Educating the workforce in AMR - too many gimmicks or coming up trumps?

Angharad Davies

Clinical Associate Professor/Honorary Consultant Microbiologist

Royal College of Pathologists' joint lead for Undergraduate and Foundation Education

Swansea University Medical School
Ysgol Feddygaeth Prifysgol Abertawe

Swansea University
Prifysgol Abertawe

Curriculum challenges

- time pressures on content
- Systems-based/Problem-based/Case-based learning
- Infection is not a ‘system’ so teaching can be piecemeal

Public Health England

Antimici
stewards

ARHAI

Journal of Hospital Infection 100 (2018) 245–256

Available online at www.sciencedirect.com

Journal of Hospital Infection

journal homepage: www.elsevier.com/locate/jhin

ELSEVIER

Healthcare Infection Society

Development of consensus-based national antimicrobial stewardship competencies for UK undergraduate healthcare professional education

M. Courtenay [a,*], R. Lim [b], E. Castro-Sanchez [c], R. Deslandes [d], K. Hodson [d], G. Morris [a,e], S. Reeves [f], M. Weiss [d], D. Ashiru-Oredope [g], H. Bain [h], A. Black [i], J. Bosanquet [g], A. Cockburn [j], C. Duggan [k], M. Fitzpatrick [l], R. Gallagher [m], D. Grant [b], J. McEwen [n], N. Reid [o], J. Sneddon [p], D. Stewart [q], A. Tonna [q], P. White [r]

NHS
Health Education England

Embedding national antimicrobial prescribing and stewardship competences into curricula

A survey of health education institutions
Executive summary

COMPETENCY	Dentistry	Pharmacy	Medicine	Midwifery	Nursing	Indep prescr	Allied Health
1: Infection prevention and control.	100%	98%	99%	85%	86%	72%	94%
2: Antimicrobial resistance and antimicrobials.	97%	100%	99%	59%	56%	75%	41%
3: Prescribing antimicrobials.	88%	81%	96%	41%	29%	90%	30%
4: Antimicrobial stewardship.	73%	77%	91%	51%	42%	77%	25%
5: Monitoring and learning	50%	48%	63%	23%	16%	68%	14%
Total average	82%	81%	90%	52%	46%	76%	41%

The British Society for Antimicrobial Chemotherapy

Survey of Infection and Antimicrobial-Use Teaching to Medical and Veterinary Medicine Undergraduates in the UK.

Abi Jenkins, Felisha Johnson and Laura JV Piddock

‘Teaching in antimicrobials and infection management comprises a tiny part of medical education with the range reported in this survey as 12---249 hours, compared to a total teaching time in excess of 5,000 hours over 5 years’*

*14 medical schools responded


TOP TRUMPS
Baby Animals
Family Guy
FIRE POWER?
BATTLESHIPS
GREATURES OF THE DEEP
PREDATORS
Horses & Ponies
WONDERS OF THE WORLD
NERF
TRANSFORMERS
DINOSAURS
DEADLY 60
WHO'S THE SCARIEST?
VOLCANOES
WHO IS THE MIGHTIEST?
DC UNIVERSE
TOP GEAR 2
THE DOG
WHICH IS THE MOST GLAMOROUS?
Barbie
WHO'S THE BRAVEST?
LORD OF THE RINGS
WHO'S THE GROSSEST?
TRASH PACK
STAR WARS
WHO'S THE FASTEST?
PLANES
WHO'S THE FIERCEST?
WHO'S THE BRAVEST?
WHO'S THE STRONGEST?
BUGS

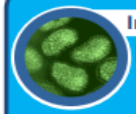
Tobamovirus

Tob-A-Mo-Virus

Virus

Max Size (nm)	18
Number of species	125
Danger to humans	12
Usefulness to humans	34
Antibiotic resistance	N/A

Tobamovirus are a group of viruses that infect plants, the most common being tobacco mosaic virus, which infects tobacco and other plants causing a mosaic like discoloration on the leaves. This virus has been very useful in scientific research.



Influenza A

In-Flu-En-Za A

Virus

Max Size (nm)	90
Number of species	1
Danger to humans	146
Usefulness to humans	12
Antibiotic resistance	N/A

The flu is an infection caused by *Orthomyxoviridae*40% of the population get the flu but most people recover completely in a couple of weeks. In 1918, before there were any vaccines for the flu, twenty million people were killed!

