



Radboudumc



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Multiplier Event

The European Prescribing Exam

- EuroPE+ -

Amsterdam 2022



World Health
Organization



The European Prescribing Exam



Prof. Dr. Christa Boer

Program director Faculty of Medicine Vrije Universiteit Amsterdam - Vice-dean for
education a.i



The European Prescribing Exam



Lunch break

12.45-13.30h





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University of Zagreb



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UNIVERSITÄT MALTA
L-Università ta' Malta



Multiplier Event The European Prescribing Exam



University College Dublin
Ireland's Global University

- EuroPE+ -

Amsterdam 2022



CHARLES UNIVERSITY



World Health Organization



The European Prescribing Exam



Agenda

12.30-12.45h:

Welcome by Prof. dr. Christa Boer

12.45-13.30h:

Lunch break

13.30-14.15h:

Introduction on the European Prescribing Exam

- 🕒 How it started
- 🕒 How it is implemented

14.15-15.00h:

- 🕒 Demo of the platform
- 🕒 The validity and reliability of the first two exams

15.00-15.15h:

Coffee break

15.15-17.00h:

World Cafe on the implementation of EuroPE⁺



The European Prescribing Exam



Introduction on the European Prescribing Exam

- How it started
- How it is implemented

13.30-14.15h



The European Prescribing Exam

Introduction: How it started



- Junior doctors write most ($\pm 70\%$) drug prescriptions in the hospital^{1,2,3}
- Junior doctors **twice** as likely to make a prescribing error compared to consultants^{1,2,3}

ARTICLES

CLINICAL PHARMACOLOGY & THERAPEUTICS | VOLUME 101 NUMBER 2 | FEBRUARY 2017

Essential Competencies in Prescribing: A First European Cross-Sectional Study Among 895 Final-Year Medical Students

DJ Brinkman^{1,2}, J Tichelaar^{1,2}, T Schutte^{1,2}, S Benemei³, Y Böttiger⁴, B Chamontin⁵, T Christiaens⁶, R Likic⁷, R Mačiulaitis⁸, T Marandi⁹, EC Monteiro¹⁰, P Papaioannidou¹¹, YM Pers¹², C Pontes¹³, A Raskovic¹⁴, R Regenthal¹⁵, EJ Sanz¹⁶, BI Tamba¹⁷, K Wilson¹⁸, TP de Vries^{1,2}, MC Richir^{1,2}, MA van Agtmael^{1,2}, on behalf of the Working Group Research on CPT Education of the European Association for Clinical Pharmacology and Therapeutics (EACPT)

55%



'Never had written out a prescription'

ARTICLES

CLINICAL PHARMACOLOGY & THERAPEUTICS | VOLUME 102 NUMBER 5 | NOVEMBER 2017

Pharmacology and Therapeutics Education in the European Union Needs Harmonization and Modernization: A Cross-sectional Survey Among 185 Medical Schools in 27 Countries

DJ Brinkman^{1,2}, J Tichelaar^{1,2}, M Okorie³, L Bissell³, T Christiaens⁴, R Likic⁵, R Mačiulaitis⁶, J Costa⁷, EJ Sanz⁸, BI Tamba⁹, SR Maxwell¹⁰, MC Richir^{1,2}, MA van Agtmael^{1,2}; for the Education Working Group of the European Association for Clinical Pharmacology and Therapeutics (EACPT)

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Introduction: How it started

Erasmus+ grant
2019



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European
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Based on:

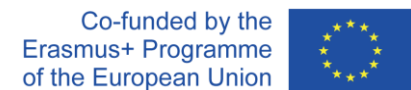
International objectives on medication safety

Based on the translation of the National objectives on medication safety of the Dutch National Pharmacotherapy Test on medication safety by Cees Kramers, Jelle Tichelaar and Ben Janssen

- The Key Learning outcomes for CPT education in Europe¹
- The Essential diseases in prescribing²
- The Dutch National Pharmacotherapy Assessment³

Jelle Tichelaar
David Brinkman
Erik Donker
Michiel van Agtmael
Robert Likic
Yva Böttiger

Thierry Christiaens
Fabrizio de Ponti
Emilio Sanz
Cees Kramers
Paraskevi Papaioannidou
João Costa



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			Subject with number of questions							Medication review	
			Analgesics	Anticoagulants	Antimicrobials	Cardiovascular drugs	Respiratory drugs	Psychotropics	Emergency medicines		Other
			Weighting: Medium	Weighting: Medium	Weighting: Small	Weighting: Big	Weighting: Small	Weighting: Medium	Weighting: Small	Weighting: Small	Big
Category	Skills	Prescribing*	2	2	-	3	1	2	1	-	-
		Medication review	-	-	-	-	-	-	-	-	12
	Knowledge**	3	3	3	3	3	3	3	3	3	-

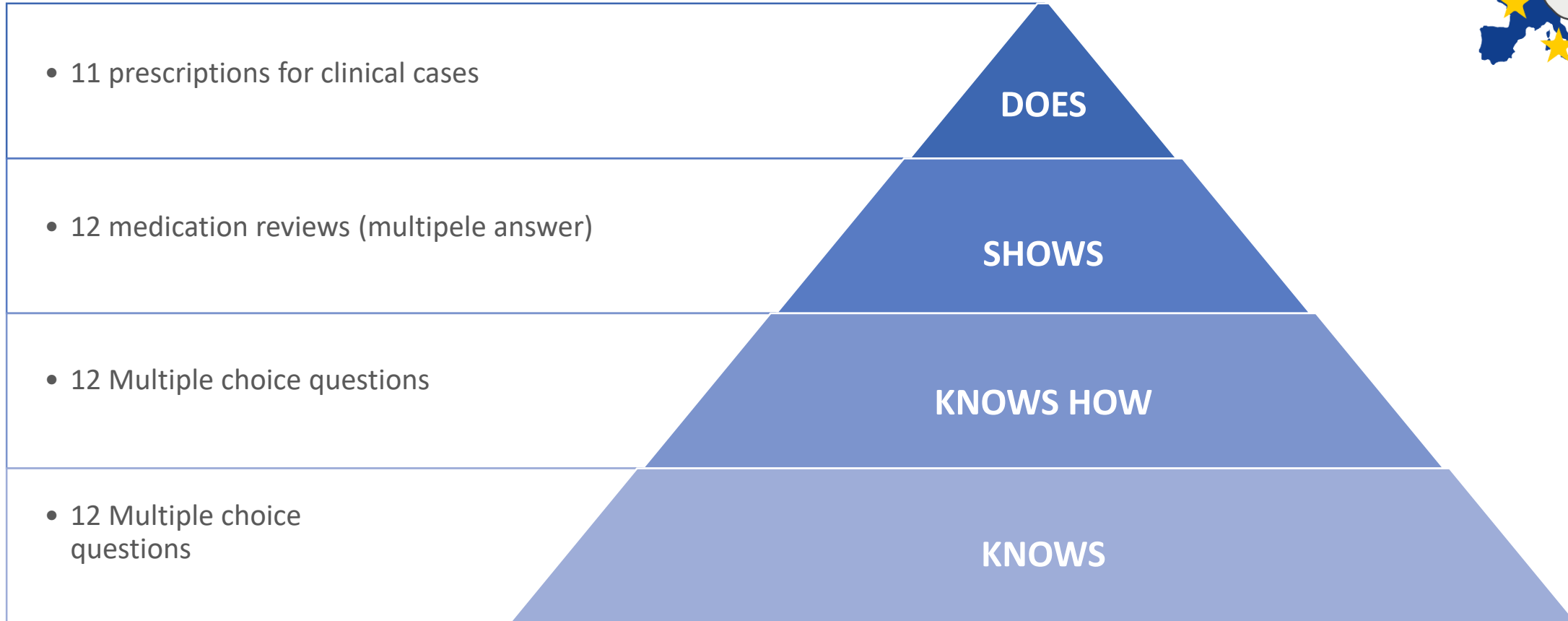
* At least 3 cases with a calculation (e.g. dose adjustment for children or reduced kidney function), at least one question with pregnancy or lactation

Categories per subject

1. Medications
2. Indications
3. Side effects
4. Patients at risk / contraindications
5. Interactions
6. Measures to prevent problems
7. Measure to take if a problem arises



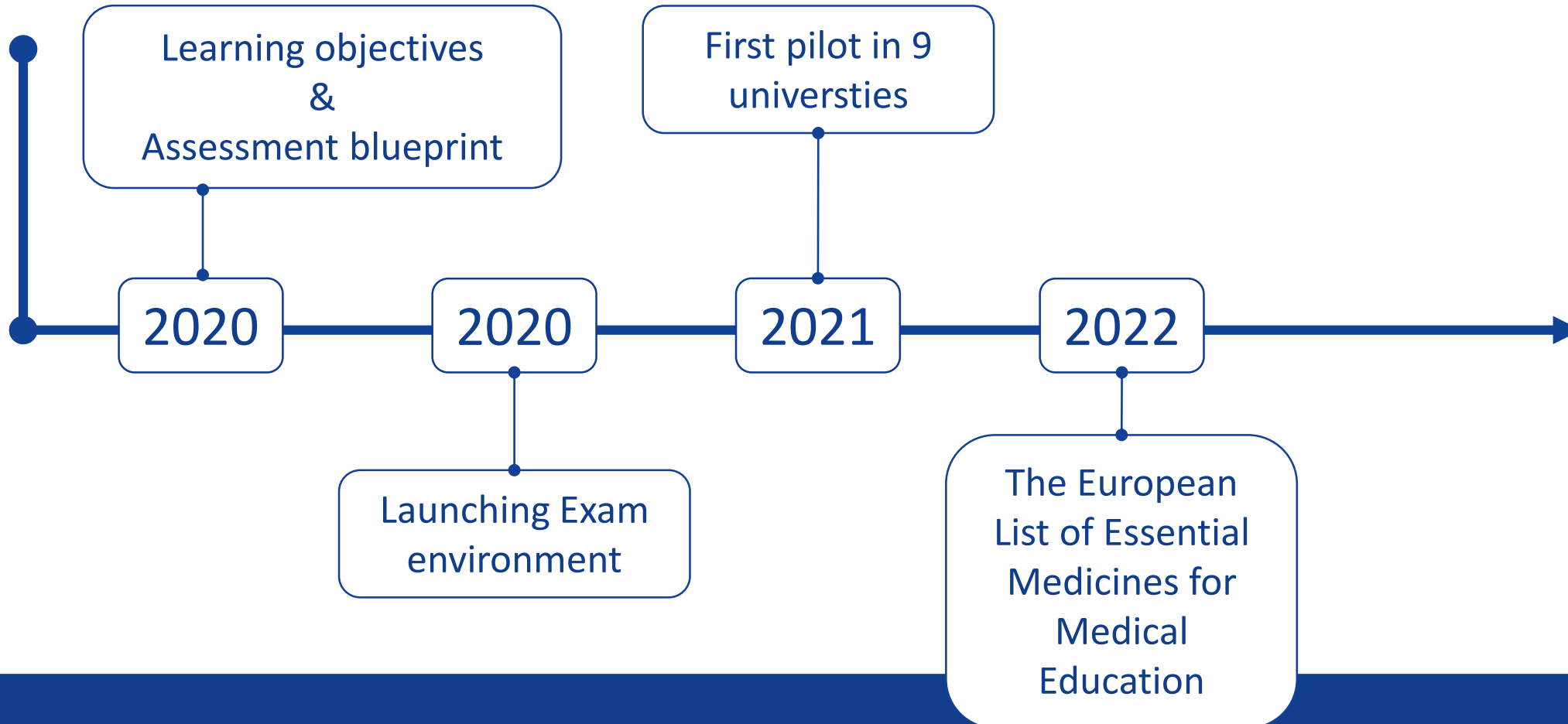
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Medical education and training
Protocol

