISCUSSION:

- 1. What is a heart murmur and how is it graded?
- 2. Coughing is a major clinical sign of cardiac disease in dogs, why is it that they cough and can you describe any other cardiac clinical signs?
- 3. Since Ruby is otherwise healthy, is she okay to have her annual booster vaccination?
- 4. What are the 4 valves of the heart?
- 5. Describe the function of the mitral valve and the mechanisms that lead to a dysfunctional valve in MMVD.
- 6. CKCS are 'pre-disposed' to developing MMVD, what does the term pre-disposed mean?
- 7. Give 3 examples of breeds with 'pre-disposed' diseases.
- 8. Pimobendan is a common treatment of choice in MMVD, how does it help the heart?

Lead by Dr Sharonjeet Uppal, Vice President of Mentoring

SCHOOL AMBASSADOR LEADERSHIP PROGRAMME

Do you have what it take to become a future NHS leader? Apply directly on the Medic Mentor website: medicmentor.co.uk

Medicine

Vet Med

Dentistry



THE **DENTIST** PBL CASE

IRREVERSIBLE PULPITIS

Alex, a 25 year old male has been experiencing pain in his lower left quadrant. Alex has had bad experiences as a child at dental appointments, resulting in him being scared of dentists and often cancels/misses appointments. However, the pain is too unbearable at this time so he reluctantly visits the dentist.

Alex is called into the dental surgery by the nurse. He initially sits in the visitors chair and takes in his surroundings. The dentist introduces himself as Dr Smith. It is evident that Alex is nervous, as he doesn't seem to be able to focus and he fidgets in the chair. Dr Smith acknowledges this and tries to distract Alex by asking about his day. Eventually, Alex relaxes slightly and is able to sit in the dental chair. Dr Smith makes Alex aware that if at any point he wants him to stop all Alex has to do is raise his hand. They practise this, and Alex feels comfortable enough to carry on.

Firstly, the Dr Smith takes a history. The Alex notifies the Dr Smith that he has thrombophilia and is on warfarin. There is no other relevant medical history. During the social history, Alex says that he loves sucking on sweets, snacking and rarely brushes his teeth. He also hasn't been able to visit a dentist for 7 years because last time he went he had an extraction and it was extremely painful but the dentist wouldn't stop to put more anaesthetic in. Dr Smith reiterated the fact that he would stop at any point, as they practised.

The dentist then asks Alex some questions about his pain and finds out that the pain:

- Is in the lower left region, the posterior teeth, but he can't determine which tooth
- Sometimes spreads across his whole left jaw
- Hot drinks and food can make the pain worse
- 8/10 pain (10 being the worst pain you can imagine)
- It occurs spontaneously
- It is a dull/throbbing pain
- It has occurred like this for 2 months
- Lasts for at 30 minute periods or longer at a time

Dr Smith then asked Alex if he felt comfortable enough for Dr smith to look in his mouth with a mirror to look at the region. Alex said yes. Clinically there was a large carious (caries) cavity in the LL7 and the LL6 is heavily restored with an occlusal amalgam.

Dr Smith then explained to Alex that he needed to do some further tests to confirm the diagnosis. He explained to Alex that he may feel discomfort, but this was essential to getting the correct diagnosis and therefore correct treatment. Dr Smith reiterated the fact that he would stop at any point, as they practised. Alex agreed. Dr Smith used ethyl chloride (EC) and then an electric pulp test (EPT) on the suspect teeth.

The results were:

- LL8: EC: + EPT: 40 - LL7: EC ++ EPT: 10

- LL6: EC + EPT: 43

- LL5: EC + EPT: 42

Dr Smith then took periapical radiographs of the suspect teeth. He notices a large shadow in the occlusal surface of the LL7 that goes into the pulp. Although the LL6 is heavily restored, from the radiograph it otherwise looks healthy.

Dr Smith's diagnosis is irreversible pulpitis for LL7. The treatment options for the LL7 are: 1. No treatment (not advised) 2. Root canal treatment 3. Extraction. The dentist summarises the diagnosis to the patient, the benefits and risks of each treatment and then answers any questions that Alex asked.

