

# MCQ workshop

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# Bloom's hierarchical taxonomy of educational objectives

Levels	Test
Knowledge	Convergent thinking: identify correct answer
Comprehension	
Application	
Analysis	
Synthesis	Divergent thinking: involves creating new knowledge / material
Evaluation	

Bloom et al 1956. *Taxonomy of educational objectives. The classification of educational goals.*  
Dickson M. *Writing Multiple-Choice Questions for Higher-level Thinking.*  
<https://www.learningguild.com/articles/804/writing-multiple-choice-questions-for-higher-level-thinking/?rd=1>

Levels
Knowledge



Mutation to which of the following genes is most likely to result in resistance to ciprofloxacin:

- a) *armA*
- b) *blaT5*
- c) *gyrB*
- d) *mecA*
- e) *vanD*

Levels
Knowledge
Comprehension



Which of the following symptoms is most commonly present in early lumbar spondylodiscitis?

- a) *malaise*
- b) *pain*
- c) *shivering*
- d) *urinary retention*
- e) *weakness in leg*

Levels
Knowledge
Comprehension
Application



Which of the following interventions is most effective at reducing the incidence of EOGBS?

- a) *give universal IAP*
- b) *give risk factor-based IAP*
- c) *screen all mums at 30-34wks and treat all GBS+ mums*
- d) *screen all mums at 34-36 wks and give IAP to all GBS+ mums*
- e) *screen all mums at 34-36wks and treat all infants of GBS+ mums at birth*

Levels
Knowledge
Comprehension
Application
Analysis



Reaching the limit of Single best answer MCQs

Consider EMQs

# EMQ structure

Series of possible diagnoses, investigations, treatments (usually 10)

Provide a series of case vignettes or situations.

NB: each option can be used once, more than once or not at all.

# EMQs: characteristics

- EMQs can be:
  - » Item discrimination and discrimination index higher
  - » Only 10 EMQs might be needed to achieve Cronbach's alpha value of 0.75
  - » More discriminatory for the borderline candidate than SBAs



# EMQ disadvantages

- Difficult to write well, ie not a series of SBAs
- Due to multiple scenarios, some options can be discounted easily
- Significant difficulty with cut-score determination, when compared with ease of well-established & convenient Angoff

## Option list

1. *Treponema pallidum*
2. Rubella virus
3. Human papilloma virus
4. Human herpes virus 8
5. *Candida albicans*
6. Epstein Barr virus
7. Cytomegalovirus
8. Coxsackie A virus
9. Coxsackie B virus

## For each of the following cases, select the most likely causative organism

- a) Breathless 16 year old boy. BP 100/70, tachycardia, raised JVP, muffled heart sounds, lungs clear
- b) White ribbed plaques on the side of the tongue of an HIV+ male (off retrovirals). Plaque cannot easily be scraped off
- c) White coating on dorsum of the tongue of an HIV+ male (off retrovirals). Coating easily scraped off.
- d) 32 yr old woman with maculo-papular rash on the trunk, palms and soles and warty lesions on the vulva and around the anus.

## Option list

1. Defibrillation
2. Ice pack on face
3. Inhaled salbutamol
4. Intravenous adenosine
5. intravenous amiodarone
6. intravenous lignocaine
7. intravenous sotalol
8. oral digoxin
9. Radiofrequency ablation
10. Synchronised DC cardioversion

## For each of the following cases, select the most appropriate treatment

- a) An overweight 3 month old presenting with a narrow complex tachycardia at 300 beats/min
- b) An unconscious 4 year old found drowned in a pond with ventricular fibrillation
- c) Recurrent episodes of SVT in a 7 year old despite treatment with 3 different anti-arrhythmic drugs over 4 years

Taken from RCPCH training module

Can you spot any problems with this question?

## Option list

1. Cytomegalovirus
2. Group B streptococcus
3. Hepatitis B
4. Herpes simplex
5. Herpes zoster
6. HIV
7. Listeriosis
8. Malaria
9. Parvovirus
10. Rubella
11. Syphilis
12. Toxoplasmosis

## For each of the following cases, select the most likely causative agent

- a) A growth scan is performed at 32 weeks. This identifies a small baby with evidence of intracranial and hepatic calcification. The patient reports no history of symptomatic illness to date
- b) A woman develops a mild febrile illness with a macular rash at 9 weeks of gestation. After serology is performed, she is offered and accepts, a termination of pregnancy.
- c) A woman at 27 weeks gestation complains of reduced fetal movements and on ultrasound the fetus is hydropic. Her child had erythema of the cheeks recently.

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## For each of the following cases, select the most likely causative agent

- d) A late booker from sub-Saharan Africa presents with severe anaemia and a baby below the 3<sup>rd</sup> centile for growth
- e) A French woman presents with a non-specific, febrile illness. On ultrasound, fetus has cerebral ventriculomegaly
- f) A neonate, born at 35 weeks after prolonged premature rupture of membranes, is affected by sepsis.
- g) An HIV-positive pregnant woman presents with viral pneumonia after spending time with her friend who has a vesicular rash in a dermatomal distribution.

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## For each of the following cases, select the most likely causative agent

- h) Fetal death due to hydrops is diagnosed on scan. On direct questioning, mum recalls an episode of arthralgia lasting 2 weeks during her pregnancy. She was up to date with all her immunisations.

- Amnioinfusion
- Caesarian delivery
- Ephedrine
- Expectant management
- Rupture of membranes
- Scalp stimulation
- Terbutaline

□ A 37-year-old G3P2 woman is at 40 weeks' gestation and has chronic hypertension. She has been induced with oxytocin and her cervix has been at 3cm for the past 4hrs. Her fetal heart rate is given below. Which of the following is the best management plan for this patient?

From DAMS eMedicoz. Youtube

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