European List of Essential Medicines for Medical Education: a protocol
for a modified Delphi study 

 Erik Donker^{1, 2}, David Brinkman^{1, 2}, Milan Richir^{1, 2}, Paraskevi Papaioannidou³, Robert Likic^{4, 5},  Emilio J Sanz⁶,
Thierry Christiaens⁷, João Costa⁸, Fabrizio De Ponti⁹, Milo Gatti⁹, Ylva Böttiger¹⁰, Cornelis Kramers¹¹, Sarah Garner¹²,
Rahul Pandit¹³, Michiel van Agtmael^{1, 2}, Jelle Tichelaar^{1, 2}
Correspondence to Erik Donker; e.donker@amsterdamumc.nl



24 Countries involved



58% Medical specialist



13% Junior doctor/resident



97 Institutions enrolled




11% Pharmacist



40% Teacher in clinical pharmacology

 98 medicines

 Available in > 80% of the countries

 Specific adjustments in the exam can be made

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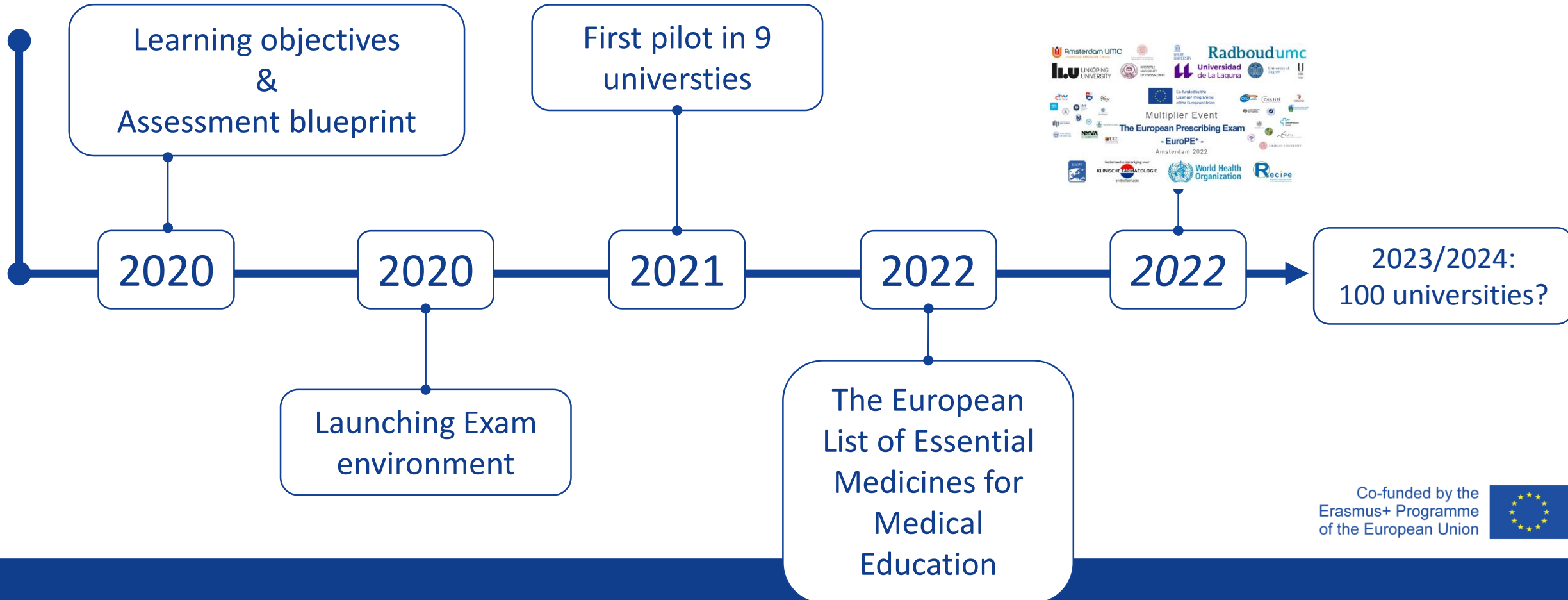
- Penultimate or final year medical students
- Knowledge part (use of resources NOT allowed)
- Skills part (resources allowed)
- 2 hours



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Introduction on the European Prescribing Exam

- How it started
- How it is implemented

13.30-14.15h



Implementation of the European **PRESCRIBING EXAM**



Some examples of how it has been done
in different universities around Europe

by Ylva Böttiger, professor, MD
at Linköping university, Sweden
(did 9/10 at the test in Athens this summer)



Implementation of the exam

The Netherlands

Radboud university medical center, Nijmegen

Number of students per year: 350

The exam has been implemented like this: we do the Dutch version, every month. It is obligatory to participate and the students have to pass. Some students need several (up tot 3) attempts

The pros and cons of this implementation has been: everyone studies hard for this exam

Students have given this feedback: they find it very relevant and useful



Implementation of the exam **Belgium**

Ugent University

Number of students per year: 250-300

The exam has been implemented like this: it was voluntary at the start of the clerkships (year 5) and after the clerkships (year 6).

The pros and cons of this implementation has been: Students have a lot of tasks to do during the clerkships and even though motivated in the first approach, they postpone and forget (we sent 3 reminders) .

Students have given this feedback: the students that did the test were positive, they found it useful.



Implementation of the exam **Sweden**

Linköping university

Yearly intake: 2 x 130 students

The exam has been implemented as a voluntary test at the end of a course in clinical pharmacology at the very end of the 9th (out of 11) semester.

The pros of this implementation is that there is a time-slot in the schedule.

Still, not all student have chosen to participate or complete the test.

Students that did participate reported it was interesting and relevant.



Implementation of the exam Greece

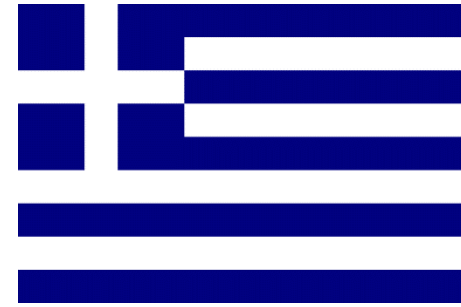
Aristotle University of Thessaloniki

Number of students per year: 300

The exam has been implemented mainly as an **obligatory test** given twice **during a new optional spring course**: once at the beginning of the course and once at the end of the course. The participating students took the exam at the beginning and the end of the **10th and 12th semester** (and 8th semester).

Some students participated in the test optionally (without selecting the new optional course). Students that participated in the test said it was interesting but too difficult (especially the skills section).

The new optional course was created in order to attract the students to participate in the exam (and prepare them to achieve better scores)



Implementation of the exam Spain

Universidad de La Laguna, Spain

140 students /academic year

The exam has been offered in two academic years (2020-21 & 2021-22), both before AND after the “Clinical Pharmacology and Therapeutics” course **in the 5^o(/6) year**.

Most students took the pre-test, but fewer took the post-test, scheduled just after the final evaluation of the course.

Students had no problem with language and used far less time than allocated. Adding the EPE to the standard evaluation of the course was too demanding.

The main weaknesses were in the clinical cases, especially those related to dosages and schedules.

It is intended that in 2022-23 the EPE would be the ONLY exam for the subject.



Implementation of the exam

Italy



University of Bologna

Number of medical students per year: ~650 (of these, 90 have teaching only in English)

The exam has been implemented like this:

- as part of a compulsory final year online clerkship (during the 2020-2021 Covid-19 pandemic)
- as part of an elective teaching for students of the two final years
- as part of an online elective pharmacology clerkship for 4th-5th-6th year students (the prescribing test was considered a formative test for self-assessment purposes at the beginning of the clerkship)

The pros and cons of this implementation has been:

- since it was an elective activity, participation was relatively limited (200 students)

Students have given this feedback: very useful if used as a formative rather than summative test



Implementation of the European **PRESCRIBING EXAM**



Some conclusions:

- Students that do perform the test find it useful and clinically relevant
- Takes less time than proposed
- Difficult to motivate students to perform a test that is not compulsory
- Two ways forward? - To have a final year compulsory test
- To have repeated, shorter formative tests



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Introduction: How it is implemented

 Ylva Böttiger



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- Demo of the platform
- The validity and reliability of the first to exams

14.15-15.00h



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The exam: A demo of the platform



Visit the exam environment!



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Description of the development of the assessments

Preliminary results (from the analysis) of the pilot exams

Exam 1

- Knowledge
- Skills

Exam 2

- Knowledge
- Skills



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Pilot exams as formative test in undergraduate medical curriculum

Amsterdam UMC, location VUmc	- The Netherlands
Linköping University	- Sweden
Radboud UMC	- The Netherlands
University de la Laguna	- Spain
University Ghent	- Belgium
University of Bologna	- Italy
University of Lisbon	- Portugal
University of Lübeck	- Germany
University of Novi Sad	- Serbia
University of Thessaloniki	- Greece
University of Zagreb	- Croatia



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Exclusion data

- ⊘ No consent
- ⊘ Multiple submissions of same students
- ⊘ Incomplete attempts
 - ⊘ Duration < 10 minutes
 - ⊘ ≤ 10 questions answered in knowledge part
 - ⊘ ≤ 2 questions answered in skills part



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Preliminary results (from the analysis) of the pilot exams

- Evaluation exam results
 - Total scores on the exams

- Reliability (and difficulty): Psychometrical analysis
 - (corrected) Difficulty index (P-value)
 - Rir values
 - Cronbachs alpha

- Validity: Blueprint exam, peer-reviewed questions and survey experts
 - Survey: score “essential”, “relevant, but not essential”, or “not relevant” for each exam question



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Results of Exam 1

Knowledge (*max score = 52*)

N = 1075

Median 41, IQR 10 (range uni's 30-44)

Mean 39.15 (SE 0.22), 95% CI 38.72-39.59

Skills (*max score = 22*)

N = 898

Median 8, IQR 6 (range uni's 4-11)

Mean 8.16 (SE 0.14), 95% CI 7.88-8.44



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Results of Exam 2

Knowledge (*max score = 51*)

N = 745

Median 36, IQR 7 (range uni's 32-39)

Mean 35.26 (SE 0.21), 95% CI 34.84-35.68

Skills

N = 649

With Q8 (max score 22)

Median 9, IQR 6 (range uni's 4-10)

Mean 8.98 (SE 0.26), 95% CI 8.48-9.49

Without Q8 (max score 20)

Median 6, IQR 5 (range uni's 5-8)

Mean 5.97 (SE 0.17), 95% CI 5.64-6.31



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Reliability of the Exams

- Cronbachs alpha: stability exam scores (via formula including all variances)
 - Normal when > 0.60 , Good when > 0.80
- Difficulty index (P-value): mean score per question point (corrected for guessing)
 - 4 answer options minimum = 0.44 , Open questions minimum = 0.25
- Rir value: correlation between question score and exam score (distinguishing capability)
 - Sufficient when > 0.15 , Good when > 0.35

(Formative exam with less control/surveillance leads to lower reliability)



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Reliability analysis Exam 1

Knowledge (36 questions)

○ Cronbachs alpha	0.86
○ Corrected P-value	Mean 0.67
○ Rir-value	Mean 0.35

0 questions with low P-value

0 questions with low Rir-value (none negative)

Skills (11 questions)

○ Cronbachs alpha	0.63
○ P-value	Mean 0.37
○ Rir-value	Mean 0.29

2 questions with low P-value

0 questions with low Rir (none negative)