Lyssavirus

Lice-A-Virus

Virus

Max Size (nm)	180
Number of species	10
Danger to humans	74
Usefulness to humans	5
Antibiotic resistance	N/A

The *Lyssavirus* infect both plants and animals. The most common *Lyssavirus* is the Rabies virus and is usually associated with dogs. Rabies has been responsible for over 55,000 deaths worldwide but can be prevented by vaccination.

Ebola

E-Bowl-Ah

Virus

Max Size (nm)	1500
Number of species	1
Danger to humans	200
Usefulness to humans	0
Antibiotic resistance	N/A

Filovirus causes a disease more commonly known as Ebola. It is one of the more dangerous viruses known to humans due to the fact that there is no known preventative vaccine or treatment. 50 – 90% of victims die from the disease!

Lymphocryptovirus

Lim-Foe-Cryp-Toe-Virus

Virus

Max Size (nm)	110
Number of species	7
Danger to humans	37
Usefulness to humans	2
Antibiotic resistance	N/A

The Epstein-Barr virus is a type of *Lymphocryptovirus* causing an illness known as the Kissing Disease or Glandular fever. Patients suffer from sore throats, swollen lymph glands, and extreme tiredness. Transmission requires close contact such as kissing or sharing drinks.

Simplex Virus

Sim-Plex Virus

Virus

Max Size (nm)	200
Number of species	2
Danger to humans	64
Usefulness to humans	2
Antibiotic resistance	N/A

Herpes simplex is one of the oldest known sexually transmitted infections. In many cases, *Herpes* infections produce no symptoms at all but unsightly scab-like symptoms do occur in about one third of people infected.

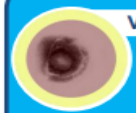
Rhinovirus

Rhino-Virus

Virus

Max Size (nm)	25
Number of species	2
Danger to humans	28
Usefulness to humans	14
Antibiotic resistance	N/A

There are over 250 different kinds of cold viruses! But *Rhinovirus* is by far the most common. *Rhinoviruses* are responsible for almost 35% of colds. *Rhinovirus* can survive three hours outside someone's nose. If it gets on your fingers and you rub your nose, you've caught it!



Varicellovirus

Var-E-Cell-O-Virus

Virus

Max Size (nm)	200
Number of species	2
Danger to humans	21
Usefulness to humans	7
Antibiotic resistance	N/A

Chickenpox is caused by the *Varicella-Zoster* virus. It is highly contagious although rarely serious and is spread through direct contact (or coughing and sneezing). Almost everyone caught chickenpox in their childhood prior to the discovery of the chickenpox vaccine.


Gentamicin
Aminoglycoside group
use: serious Gram negative sepsis
Cephalosporins
Ciprofloxacin
Quinolone group
Main uses: Pseudomonas sp
Flucloxacillin
Beta-lactam group
Main use: staphylococcal infections
Gram positive cover 3
Staphylococcus aureus only
Gram negative cover 0
Toxicity 2
allergy
Ease of administration
Oral/i.v., but frequent
dosing
Vancomycin
Glycopeptide group
Main use: serious Gram positive infections e.g. MRSA
Gram positive cover 10
Gram negative cover 0
Toxicity 6
Red man syndrome
Some kidney toxicity
Ease of administration 2
i.v. only, check levels
Carbapenems
Beta-lactam group
Covers anaerobes

Evaluation

36 1st year medical students

Note to self!

- Many students don’t know Top Trumps rules!

Student opinion

- 23/36 said they found the Top Trumps useful
- 10/36 said they did not find them useful
- 1 response: ‘yes and no’

Student comments

Fun but not helpful to learn

Wasn't really paying attention to what drug was on each card, just the stats

Not really useful but entertaining

I did not remember or learn anything from the Top Trumps

Focus too much on numbers when playing and not actual cards

Too fast paced to take anything in properly

Student comments

Really good revision aids (x3)

Really liked them, thought the numerical G +ve/G-ve rating was helpful and the pictures were nice

I love them, clarithromycin is very cute

They were a great addition to the presentation, thank you!