HERE ARE SOME THOUGHTS TO HELP YOU GUIDE YOUR DISCUSSION:

- 1. What is thrombophilia?
- 2. What is warfarin, what does it do and what can it be used for?
- 3. What are the different teeth notations used in dental charting?
- 4. What is caries and what causes it? Does Alex have any risk factors for caries?
- 5. What type of tests are EC and EPT, and what are they used for?
- 6. What are radiographs used for in dentistry?
- 7. What are the different types of radiographs that dentists can take of teeth and what are the differences between them?
- 8. What is the acronym used for a pain history? Use the pain history taken above to fill out the acronym with the appropriate information for this case.
- 9. What is the shadow on the radiograph likely to be? And why is it significant that it has reached the pulp?
- 10. What is irreversible pulpitis and what can cause it?
- 11. The patient is on warfarin, how might this affect the treatment of the LL7? (hint: extraction)
- 12. What test is required for a patient on warfarin who is having an extraction? What is the measurement range required in order for an extraction to be allowed to be done?
- 13. Why might Alex's fear of the dentist and missed/cancelled appointments influence the treatment option that is most appropriate for Alex?

QUICKFIRE QUIZ

CARDIOLOGY

Time for a quickfire quiz, this section is here to help with your revision for the multitude of topics you will be leaning at school, these question will be a mixture of medical, social and scientific questions, see how many you can answer on your own from what knowledge you have already gained.

Remember a lot of these question could be used in you Medical Society meetings!

- 1. What is Endocarditis, and how can impact the heart?
- 2. Name the electrical process and the stages that make the heartbeat.
- 3. What are the names of the main artery and the main vein in the neck?
- 4. Answer true or false for the following questions:
 - **a.** Red blood cells and platelets are formed bone marrow found in the axial skeleton.
 - **b.** Children will always have the same blood type as one of their parents.
 - c. Haemoglobin molecules within red blood cells only transport oxygen.
 - **d.** The blood type O- is the universal donor.
- 5. Name as many anatomical parts of the heart as you can.

Group activity opportunity:

Draw an anatomically correct heart and label it as accurately as possible without any reference.

.endineae.

5. Cardiac muscle, endocardium, epicardium, interventricular septum, trabeculae carneae, left atrium, left ventricle, right ventricle, vena cava, aorta, pulmonary artery, pulmonary veins, tricuspid valve, mitral valve, pulmonary semi-lunar valve, aortic semi-lunar valve, chordae

A.True b. False (children can different blood types to their parents and siblings) c. False (they
transport both O2 and CO2) d. True (all other blood types can receive O- blood)

3. Carotid arteries (Common, Vertebral, External) Jugular vein (internal, External)

A. Sinoatrial node = atrial constriction b. Atrioventricular node = slows SA node pulses c. Bundle of
HIS = AV node send pulse down HIS between the ventricles to the base apex of the heart before
branching left and right constricting the ventricles electrical activity reterns to SA node.

1. A rare bacterial infection of the endocardium (inner lining) of the heart, can result in irreparable damage the heart resulting in surgical heart valve repair or replacement



ALL PHOTOS ARE FROM REAL MEDIC MENTOR EVENTS

PLEASE SEE THE **MEDIC MENTOR WEBSITE FOR FUTURE** DATES AND **LOCATIONS**



DAY 1 INSIGHT CONFERENCE

The Insight Conference is an essential event for any aspiring doctor, dentist or vet. It will help you to make an informed career decision and develop a greater insight into your chosen profession, which is a scored component of the UCAS application.

DAY 2 UCAS **LECTURES**

This is the most comprehensive UCAS lecture available, for students who want to take the next step and make a competitive application medical school. It also covers much of the medical-wider reading that students are not taught in schools.

DAY 1 £25/STUDENT OR FREE FOR STUDENTS FROM LOW-INCOME

REGISTER YOUR PLACES AT MEDICMENTOR.CO.UK

THE **MENTORING ORGANISATION** FOR ASPIRING DOCTORS, VETS AND DENTISTS

Suitable for students in S3-S5 or year 10-12. Parents and teachers are also welcome.

Proceeds from these events are reinvested to support next generation of healthcare professionals with scholarships and free educational initiatives.

FIND OUT WHY **OVER 6000** PEOPLE HAVE JOINED MEDIC MENTOR

UCAT

University Clinical Aptitude Test.

Becoming a doctor means not only having the intelligence and knowledge to succeed but also the mindset to be a Doctor. This is where the UCAT comes in. To go into medicine you must take the UCAT a multiple-choice computer test comprised of five sections:

Section 1: Verbal Reasoning.

Section 2: Decision Making.

Section 3: Quantitative Reasoning.

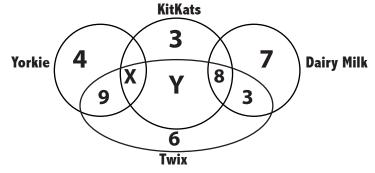
Section 4: Abstract Reasoning.

Section 5: Situational Judgement.