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Reliability analysis Exam 2

Knowledge (36 questions)

○ Cronbachs alpha	0.77
○ Corrected P-value	Mean 0.63
○ Rir-value	Mean 0.25

1 question with low P-value

3 questions with low Rir (none negative)

Skills (11/10 questions)

○ Cronbachs alpha	0.60
○ P-value	Mean 0.34
○ Rir-value	Mean 0.30

4 questions with low P-value

0 questions with low Rir (none negative)



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Validity of the Exams


- Learning goals and assessment blueprint
- Peer-reviewed questions
- Survey external experts: evaluation of the questions (and the exam)
 - Given feedback will be evaluated in order to improve questions and the exam
- (Rir-values)







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Experts opinion (N = 28) on validity: mean scores per exam part




 Exam 1: Knowledge (worst question)


-  74% Essential (43%)
-  24% Relevant (48%)
-  2% Not relevant (9%)




 Exam 1: Skills (worst question)

-  82% Essential (50%)
-  15% Relevant (40%)
-  3% Not relevant (10%)

 Exam 2: Knowledge (worst question)

-  66% Essential (21%)
-  31% Relevant (58%)
-  3% Not relevant (21%)

 Exam 2: Skills (worst question)

-  73% Essential (58%)
-  25% Relevant (37%)
-  2% Not relevant (2%)



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Improvement of the exams and of the analysis

- 🗑 Document containing all questions of possible lower quality
 - 🗑 Will be evaluated in order to improve these question if possible
 - 🗑 New analysis after this evaluation to receive more reliable psychometrical parameters

Further steps

- 🗑 Compare exam results between traditional and problem-based teaching
- 🗑 Determine the required scores for passing the exam
- 🗑 Determine appropriate maximum duration of the exam



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Coffee break

15.00-15.15h



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World Cafe

15.15-17.00h



The European Prescribing Exam World Cafe



AIM:

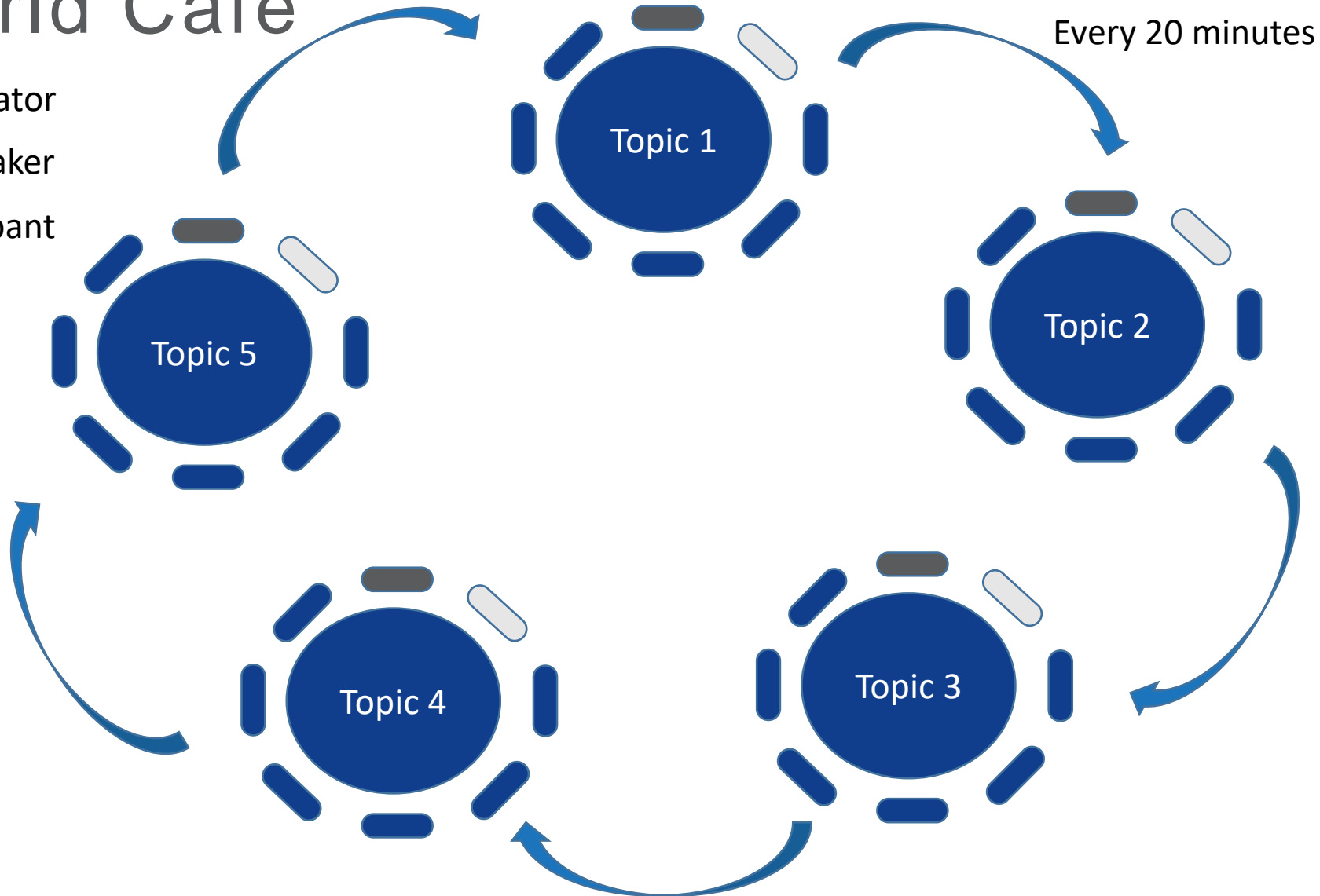
To identify the barriers and solutions to implement the European Prescribing Exam in all European universities.



The European Prescribing Exam World Cafe



- Moderator
- Note-taker
- Participant



Topics:

- 1: Organization
- 2: Technical aspects
- 3: Content
- 4: Implementation
- 5: Politics



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Round 1



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Round 2



The European Prescribing Exam



Round 3



The European Prescribing Exam



Round 4



The European Prescribing Exam World Cafe



Summary:

- 1: Organization
- 2: Technical aspects
- 3: Content
- 4: Implementation
- 5: Politics



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Cruise Diner



The European Prescribing Exam Cruise Diner

- Starting time: 18.30h
- Location: Museumbrug 1

- We have the tickets for public transport





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Multiplier Event The European Prescribing Exam



University College Dublin
Ireland's Global University

- EuroPE+ -

Amsterdam 2022



Universidad Zaragoza



CHARLES UNIVERSITY



World Health Organization



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Agenda

09.00-10.45:

Workshop creating exam questions

13.15-14.00h:

The next steps

10.45-11.00h:

Coffee break

11.00-12.30h:

Future organization of EuroPE⁺

- 🕒 An example: the Dutch National Pharmacotherapy Assessment
- 🕒 EuroPE⁺ and the Early Career Pharmacologists of the EACPT
- 🕒 The French situation
- 🕒 How to involve new universities

12.30-13.15h:

Lunch break



The European Prescribing Exam



Workshop creating exam questions

09.00-10.45h

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Exam questions 1-01

Common pitfalls in making exam questions

1. Stem / case does not relate to the question

Stem

Patient X, 59-years old, comes to your clinic for a yearly check-up. He is a smoker and has T2 Diabetes and hypercholesterolemia. You now find a BP of 160/95 (average of multiple measurements).



Exam questions 1-01

Common pitfalls in making exam questions

2. Nonsensical alternatives (makes the question unnecessarily easy)

Question: A patient of 80kg requires fraxiparin. The guideline advises a dosage of 86 units / kilogram with a 25% reduction due to his renal function. The solution is 9500units/ml. How much should you give the patient?



Exam questions 1-01

Common pitfalls in making exam questions

3. Use of (double) negatives (difficult to understand)

Question: Which of the following is NOT a side effect of drugs that block the activity of the muscarinic acetylcholine receptor?

- a) Blurry vision
- b) Dry mouth
- c) Urinary incontinence
- d) Constipation



Exam questions 1-01

Common pitfalls in making exam questions

4. Assessing multiple learning objectives

Question:

Which of the following statements is correct?

1. Ace-inhibitors are well-known to cause hypokalaemia.
2. Hydrochlorothiazide is contra-indicated in patients with gout.

- a) Statement 1 is correct, statement 2 is incorrect
- b) Statement 1 is incorrect, statement 2 is correct
- c) Both statements are correct
- d) Both statements are incorrect



Create your question

And upload it to GoogleDocs

For the next 20 minutes

Group up (3-4 participants)

Make a question

- 🗑 About your favourite CPT-topic
- 🗑 Case-based
- 🗑 Multiple-choice w/ 2-5 alternatives

Finished? Make another one (use new form)



Test time!

Let's see who's smartest ...
... and who made the best question!

Go to www.socrative.com

Select student login

Use roomcode: **EUROPEANPRESCRIBINGEXAM**

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Coffee break

10.45-11.00h



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Future organization of EuroPE⁺

- An example: the Dutch National Pharmacotherapy Assessment
 - EuroPE+ and the Early Career Pharmacologists of the EACPT
 - The French situation
 - How to involve new universities

11.00-12.30h



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Future organization of EuroPE+

An example: the Dutch National Pharmacotherapy Assessment

By: Floor van Rosse. Assistant Professor at Erasmus Medical Centre, the Netherlands



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Dutch Pharmacotherapy exam - some facts

- Implemented in all 8 medical master curricula
 - Of whom most as a summative exam
 - Learning materials on nvkfb website
- 60 MCQs
 - Constructed with peer review
 - Assessment matrix
 - 85%
- 4x/year meet up with all stakeholders to:
 - Discuss and thus improve quality of exam questions
 - Discuss topics that should be added/changed in learning materials
 - Improve learning materials (e.g. illustration improvement)
 - Research



Nederlandse Vereniging voor
KLINISCHE FARMACOLOGIE
en Biofarmacie

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LETTER TO THE EDITOR

A Licence to Prescribe

Correspondence Jelle Tichelaar PhD, Department of Internal Medicine, Section of Pharmacotherapy, VU University Medical Center, De Boelelaan 1117 (ZH 4A47), 1081 HV AMSTERDAM, The Netherlands. Tel.: +31 20 444 8090; Fax: +31 20 444 8100; E-mail: j.tichelaar@vumc.nl

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Cornelis Kramers¹, Ben. J. Janssen², Wilma Knol³, Marleen H. M. Hessel⁴, Wilhelmina M. Mulder⁴, Glenn Dumont⁵, Antoinette Maassen van den Brink⁶ and Jelle Tichelaar⁷