Fun very useful way to apply knowledge – would love to have them available for myself

The more learning methods the better!

Fun

Results

- 14/36 students had higher score after Top Trumps
- 10/36 students had lower score
- Total number of marks scored by all students increased from 136 to 145 (6% improvement)

Conclusions

- A bit of fun
- *Not* very successful at enhancing student knowledge
- Useful as:
  - ice-breaker
  - possibly revision aid
  - to break up didactic teaching sessions

HM Government

Tackling antimicrobial resistance 2019–2024

The UK's five-year national action plan

Published 24 January 2019

Ensuring AMR & Stewardship is properly represented in MLA

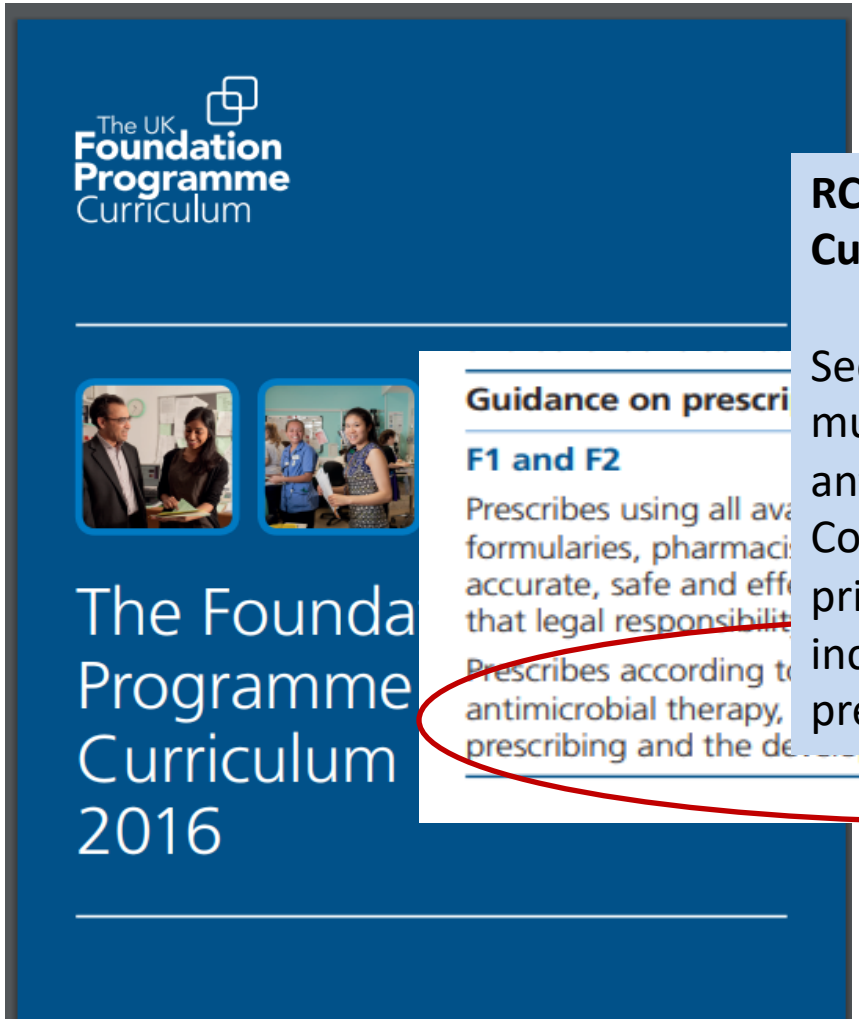
Medical schools will be reviewing curricula - opportunity to be involved

The Royal College of Pathologists

Pathology: the science behind the cure

Pathology Undergraduate Curriculum

September 2014



RCPath response to Foundation Programme Curriculum consultation

Section 3, 'Prescribes safely' should include much more comprehensive reference to antimicrobial stewardship , similar to …Infection Control in Section 4…specific reference to principles of good antimicrobial stewardship, including prompt review of all antibiotic prescriptions, and iv to oral switch.

- Lots happening in undergraduate and Foundation curricula at present
- An opportunity to ensure antimicrobial stewardship is firmly at their core
- Balance between innovation in

teaching and efficacy...

Thank you