Entire test running time: 2hours

UCAT Practice Question

SECTION 2: DECISION MAKING



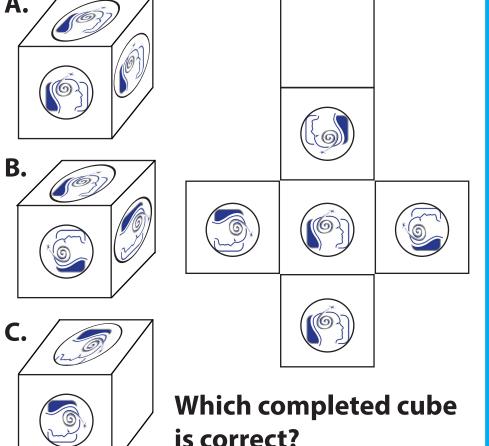
100 people are asked what chocolate they have in their fridge, every person has at least one chocolate bar in their house.

Which of the following is true:

- 1. There are more people that have KitKats than Twix.
- 2. There are exactly 21 gardens with only one type of chocolate bar.
- 3. The amount of people with all four chocolate bars cannot be calculated.
- 4. There are more fridges with Twix than Yorkie.

BMAT Practice Question

SECTION 1: APTITUDE AND SKILLS



BMAT

BioMedical Aptitude Test

The BMAT is required by these universities in the UK:

University of Cambridge
University of Oxford Medical School
Imperial College London
University College London
Leeds' School of Medicine
Brighton & Sussex Medical School
Keele University
Lancaster University

The BMAT is a written test that tests your scientific knowledge as well as your aptitude for medicine, it does this over three sections

Section 1: Aptitude and Skills.

Section 2: Scientific Knowledge and

Application.

Section 3: Writing Test.

Entire test running time: 2hours

Situational Judgement Test Question

Situational Judgement Tests (SJT) are an important means of assessing a health care professionals' professionalism and ethical reasoning. SJT questions comprise a real-life challenging scenario and provide five options for actions that could be taken in the situation given. The answers usually need to be selected or ranked in order of importance, from most suitable action/reasoning to least suitable action/ reasoning. Respondents are expected to answer the question, in accordance with the guidelines from their governing body; in the case of Doctors, this would be the General Medical Council (GMC). SJT questions are designed to challenge but with practice and understanding the reasoning behind the answers, they are something you can get the hang of. This is really important not only for applying to medical school, as you will be ranked on SJT questions in the ULKCAT, but also throughout your degree and in your future career.

THE MEDIC & DENTIST SJT

You are a junior GP on a home visit who suspects that an elderly patient is not adhering to her medication, as she is reporting a worsening in her symptoms that should be addressed by the tablets that she is taking. The patient insists that she takes her medication exactly as prescribed and doesn't miss any.

Order the following responses in order of appropriateness:

- A. Educate her in why she should take her medication and put her tablets in a dosette box for easier use
- B. Take the patient at her word and up the dosage of medication to see if this improves her symptoms
- C. Gently reprimand her and insist that she take her medication as prescribed, as this is the only way that her symptoms will improve
- *D.* Take the time to explore with her the reasons why she might not be taking her medication properly
- *E.* Ask her relatives who live with her to make sure that she takes her medication each day





Find out how over 80% of last year's Summer School students successfully applied to Medical Schools in the UK

GIVE YOURSELF THE BEST CHANCE OF GETTING AN OFFER TO STUDY

Medicine

Vet Med

Dentistry

Situational Judgement Test Answer: BEDAC

Option (B) is the most appropriate, as there may be a reason why the patient is not taking their medication properly. She may be unaware of when or why they have to be taken, she may be experiencing unpleasant or embarrassing side effects and may not want to tell anyone, the medication may be entering her body in the wrong way, or any other reasons. None of the other options would properly address any of these problems, although putting her medication in a dosette box may be helpful (E). This is the next most appropriate response but assumes that the problem is down to the patient forgetting which medication to take at which time. This may not be the case. (D) also assumes this but is less appropriate as it relies on other people being around every

time that the patient must take the medication and it doesn't help them understand how or why they are taking the treatment. Option (A) is less appropriate still, as telling the patient off may make her feel uncomfortable or chastised and be even less likely to adhere to the treatment. There may also be alternatives to the medication that you could explore with the patient. Option (C) is least appropriate, as this is ignoring the problem and could be harmful if the patient decides to take any of this strengthened medication. This could lead to toxic levels in the body and cause dangerous side effects.