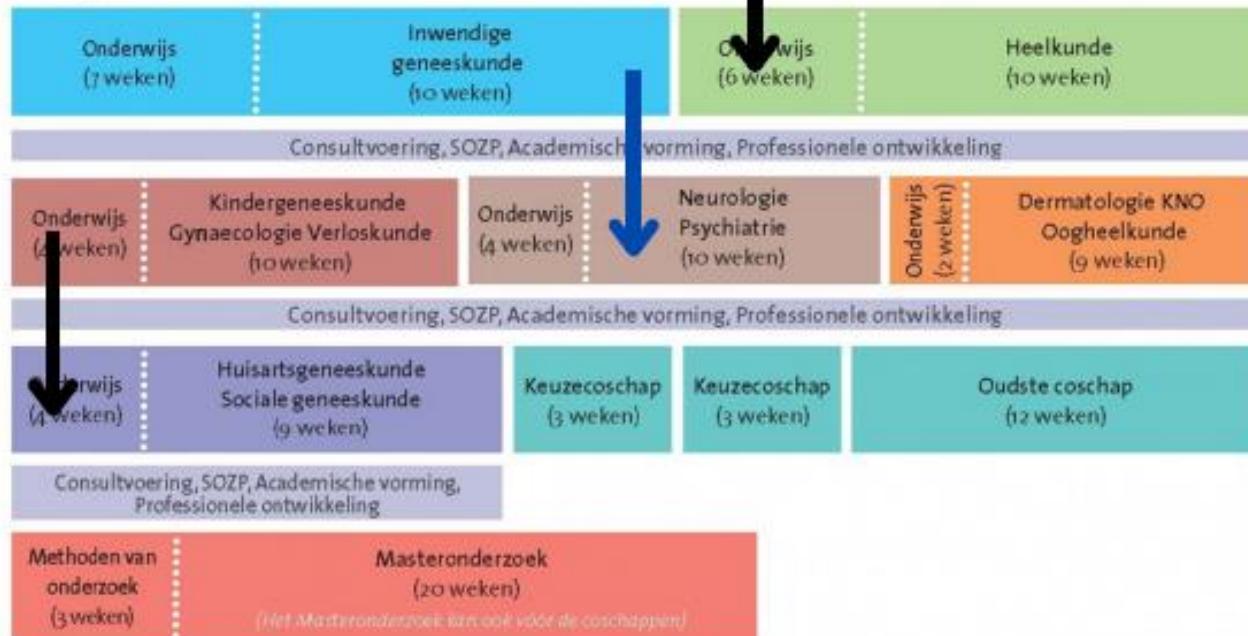
¹Department of Pharmacology-Toxicology, Radboud University Medical Center and Department of Clinical Pharmacy, Canisius Wilhelmina Ziekenhuis, Nijmegen, The Netherlands, ²Department of Pharmacology & Toxicology, Maastricht University, Maastricht, The Netherlands, ³Department of Geriatric Medicine and Expertise Centre Pharmacotherapy in Old Persons (EPHOR), University Medical Centre Utrecht, Utrecht, The Netherlands, ⁴Department of Clinical Pharmacy and Toxicology, Leiden University Medical Centre, Leiden, The Netherlands, ⁵Department of Pharmacy, Academic Medical Center, University of Amsterdam, Amsterdam, The Netherlands, ⁶Division of Vascular Pharmacology and Metabolic Diseases, Department of Internal Medicine, Erasmus MC, University Medical Center Rotterdam, The Netherlands, and ⁷Department of Internal Medicine section Pharmacotherapy and Research & Expertise Center In Pharmacotherapy Education (RECIPE), VU University Medical Center, Amsterdam, The Netherlands

Keywords graduation, medication safety, medical students, pharmacotherapy, prescribing





Programmaoverzicht vernieuwde master Erasmusarts 2020



Knowlegde (Dutch Pharmacotherapy exam – blue arrow)

Skills – prescribing exam (case based, in pscribe)

- Formative (but obliged)
- Summative



- ECTS pharmacotherapy
 - Attendance essential education
 - PASS knowledge exam
 - PASS skills exam



MINI QUIZ!

How many ECTS do you think the students receive when they've reached this marvellous goal??

- A. 1
- B. 5
- C. 7,5
- D. 11





Research on assessment

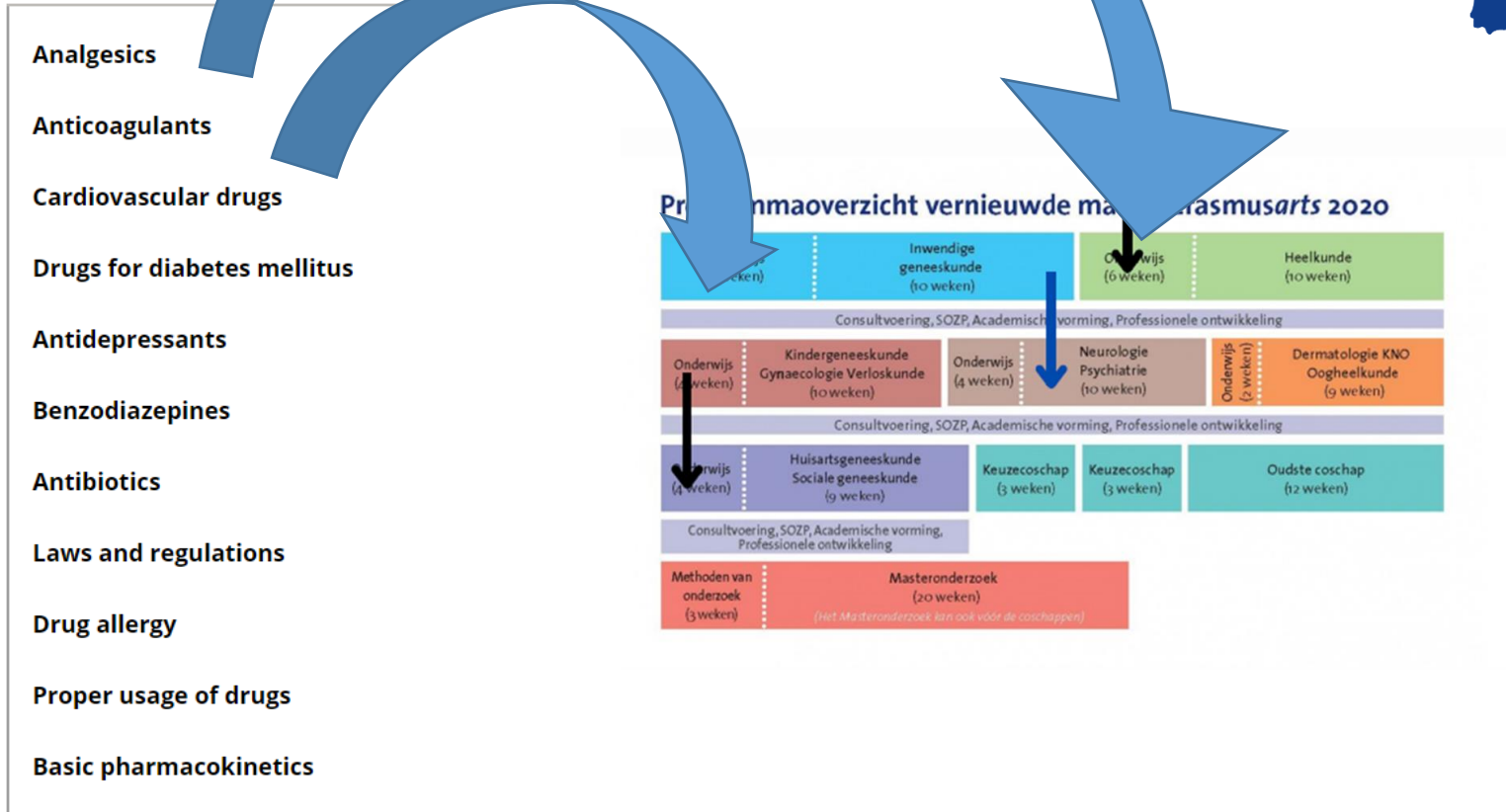
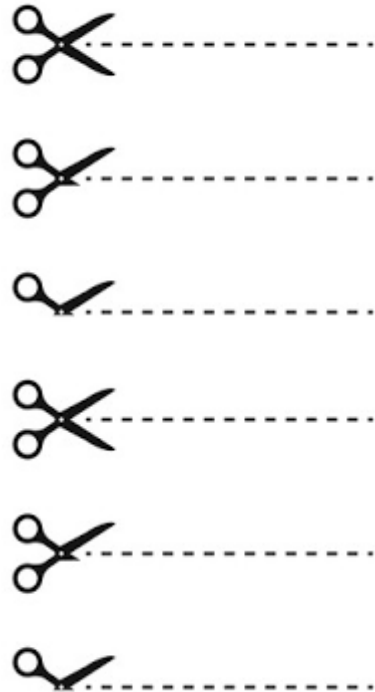
- 270 students
- Knowledge exam:
 - ~50% of students takes practicing exam
 - Of whom 63% < 24 hours before the exam
- Both exams:
 - Students who passed their pharmacotherapy assessments first time spent more time, and practised more frequently, with e-learning modules



Kalfsvel L, Versmissen J, van Doorn A, van den Broek W, van der Kuy H, van Rosse F.
Better performance of medical students on pharmacotherapy knowledge and skills tests is associated with practising with elearning program Pscribe.

Br J Clin Pharmacol. 2021;1-13. doi: 10.1111/bcp.15077





Analgesics

Anticoagulants

Cardiovascular drugs

Drugs for diabetes mellitus

Antidepressants

Benzodiazepines

Antibiotics

Laws and regulations

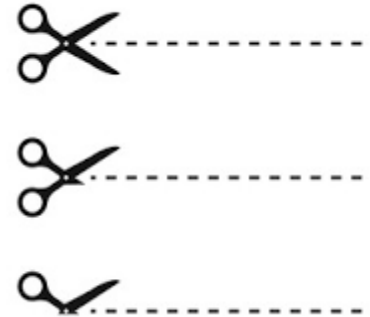
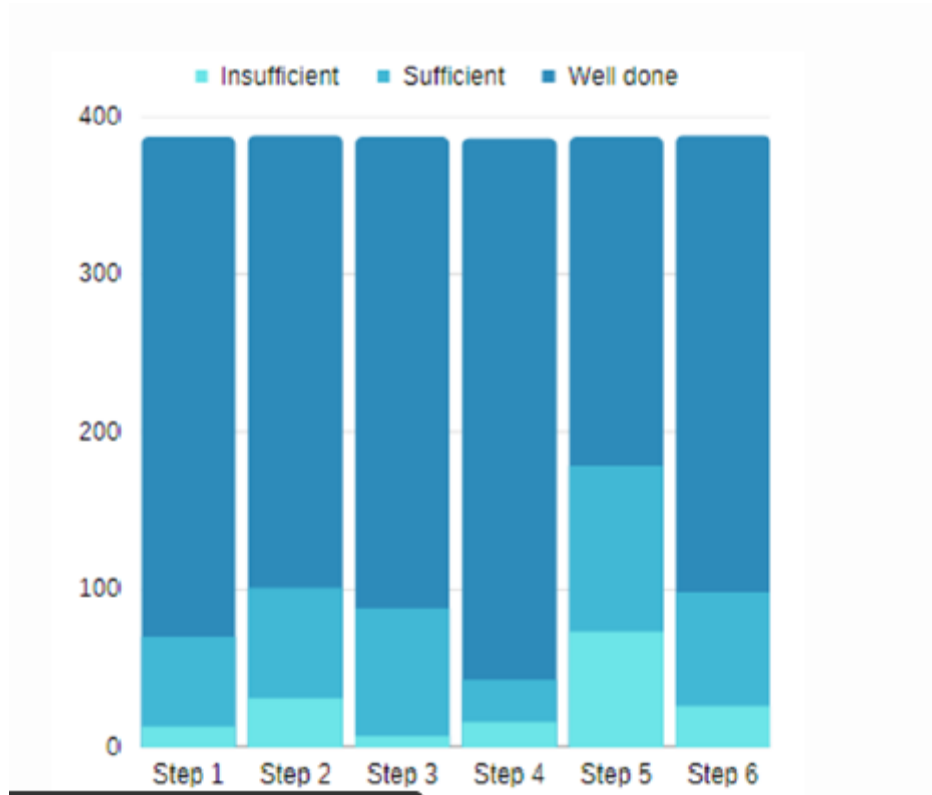
Drug allergy

Proper usage of drugs

Basic pharmacokinetics



Skills exam – the WHO 6-step





What will this bring?

- More 'just in time' learning
- More repetition ("spiral curriculum")
- Retrieval practice → better knowledge recall?
- Longer hold of knowledge?
- Smooth(er) transition to programmatic assessment





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Future organization of EuroPE⁺

EuroPE⁺ and the Early Career Pharmacologists of the EACPT

By: Carla Sans Pola. Assistant Professor at Vall d'Hebron University Hospital, Spain



EACPT EARLY-CAREER CP

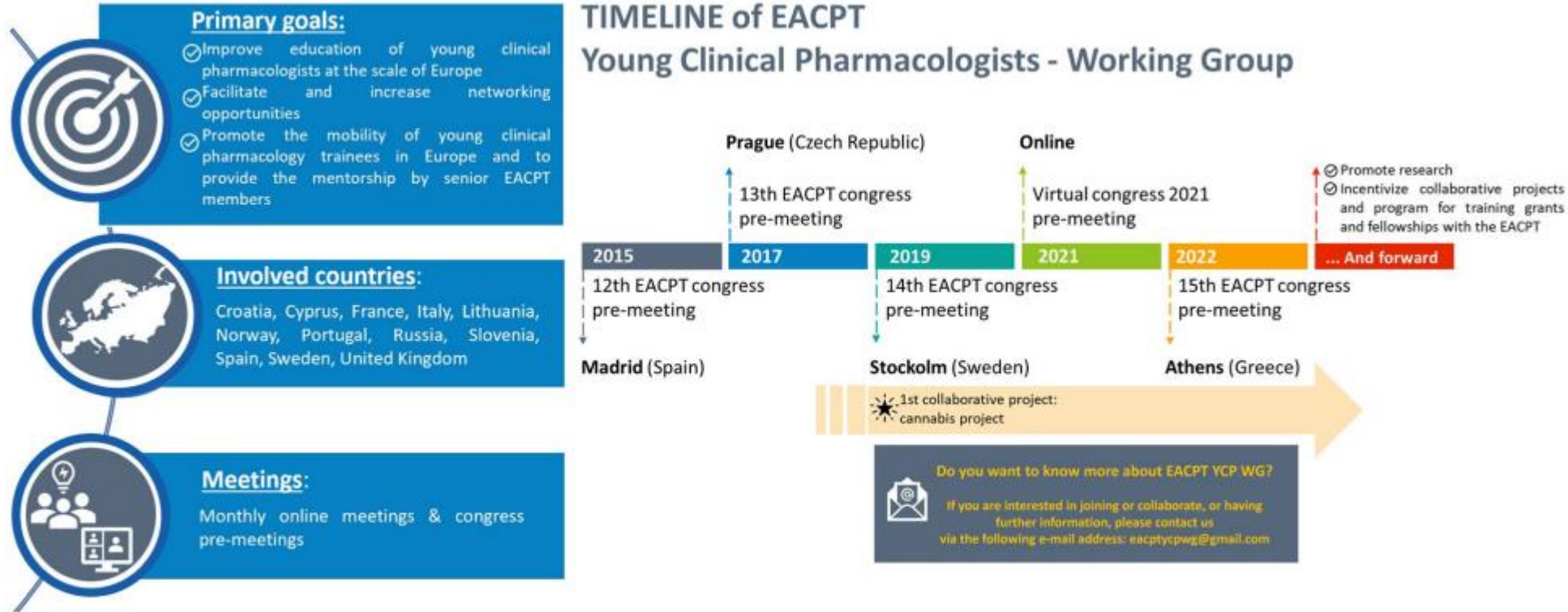


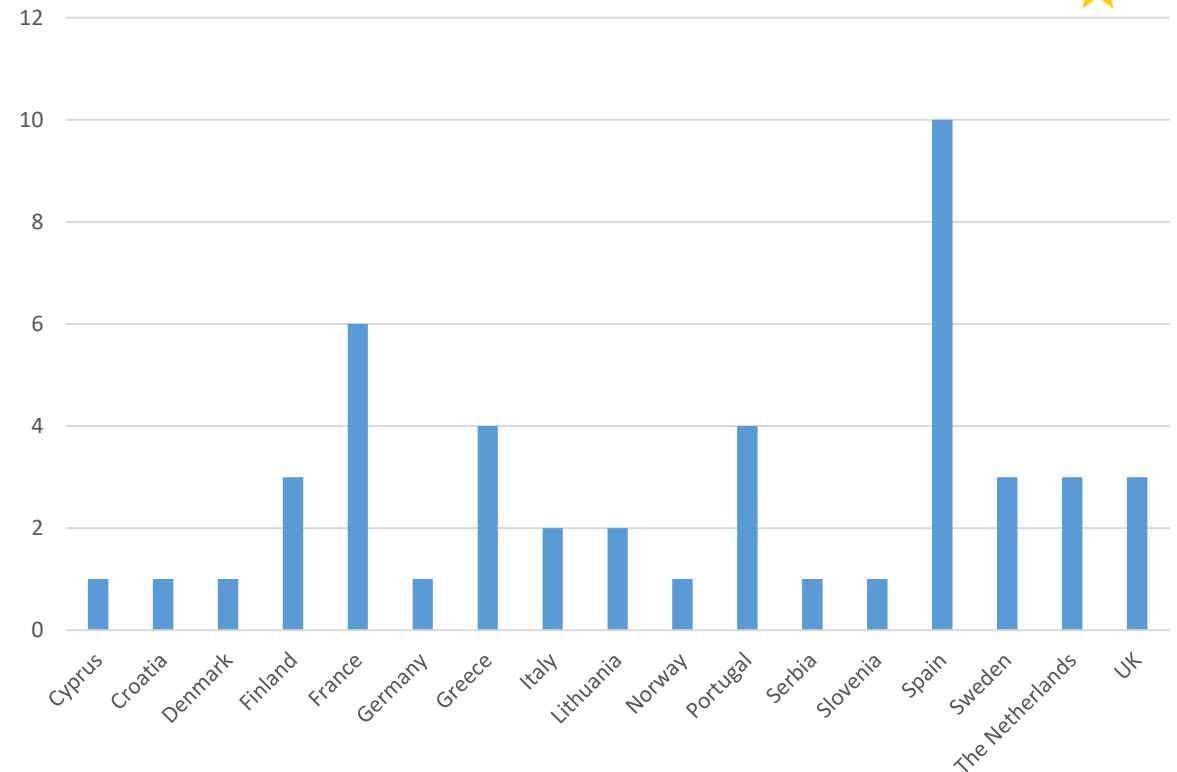
Fig.1 The main characteristics of the European Association for Clinical Pharmacology and Therapeutics Young Clinical Pharmacologists Working Group (EACPT YCP WG)

EACPT EARLY-CAREER CP



2021 – 2023

- Co-chairs: Émilie Jouanjus (France) and Carla Sans (Spain)
- 47 active members from 17 countries
- Monthly/bimonthly meetings
- Active projects:
 - Perception of medical cannabis – survey
 - Clinical pharmacology training in Europe
 - Mentoring program
 - Participation in European Prescribing Exam



EACPT EARLY-CAREER CP



- Participation in European Prescribing Exam
 - Subgroup within the working group
 - 8 members (and counting...)

Name	Surname	Country	Affiliation
Lina	Camacho	Spain	Hospital Universitari Vall d'Hebron. Universitat Autònoma de Barcelona
Marc	Labriffe	France	CHU Limoges
Andrej	Belančić	Croatia	Clinical Hospital Centre Rijeka
Elena	Guillen	Spain	Hospital Clinic of Barcelona
Diane	Merino	France	CHU Nice
Carla	Sans	Spain	Hospital Universitari Vall d'Hebron. Universitat Autònoma de Barcelona
Lucía	Bellas	Spain	Hospital Universitari Vall d'Hebron
Charalambos	Dokos	Germany	Institute of Pharmacology, Medical School, University of Cologne.



The European Prescribing Exam

Future organization of EuroPE⁺

EuroPE⁺ and the Early Career Pharmacologists of the EACPT **The French situation**

By: Marc Labriffe, Assistant Professor at CHU de Limoges, France

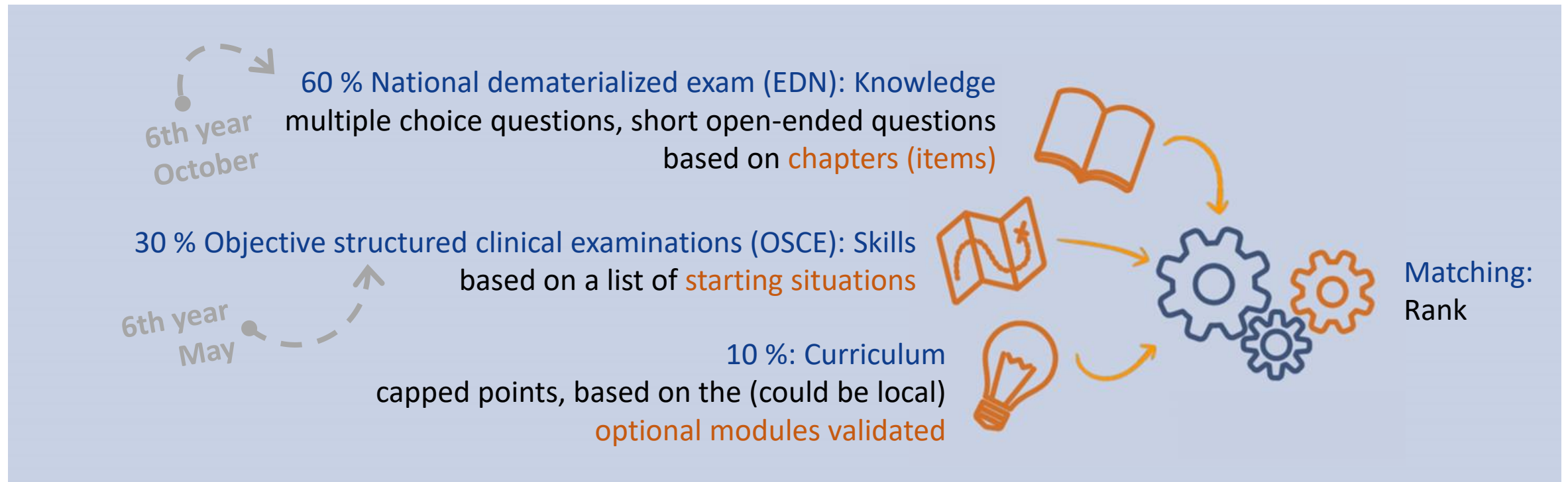


Actual final exam in France



The **rank** determines whether each student can choose the specialty he wants.

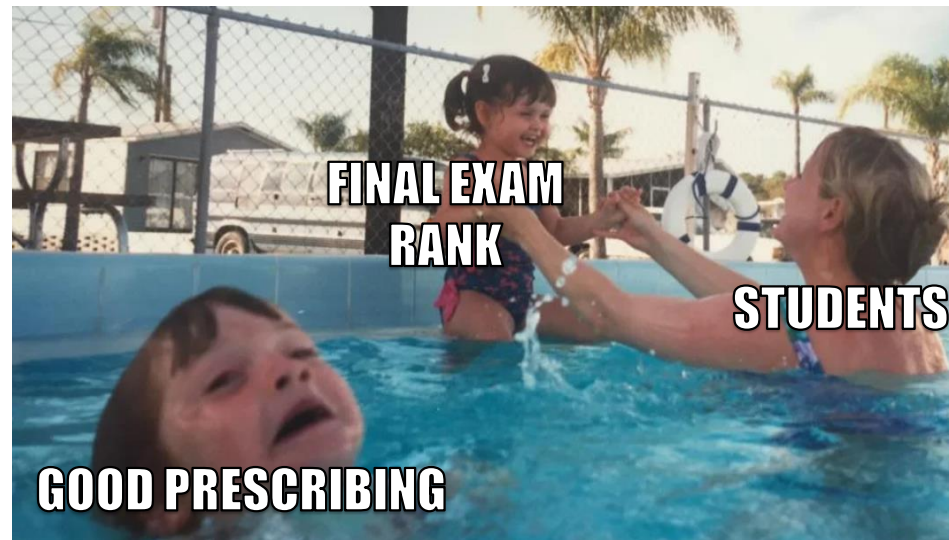
E.g., being resident in cardiology in Paris, ophthalmologist in Nice etc.