THE **MEDIC** DEBATE

"DOCTORS SHOULD BE ABLE TO KNOWINGLY PRESCRIBE PLACEBOS?"

Points to consider:

- What is a placebo and in what situations are they given to patients?
- Does always giving patients tablets when they ask for them lead to a reliance on always medicating their symptoms?
- Is the beneficial effect of a placebo worth prescribing e.g. in the case of a cold when there is normally no other medication for it?
- Is there an ethical problem of prescribing a tablet, inert or that is likely to have little impact, when a patient is under the impression that it will have a physiological effect?
- Should GPs tell the patient that the pill is a placebo?
- Do placebos still work if the patient knows that it is a placebo and that it is unlikely to have any effect?
- What are the different ways that the placebo effect is taken advantage of in healthcare and in actual drug manufacture to improve patient outcome?

An important skill as a future medical practitioner is to debate, critically appraise information, weigh up arguments for and against and come to a considered and well-reasoned view point. In this series, we provide a debate topic which we want you to consider in detail; what immediately comes to mind, how would you defend your point of view if challenged-what evidence would you use to support your arguments and what are the strengths and flaws of the for and against arguments. We encourage you to work through the questions below, ideally with peers or colleagues.

Keep in mind theses debates work best with others, why not try:

- Creating your own Medical Society?
- Going through the points with friends and family?
- Discuss this month's Debates on the Medic Mentor Facebook and Twitter pages?

Remember a Debate is not an argument, make your views relevant and always accept that others will have their own views, be diplomatic, and informative

THE **VET** DEBATE

"ANIMALS ARE A LUXURY, NOT A NECESSITY"

Points to consider:

- Should everyone own pets?
- What are some of the responsibilities owners take on when owning a pet?
- Explain the 5 freedoms for animals.
- Do these responsibilities differ between companion animals and production animals?
- What are options for owners with financial difficulties?
- How does this statement apply to homeless individuals owning pets?
- Is it fair to euthanize an animal due to owner's financial limitations?
- Do breeders/shelters/pet shops have any responsibility in ensuring an animal will go to a home with adequate finances to cover their care?



Medic Mentor Students: Awards Program January 2020

Every student considering an application to medical, dental or vet school should also be enrolled on the Awards Programme because...

- 1. It increases your chances of getting into medical, dental and vet school2. It helps you to focus your efforts and achievements
 - 3. It is an impressive medically relevant Award to have on your CV
 - 4. It puts you in the running for a £12,000 scholarship for university
 - 5. It makes the process more fun and less stressful!



SCIENCE IN THE SPOTLIGHT

IN THIS SECTION, WE AIM TO COVER A TOPICAL NEWS STORY, PROVIDING THE SCIENCE BEHIND THE STORY, AND DISTINGUISHING FACT FROM THE FICTION

Ketamine may reduce heavy drinkers' craving

A one-off dose of ketamine may help heavy drinkers cut back on alcohol, an experimental trial by University College London suggests.

When the sedative was used to disrupt people's memories of why they wanted to drink, they drank less and their urge to drink lowered over nine months.

The researchers say ketamine could be a helpful treatment for alcohol and other addictions. Experts said the findings were worthy of further investigation.

What is ketamine?

Ketamine is widely used in the NHS as an anaesthetic, sedative and pain reliever.

It is also commonly used on animals.

Because of its hallucinogenic effects, it is also thought of as a "party drug".

BUT IT CAN CAUSE SERIOUS HARM TO THE BODY, AND BE FATAL. IF USED THIS WAY.

- KETAMINE USERS TALK ABOUT HEALTH PROBLEMS
- KETAMINE'S 'RAPID HELP' FOR DEPRESSION
- KETAMINE USE 'CAN
 DESTROY BLADDER'

 KETAMINE IS CLASSED BY THE
 GOVERNMENT AS A CLASS-B

 DRUG, WHICH MEANS IT IS

 ILLEGAL TO TAKE, CARRY, MAKE

RECREATIONAL USE RISKS:

- SERIOUS BLADDER PROBLEMS
- FEELINGS OF SICKNESS
- CONFUSION

OR SELL.

- MEMORY PROBLEMS
- PARALYSIS OF THE MUSCLES
- HALLUCINATIONS
- DEPRESSION
- FLASHBACKS

WHAT DID THE STUDY FIND?
THE STUDY INVOLVED 55 MEN
AND 35 WOMEN WHO WERE
DRINKING ABOUT 30 PINTS OF
BEER A WEEK - FIVE TIMES THE
RECOMMENDED LIMIT - BUT
HAD NOT BEEN DIAGNOSED WITH
ALCOHOL ADDICTION AND WERE
RECEIVING NO TREATMENT.