Actual final exam in France

The **rank** determines whether each student can choose the specialty he wants.

E.g., being resident in cardiology in Paris, ophthalmologist in Nice etc.



New program for the French medical studies



Very recent: will be applied for the first time in June 2023.

Chapters (items) (n = 367) and their objectives (\approx 5-20 per item), for MCQ

E.g., Drugs of the renin-angiotensin system: know the mechanisms of action, indications, side effects, drug interactions, monitoring methods and main causes of failure (No. 330, 4th obj.)

Starting situations (n = 355), for OSCE

E.g., Announcement of a diagnosis of serious illness to the patient and/or his family (No. 327)

Prescribing a hypnotic/anxiolytic (No. 256)

Dyskalemia (No. 201)



Challenges



Medical schools

French medical studies are living an **important transition** with a new program (called R2C). Every French medical school/teacher is under pressure to be up to date on the program (and maintain a good rank among other French Medical schools).

Students

The students have a lot of work (many **items** and many **starting situations**). They focus strictly on the official program.

English

Same in the French city of Nice.



Local preparation for the implementation of the Exam



We had to convince the **local professors in charge of pedagogy** in the 5th and 6th year of medical studies,
Explaining to them that the huge majority of the questions in the European Exam are in the **official objectives**.

We also talked to the **English teachers of the Medical school** (English courses already exist for 2nd- and 3rd-year medical students).

We will also talk to the **student delegates of 5th and 6th year** to explain the usefulness of the project, and to choose a date.



Local preparation for the implementation of the Exam



I built a table with all the **questions** of the previous exams (1 and 2) and the **corresponding official objectives involved**, in order to demonstrate that they fit to the French objectives.



	A	B	C	D	E	F	G	H	I	J	K
1	Exam	Que	Topic	Numl	Chap	Number a	Official objective involved				
2	Ex	N	Thème abordé	Sit	It	Numér	Objectif officiel concerné				
3	1	1	consentement pour analyse anonyme	NA	NA	NA	NA				
4	1	2	mésusage et dépendance	313	076	DP-A07	Connaitre les complications médicales générales principales de la consommation d'alcool				
5	1	3	corticoïdes effets indésirables	251	330	PC-A16	Antalgiques non opioïdes (dont paracétamol): connaitre les mécanismes d'action, indications, effets seco				
6	1	4	dépression respi morphine	250	330	PC-A17	Antalgiques opioïdes: connaitre les mécanismes d'action, indications, effets secondaires interactions mé				
7	1	5	hémorragie dig	248	355	ET-A02	Connaitre les principales causes d'hémorragie digestives				
8	1	6	acénocoumarol/warfarine (AVKs) et r	248	330	PC-A08	Anticoagulants oraux (AVK et AOD): connaitre les mécanismes d'action, indications, effets secondaires int				
9	1	7	anticoagulant oral direct dabigatran et	248	330	PC-A08	Anticoagulants oraux (AVK et AOD): connaitre les mécanismes d'action, indications, effets secondaires int				
10	1	8	acénocoumarol/warfarine (AVKs) et c	248	330	PC-A08	Anticoagulants oraux (AVK et AOD): connaitre les mécanismes d'action, indications, effets secondaires int				
11	1	9	antibiotiques effets indésirables	026	177	SP-B01	Surveillance de l'enfant sous antibiothérapie				
12	1	10	antibiotiques effets indésirables	085	177	DE-B03	Connaitre (Indications Contre-Indications spectre effets secondaires et interactions)les principales molé				
13	1	11	antihypertenseur	054	330	PC-A04	Médicaments du système rénine-angiotensine: connaitre les mécanismes d'action, indications, effets sec				
14	1	12	hypoglycémie	209	240	ET-A01	Connaitre les médicaments du diabète pouvant provoquer une hypoglycémie chez le diabétique				
15	1	13	antidiabétique	281	330	PC-A15	Antidiabétiques(metformine,sulfonururées,inhibiteurs DPP4,agonistes du GLP1,inhibiteurs des SGLT2): cc				



Challenges

Preparing the final French exam and participating to the European Exam are **not mutually exclusive**.



First attempt with 2nd year medical students | 18 October 2022



Introductory course in pharmacology (\approx 100 students):

The WHO-6-steps for good prescribing

Simplified course on *antidotes, hypoglycemia, hypokaliemia*

English MCQs on their cellphones (anonymous): selected questions from Exam 1 and 2
Evaluation of the course by the students

Satisfaction survey (anonymous), *Overall, this training met my expectations:*

Fully agree	57 %
Rather agree	38 %
Rather disagree	3 %
Fully disagree	2 %



First attempt with 2nd year medical students | 18 October 2022



Satisfaction survey (anonymous), free text comments:

« Very relevant clinical cases »

« Interesting »

« Very cool »

« Good course »

« Very good clinical cases!!! »

« Great clinical cases!! »

« Thanks »

« It was cool :D »

« Great! »

In Limoges, we plan to propose the Exam for 5th- and 6th-year students in January-April 2023.



Other French centers



Meeting of the French College of Pharmacologists (CNPM) :
Professional development days

Nantes, France | 24 - 25 November 2022

Most of the pharmacology teachers will be present.

20 min will be dedicated to the presentation of the Exam, by Yoann Cazaubon (here today, from Montpellier) and me.

Co-funded by the
Erasmus+ Programme
of the European Union



The European Prescribing Exam

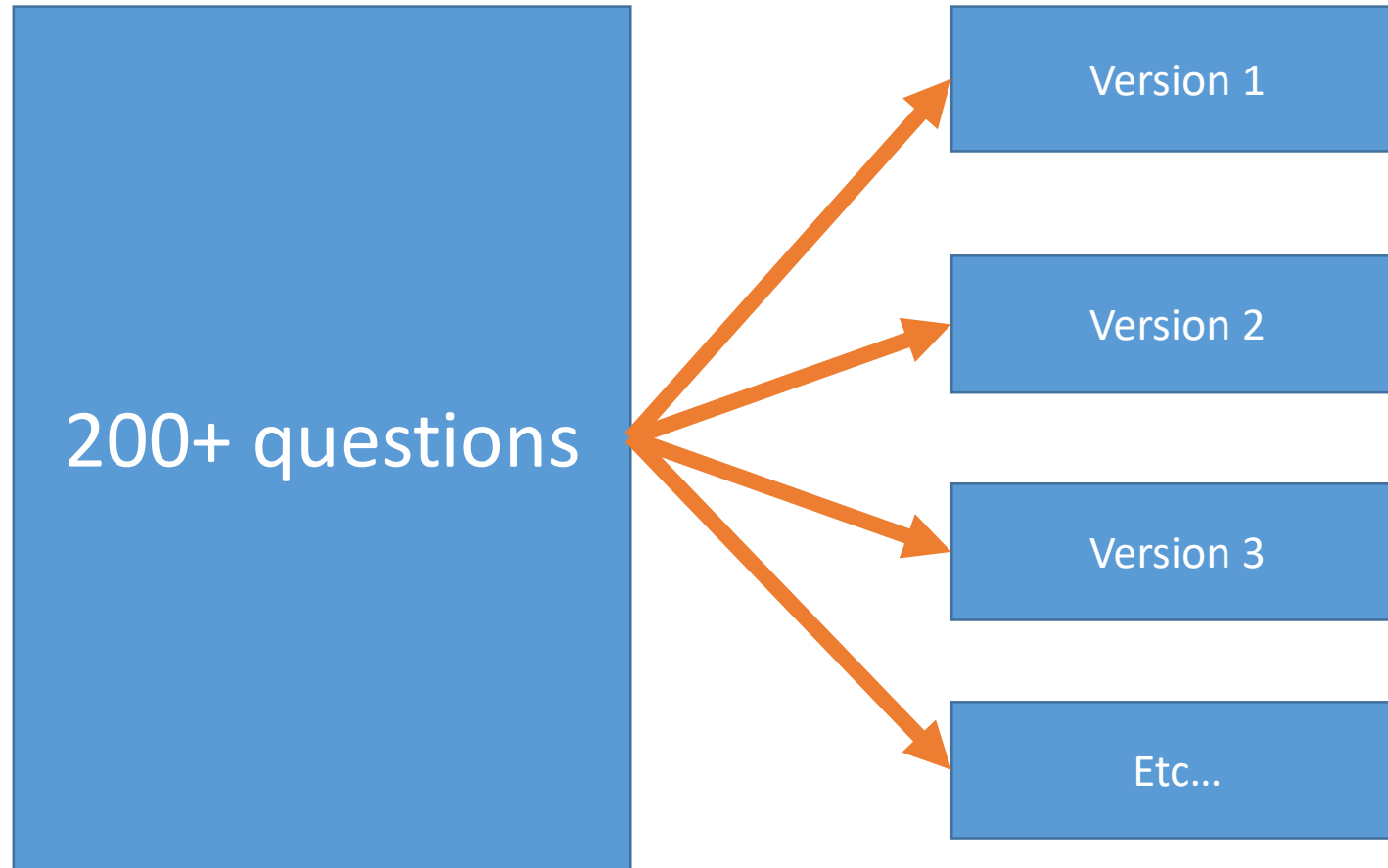
Future organization of EuroPE+

How to involve new universities

Group discussion, hosted by Robert Likic and David Brinkman, project members of EuroPE+



Database



Coordinating board
1 clinical pharmacologist per country



Expert panel
Question development and
review



Expert panel




Tasks:

- Each university develops 10 questions for the database per year (all types)
- Each university provides feedback on 10 questions from other European universities per year

Involve young clinical pharmacologists!



Question development



**European
PRESCRIBING EXAM**

An Erasmus+ project


International objectives on medication safety

Based on the translation of the National objectives on medication safety of the Dutch National Pharmacotherapy Test on medication safety by Cees Kramers, Jelle Tichelaar and Ben Janssen

Jelle Tichelaar	Thierry Christiaens
David Brinkman	Fabrizio de Ponti
Erik Donker	Emilio Sanz
Michiel van Agtmael	Cees Kramers
Robert Likic	Paraskevi Papaioannidou
Ylva Böttiger	João Costa




World Health Organization



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of the European Union



EACPT



Nederlandse Vereniging voor
KLINISCHE FARMACOLOGIE
en Biofarmacie

5. Interactions

5.1. –

5.2. NSAIDs

5.2.1. Coumarins, steroids, antiplatelet agents, SSRIs (Ulcer)

5.2.2. RAAS inhibitors, diuretics (Renal failure)

5.3. Opiates

5.3.1. Anticholinergics, antidepressants, diuretics (Constipation)

5.3.2. Benzodiazepines (Respiratory depression)





Co-funded by the
Erasmus+ Programme
of the European Union



Question format

Use the reader
and learning outcomes!

Subject:	...
Disease	...
Type item:	Multiple choice – multiple answer – prescribing
Type of knowledge:	Adverse event – contraindication – interaction - prescription
Case..	
...	
Physical examination	
...	
Medical history	
...	
Medication	
...	
Laboratory results	
...	
Additional tests	
...	
Question	
...	
Options	
A.	
B.	
C.	
...	
Answer	
...	



Laboratory results
<i>No recent findings.</i>
Question
Your working diagnosis is: pain due to osteoarthritis of both knees, not sufficiently responding to current treatment. Write one or more drug prescriptions that are the MOST appropriate to treat the pain.
Answer
<ul style="list-style-type: none"> • Ibuprofen tablet daily dose 800-1600 mg (when needed) + omeprazole 20 mg once a day <ul style="list-style-type: none"> ○ (400 mg 2-4 times a day) ○ (600 mg 2 times a day) • Ibuprofen gel 5% 2-4 times a day (2-4 fingertip units) • Ibuprofen tablet daily dose 800-1600 mg (when needed) + omeprazole 10 mg once a day • Ibuprofen tablet daily dose 800-1600 mg (when needed) + omeprazole 40 mg once a day • Ibuprofen tablet daily dose 0-799 mg or 1601-2400 mg (in normal dosage regime) + omeprazole 20 mg once a day • Tramadol tablet daily dose 100-200 mg <ul style="list-style-type: none"> ○ (50 mg 2-4 times a day, or when needed 2-4 times a day) • Tramadol tablet with extended release daily dose 100-200 mg • Tramadol drops daily dose 10-25 mg <ul style="list-style-type: none"> ○ (2-4 times a day, or when needed 2-4 times a day) • Codeine tablet daily dose 30-120 mg <ul style="list-style-type: none"> ○ (30 mg tablet 1-4 times a day, or when needed 1-4 times a day) <p>All the other options Including high doses tramadol (daily dose > 200 mg) and codeine (daily dose > 120)</p>



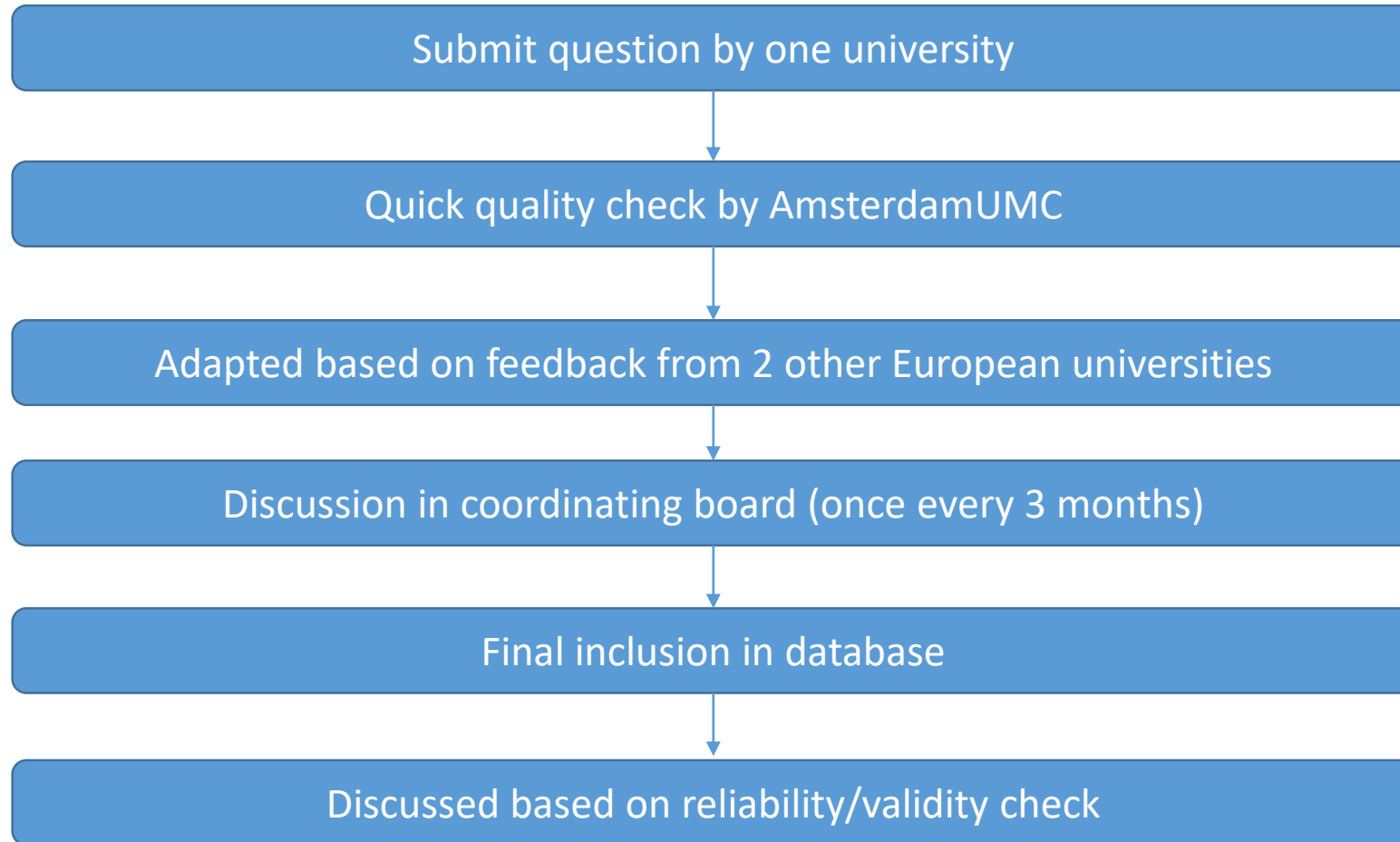
Coordinating board



- Consists of one clinical pharmacologist from each European country
- One meeting every 3 months
- Each question is discussed based on (check learning outcomes/appliability/readability)
- Final decision is made



Question evaluation



The European Prescribing Exam



Lunch break

12.30-13.15h



The European Prescribing Exam



The next steps

13.15-14.00h





Certificate of Attendance

This is to certify that

.....

Has attended the event

CP4T program module: Multiplier event of the European Prescribing Exam

Held on
10 and 11 November 2022
Amsterdam, The Netherlands

Best Regards,

Erik Donker, MSc
Project manager of EuroPE+
Project manager of CP4T

Dr Jelle Tichelaar
Project leader of EuroPE+
Project leader of CP4T

Co-funded by the
Erasmus+ Programme
of the European Union





European **PRESCRIBING EXAM**

PROJECT

WHY?

To increase harmonisation

Learning to the test

GOAL

Ensuring that medical students in Europe graduate with prescribing competencies for safe and effective clinical practice

HOW?

Online examination on safe prescribing
(Knowledge and skills)

Free of charge



EurOP²E

European Open Platform for Prescribing Education

CPT Teachers rarely collaborate¹

Digital teaching resources are costly

Make collaboration and sharing easy

High Quality Open Educational Resources
(Free to reuse, revise, redistribute)

Discussion board

Co-funded by the
Erasmus+ Programme
of the European Union



EurOP²E

European Open Platform for Prescribing Education



Goal: To improve international CPT Education through


- 🕒 Sharing existing resources
- 🕒 Learning from each other
- 🕒 Discussing teaching ideas
- 🕒 Facilitating the production of high quality collaborative resources

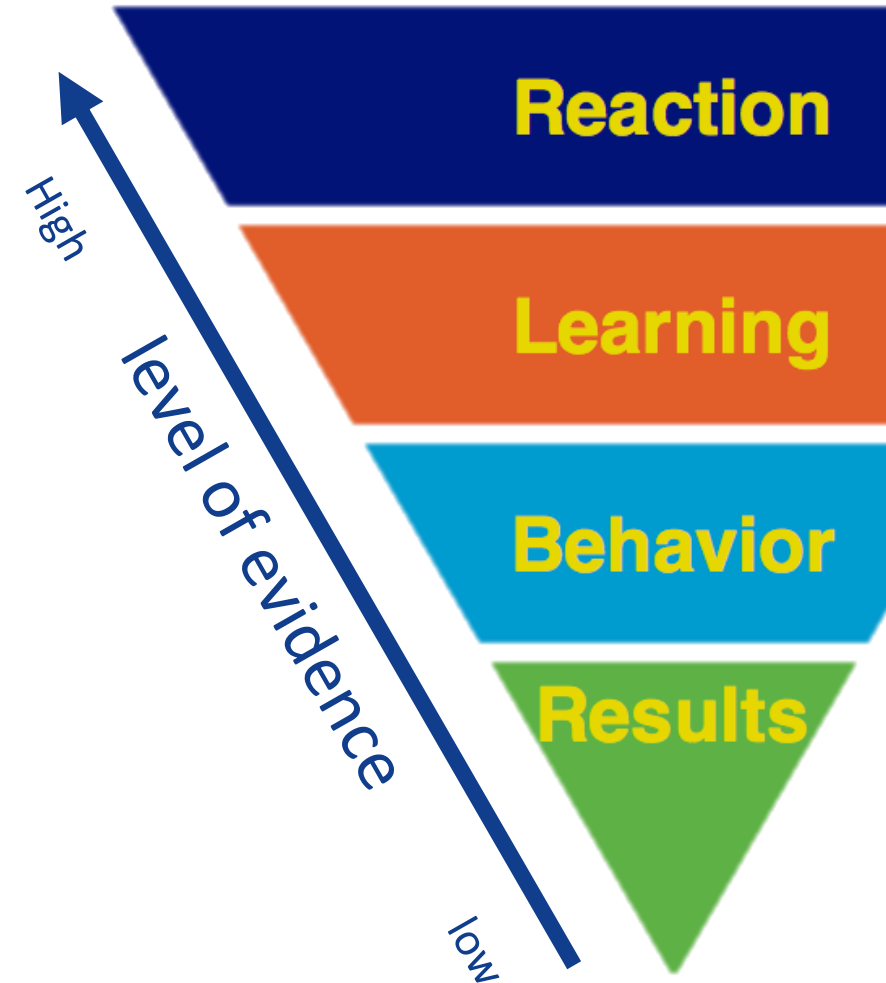


Digital education

For Clinical Pharmacology and Therapeutics

Advantages:

- Anytime; anywhere
- Direct feedback
- Interactivity & multimedia
-  Pandemic proof
- Re-usable in a variety of settings & locations**
- Effective for teaching CPT knowledge & skills¹