FIRST, THEY WERE SHOWN
PICTURES OF BEER AND OTHER

DRINKS, ASKED TO RATE THEIR URGE TO DRINK AND THE PLEASURE IT WOULD GIVE THEM AND THEN GIVEN A BEER.

NEXT, THEY WERE SPLIT INTO THREE GROUPS AND:

- THE PROCESS WAS
 REPEATED BUT INSTEAD
 OF A BEER, THEY WERE
 GIVEN A SMALL DOSE
 OF KETAMINE VIA AN
 INTRAVENOUS DRIP
- THE PROCESS WAS
 REPEATED BUT INSTEAD
 OF A BEER, THEY WERE
 GIVEN A PLACEBO VIA AN
 INTRAVENOUS DRIP
- THE PROCESS WAS NOT

REPEATED, AND THEY
WERE GIVEN A SMALL
DOSE OF KETAMINE VIA AN
INTRAVENOUS DRIP.

- DURING THE FOLLOWING NINE MONTHS, ALL THREE GROUPS MANAGED TO REDUCE THEIR DRINKING.
- BUT THE FIRST GROUP HAD THE GREATEST OVERALL IMPROVEMENT:
- CUTTING THEIR ALCOHOL INTAKE BY ABOUT HALF
- DRINKING ON FEWER DAYS
- WHEN GIVEN A SMALL BEER, HAVING LESS URGE TO DRINK IT AND ENJOYING IT LESS.

What do the experts say?

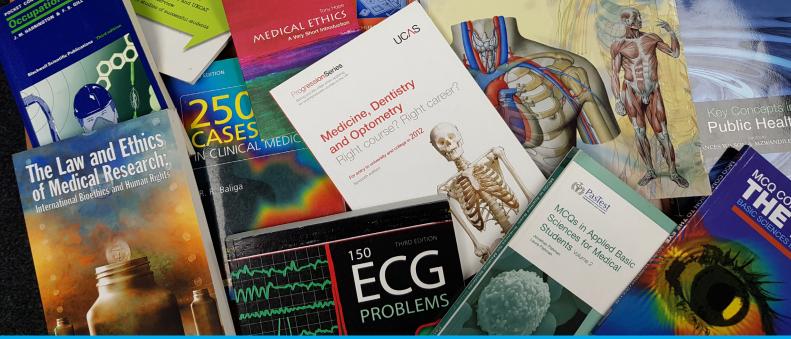
Lead study author Dr Ravi Das, a psychopharmacologist at University College London, said: "This is a first demonstration of a very sensible, accessible approach.

"We want to make treatment better for people with addictions, so we now need to replicate this in a full clinical trial."

Matt Field, a professor of psychology at the University of Sheffield, said the findings were "promising" and "worthy of further investigation".

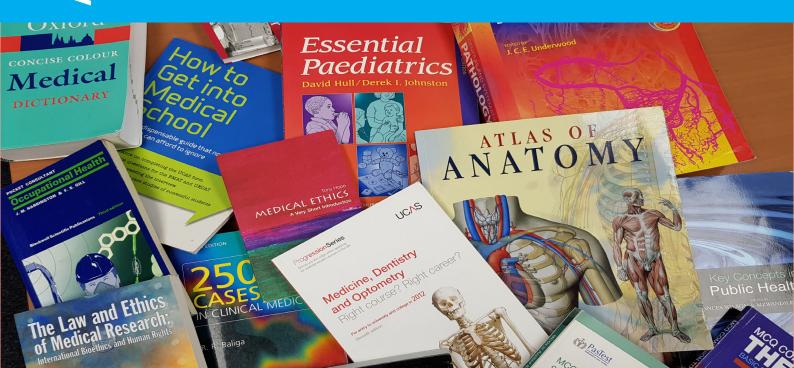
But "further investigation with a larger sample size" was needed to support claims using ketamine to rewrite reward memories led to unprecedented long-lasting reductions in alcohol consumption. Celia Morgan, a professor of psychopharmacology at the University of Exeter, said: "Ketamine is an addictive substance and associated with harms to bladder and a risk of accidents, so we have to be cautious when using it in groups who are prone to addictive behaviours.

"But this is important work trying to drive the science of ketamine and memory forwards."



Read the article, taken from the BBC News website, and answer the following questions:

- 1. What type of study is this article describing?
- 2. Do you feel that the article explains the results clearly and in enough detail?
- 3. Explain the three arms of the trial and what the researchers were trying to investigate with each
- 4. Why do you think that all three groups were able to reduce their drinking?
- 5. What is randomisation and how is it carried out?
- 6. What is blinding/double blinding, and do you think that this was done in this study?
- 7. Does having a small study sample will mean that the 95% confidence interval will be larger or smaller?
- 8. Do you think that these findings are generalisable (to the rest of the country/internationally)?
- 9. What are the difficulties of using an illegal substance in a study?
- 10. What might be the ethical concerns in this trial, and do you think they are worth the potential findings?



THE FOUR BASIC
BIOETHICAL PRINCIPLES
GOVERN MEDICAL ETHICS
FOR ALL WHO WORK IN
HEALTHCARE THESE ARE;

AUTONOMY

Respecting individuals choice to make there own informed decisions.

JUSTICE

Ensuring that all patients are treated equally and fairly.

BENEFICENCE

The balance of benefits and risk to the patient, actions should be for the patients benefit.

NON-MALEFICENCE

Do no harm, if some harm or discomfort may result from treatment it must be outweighed by the benefits.

Keep these principles as a framework when answering any ethical situation encounter.

THE **MEDIC** ETHICAL SCENARIO

You are doing some work experience on an elderly care ward, where you see a patient who is in severe pain and has advanced, terminal cancer. He asks if the on-call doctor could up his dosage of morphine so as to hasten his death, even though he is already on the highest recommended dose. You see in the patient's notes that he has a DNAR order.

- 1. What does DNAR stand for?
- 2. What is the aim of palliative care?
- 3. What would be the positives and negatives of giving this patient what he wishes?
- 4. What is the current law regarding euthanasia in the UK?
- 5. What are the different types of euthanasia? Do you think this scenario fits into one of these definitions?
- 6. Explain the principle of double effect. How could it apply to this case?
- 7. Is there any evidence that giving a greater dose of opiate increases chance of death in a palliative care setting?
- 8. Why can a DNAR order be placed and who can issue them?
- 9. Can DNARs be put on a patient against their wishes?

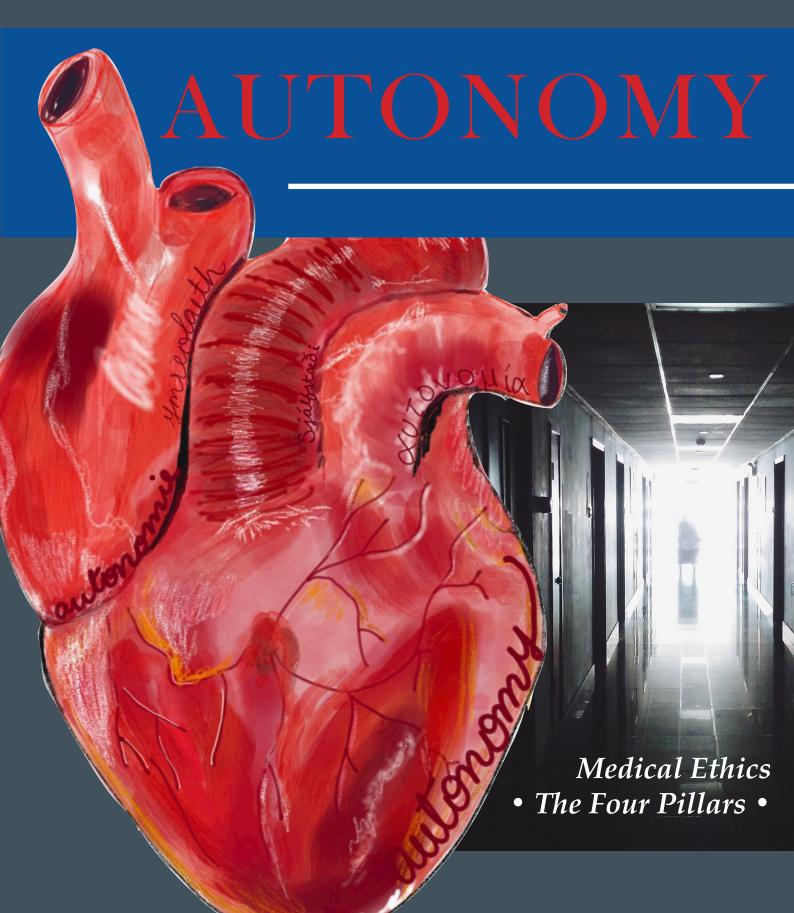
THE **VET** ETHICAL SCENARIO

You are a final year veterinary student on a yard visit. The patient to be examined is a 28 year old Thoroughbred gelding with bilateral glaucoma with essentially no vision but painful eyes. After a detailed history and ocular examination it is determined that bilateral enucleation (removal of the eye in socket) or euthanasia are the only two feasible options. The owner is very distressed and is struggling to make a decision.

- 1. What is your initial view of the scenario and what would you do?
- 2. What are the pros and cons of the 2 treatment options?
- 3. At what point would you discuss finances with the owner?
- 4. Would your decision be different if it were a cat or dog? If so, why?

MENTOR

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CRITICAL ANALYSIS OF AN ARTICLE

LEARN TO THINK CRITICALLY LIKE A HEALTHCARE PROFESSIONAL

key skill that every medical student should acquire is the critical appraisal of research articles. In the UK, we practise evidence-based medicine which essentially means that decisions regarding clinical guidelines, investigations and management conditions are made after careful evaluation of scientific evidence. The most basic form of such evidence is research published in peerreviewed scientific papers. However, there is a real art to distinguishing between robust scientific good, findings and science that is lacking in good evidence. Just because something is published in a newspaper, online, journal, or even a textbook does not mean it is definitely true.

Critical appraisal is a process used to identify the strengths and weaknesses of an article in order to objectively assess its usefulness and validity.

Ve, at Medic Mentor, would like to encourage you to learn this invaluable skill as soon as possible. However, instead of reading dry scientific papers that are likely to be above your level of understanding, in each School Societies Bulletin we will give you an interesting medicine-related article to read and appraise. This is also a useful skill, as we are presented with opinions mixed in with facts in the media every day, and doctors need to be able to dissect to the key issues.

As well as this, we now offer amazing opportunity for those of you who want to voice your opinion or just get a huge brownie point for application to medical school and beyond. Write down your critical appraisal using the "Letter Guidance" in the downloads section of our website for full details. The best letters will be published in the subsequent issue of Medic Mentor Magazine, the only magazine in the UK dedicated to students applying healthcare to degrees, where school students can put their name to an article. It cannot be emphasised enough how good such a thing would look on a medical candidate's CV.

CRITICAL ANALYSIS OF AN ARTICLE

AUTONOMY, THE ABILITY TO MAKE YOUR OWN DECISIONS - OR IS IT?

Here we have an article taken form the Medic Mentor magazine, the theme was

"Autonomy"

After having worked through this study guide you should have a grasp on how to read, and without bias, analyse the information presented to you in the article. In Februarys Study Guide, one of our mentors will have analysed this same article for you to compare to you own critical analysis.

Autonomy, the ability to make your own decisions - or is it?

ZAINAB AFZAL

Autonomy is one of the central ethics of medicine. It is based on the idea that the patient has the ultimate decision-making responsibility for their own treatment and is defined as the respect given to patients and their decisions. This means that a medical practitioner cannot impose treatment on an individual for whatever reason. There are four central ethics in medicine: Autonomy, Beneficence, Justice and Non-Maleficence. The subject of patient autonomy is an oft-debated topic in medicine not only because of the patient's rights but also due to the underlying question of whether it is morally correct for doctors to take a step back and let the patient decide.

Research has shown that patient-centred care actively engages people in their treatment and improves outcomes.

Patient autonomy has undoubtedly had a positive impact on patients, allowing them to raise their opinion on their treatment. The idea that patients should be offered options and allowed to make voluntary choices about potentially life-changing health care interventions is important. It certainly discourages some inappropriate paternalism and protects some patients from unwanted intervention, for example, by permitting individuals to decline surgery that they consider more burdensome than beneficial. Medical paternalism is a set of attitudes and practices in medicine in which a physician determines that a patient's wishes or choices should not be honoured. The doctor-patient relationship has evolved over the years. Prior to the last two decades, the relationship was predominantly between a patient seeking help and a doctor whose decisions were silently complied with by the patient. In this paternalistic model of the doctor-patient relationship, the doctor utilises his skills to choose the necessary interventions and treatments most likely to restore the patient's health. Any information given to the patient is selected to encourage them to consent to the doctor's decisions. This idea of the doctor having a greater say in the treatment has been challenged over the years. There is now a more active, autonomous and thus patient-centred role for the patient which advocates greater patient control, reduced physician dominance, and more mutual participation.

The idea that patients should be enabled to make informed decisions also helpfully encourages attention to individuals' understandings of health care interventions, and supports the development and use of potentially autonomy-enhancing patient decision aids. Patient decision aids are a means of helping people make informed choices about healthcare that take into account their personal values and preferences. Numerous studies have shown that decision aids appear to have a positive impact on patient-practitioner communication. They have also proved to increase people's involvement, and improve knowledge and realistic perception of outcomes. In addition, with the patient being responsible for the final and ultimate decision for their treatment, it allows the patient to develop a sense of assurance and trust knowing the treatment they will receive. Studies have shown



that patient-centred care actively engages people in their treatment and has improved outcomes; for example, a study on older adults with asthma found that those who were offered greater involvement in decision making resulted in a better asthma-related quality of life. This clearly shows the importance of autonomy in medicine and the positive impact it can have.

Despite these clear pros of taking a patient-centred approach that engages patients in decision making, some argue it may not necessarily be in the patient's best interests to let the decision depend on them entirely. This is partly due to the fact that the patient may not fully understand their condition and so it would be unlikely that they would understand the resulting consequences of their decision. In

Autonomy also depends on the capacity of the patient. A patient's capacity is influenced by the rights of the patient and the consideration of beneficence and non-maleficence on the part of the doctor. If a patient is unable to make decisions for themselves due to lack of capacity then a qualified person is likely to make these decisions for them on their behalf. In terms of legal requirements in



the UK, only adult patients with the capacity to make decisions about their own treatment can exercise the right to autonomy. In the case of an emergency, is also stated that it may be necessary for medics to make treatment decisions for the patient if they are not able to obtain the patient's informed consent. In very rare cases, an exception may apply such that the doctor is not

addition, if the doctor is not allowed to influence the decision of the patient, the patient may not have full confidence in their decision. This could result in them making poorly guided options which are not necessarily beneficial for them; potentially resulting in their condition worsening. This raises the question of whether it is morally correct to allow the decision to reside solely with the patient. It can be argued that if clinicians are more inclined to offer and allow choice than to enable patients to make informed choices, the principle may also fail to protect those who are basically 'competent' but who struggle to choose between health care options because, for example, they lack confidence, are not sure which option they prefer, have conflicting priorities or anticipate blaming themselves if outcomes are poor. These patients may feel abandoned rather than autonomous if their clinicians refuse to do more than inform them about options and insist that they choose. This again leads to the initial consideration of whether the decision actually lies upon the patient, and if it does, should it?

required to provide a patient with information if this would be seriously harmful to them. Further thought into the situation may also lead to the belief that the next person to have the responsibility of the decision should be the relatives of the patient. This again can lead on to further complications and issues as the patient cannot be asked whether they wish to consent to the responsibility being passed to a relative, or the relative might not be fully aware of the situation and so would not be able to make an informed decision. This is a common complication when young patients are involved as those under 18 are not assumed to have capacity (as those over 18 are). In cases where paediatric patients lack the capacity to make a decision regarding their treatment, it is likely that a parent will be given the responsibility to make the decision for them simply since they are responsible for taking care of their children. A young patient's capacity will be determined by their ability to understand their condition and the resulting consequences which could be brought about depending on the decisions

that they make. Alternatively, the situation may be critical and cannot be held until someone decides. In most cases, if the patient is unable to give consent or to make a decision then it is likely that the situation is then in the hands of a team of healthcare workers or the courts.

Recognition of the vulnerability of autonomy in health care contexts led to its inclusion as a key concern in biomedical ethics.

Autonomy is widely regarded as the most important ethical principle in medicine. Recognition of its vulnerability in health care contexts led to the inclusion of respect for autonomy as a key concern in biomedical ethics. A principle of respect for autonomy is also invoked in discussions about confidentiality, privacy and truth-telling, but is most strongly associated with the idea that patients should be allowed or enabled to make autonomous decisions about their health care. It is seen as the most important medical ethical principle as it should ultimately be the patient's duty to decide whether they wish to go forward with a certain treatment or if they

think they would be better off without it. Patient autonomy is widely valued as it may shape the way people get to live their lives and it is believed that it will help to strengthen patient-doctor interactions and relationships. When discussing biomedical ethics, doctors frequently favour the right of the patient to decide. This emphasis and respect for autonomy can overrule any number of other considerations, showing its importance in medicine.

Autonomy is clearly important but it is not always followed and not necessarily always in the best interests of the patient. Issues of autonomy continue to be areas of debate in medical practice, and often make clinicians consider their own role in preserving the autonomy of their patients whilst also ensuring their decisions are informed. The legal and ethical frameworks surrounding autonomy continue to have grey areas that may cause conflict between doctors and patients. First and foremost as clinicians we must strive to ensure that our practice is patient-centred rather than paternalistic, and that we are working for the best interests of our patients, be that by preserving autonomy, or, in some cases, making decisions for patients. ✓