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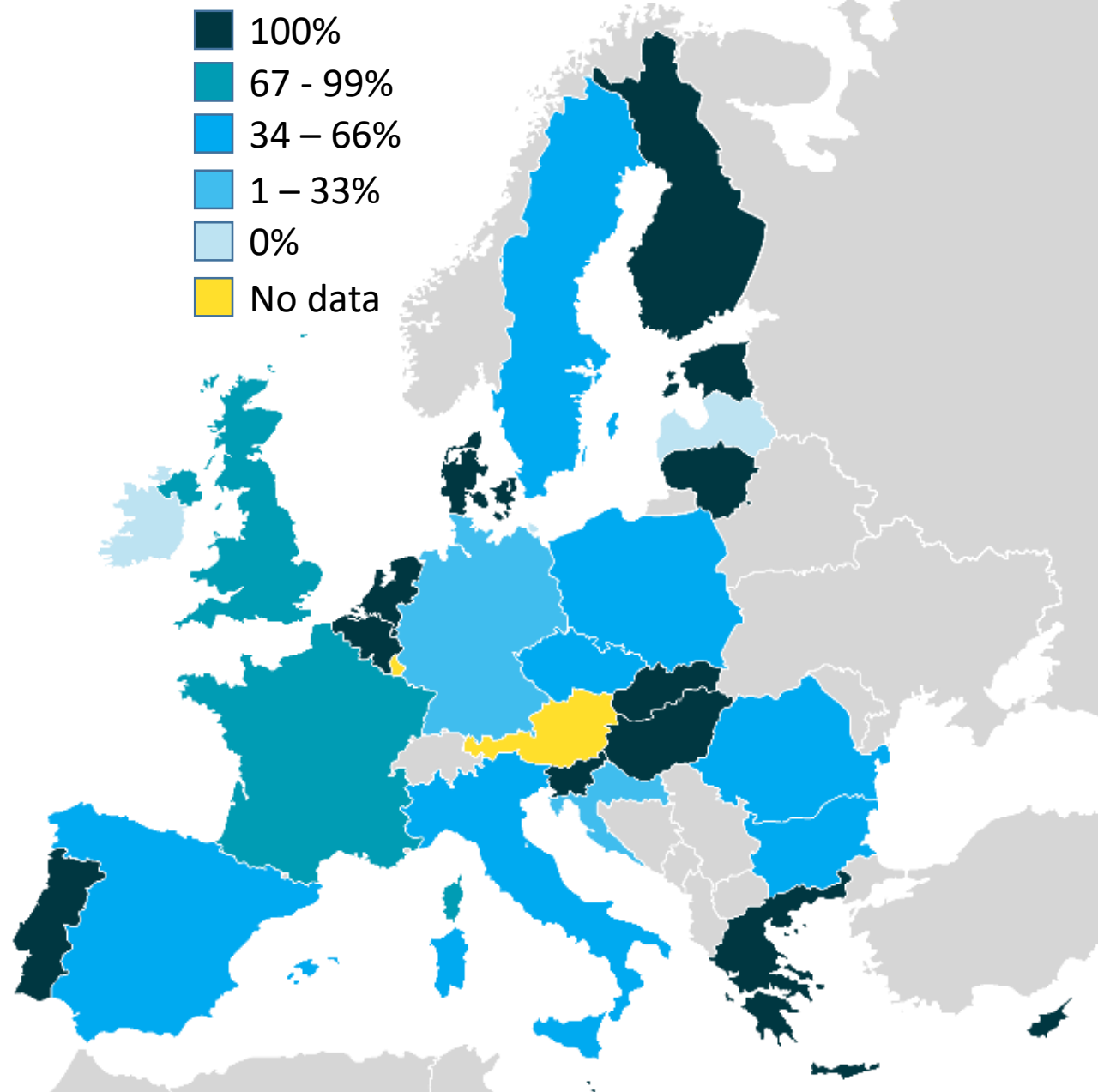
Digital education

Use & sharing practices

In 2019¹:

69.5% of European CPT curricula (n=95) used a **median of 2** digital resources

But only 2 (2.1%) made these resources openly available to other universities



Digital education


Use & sharing practices

In 2019¹:

69.5% of European CPT curricula (n=95) used a **median of 2** digital resources

But only 2 (2.1%) made these resources openly available to other universities

Why not?²



Nobody asked me (n=9)

I do not know / would be happy to share (n=3)

What we have is not special enough (n=7)

Technical reasons (n=6)

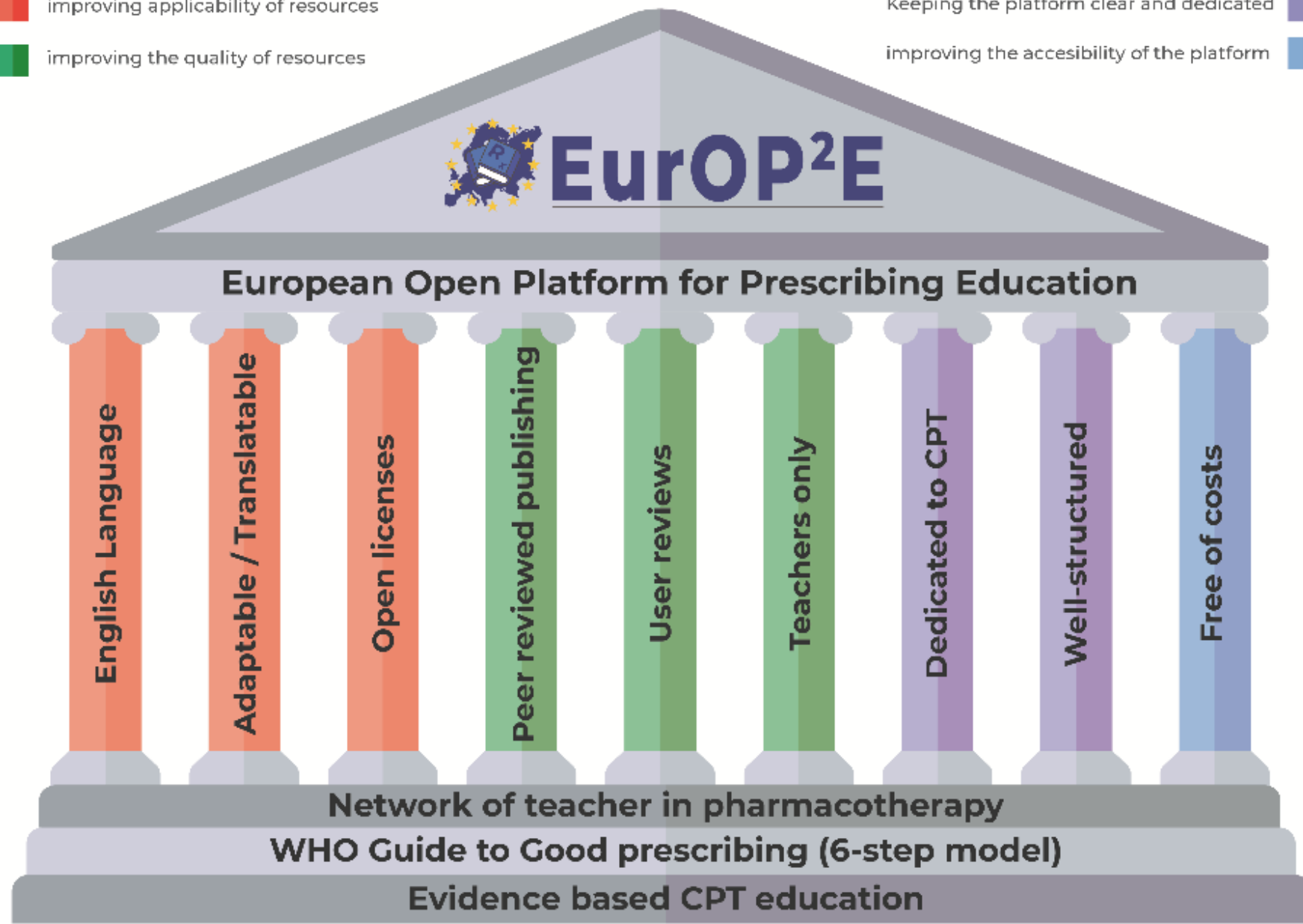
Language (n=5)

Copyright laws (n=2)



- improving applicability of resources
- improving the quality of resources

- Keeping the platform clear and dedicated
- improving the accessibility of the platform





Teaching the teacher

Avoiding double work

Reproducibility

Clinical Pharmacology & Therapeutics

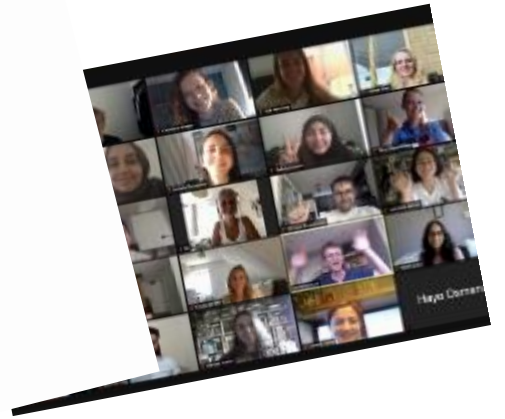
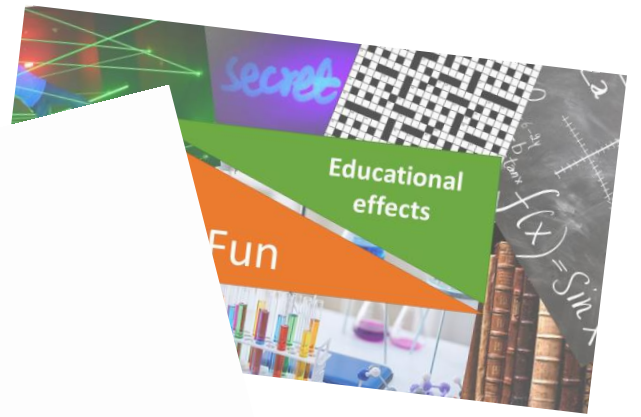
Review | Open Access

A clinical pharmacology and therapeutics teacher's guide to race-based medicine, inclusivity, and diversity

Michiel J Bakkum ✉, Petra Verdonk, Elias G Thomas, Floor van Rosse, Michael Okorie, Paraskevi Papaioannidou, Robert Likic, Emilio J Sanz, Thierry Christiaens, João N Costa, Lorena Dima, Fabrizio de Ponti, Jeroen van Smeden, Michiel A van Agtmael, Milan C Richir, Jelle Tichelaar, The EurOPE consortium ... See fewer authors ^

First published: 03 November 2022 | <https://doi.org/10.1002/cpt.2786>

... issues /
"Not in the textbook stuff"
... support systems



PharmaCO₂therapy



Co-funded by the Erasmus+ Programme of the European Union





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Fabrizio de Ponti
Milo Gatti

Radboud UMC (NL)

Cornelis Kramers

Centre for Human Drug Research (NL)

Jeroen van Smeden

see you in Jan/feb?





 **erasmus+**
meer perspectief
www.erasmusplus.nl

Participants (2)

Amsterdam UMC
i.u. Leiden University
Radboudumc
Universidad de La Laguna

Co-funded by the Erasmus Programme of the European Union

Multiplier Event
European Prescribing Exam
-EuroP

Workshop

Creating Exam Questions

Too much information:
- Type of fracture

Missing information:
- Alcohol?
- Why still painful?
- Age

A patient fell from his bike 2 months ago and had a minor fracture of his proximal radius. He is now using paracetamol since 2 months because of pain in his elbow. His medical history is blanco and he uses no other medication. What is the maximum dosis of paracetamol this patient is allowed to use per day?

- a) 3000mg/day
- b) 4000mg/day
- c) 2000mg/day
- d) 1500mg/day
- e) 2500mg/day

Plausible answer options?
Multiple correct answers

Clear question

Missing information:

- Current treatment
- HbA1c
- Glucose

M. D, 74 years, comes to your clinic to adapt the treatment for his T2 diabetes. He also has chronic kidney disease with an eGFR of 13 mL/min. Which of the following drugs is the most appropriate?

- a) **Vildagliptin**
- b) Metformin
- c) Glimepirid
- d) Dapagliflozin
- e) Acarbose

Plausible answer options?
Multiple correct answers

Clear question

How 'real' is it to already know the pathogen?

Missing information:
-How allergic?
- Since when allergic?

A 6-year-old child presents with an otorhinilaryngology condition with moderate fever caused by a gram-positive cocci. The child is known to be allergic to amoxicillin. The physician wishes to propose oral antibiotic therapy. According to the efficacy and tolerance criteria, which antibiotic family(ies) should be prescribed?

- a) **Macrolides**
- b) Penicillins
- c) Tetracyclins
- d) Cephalosporins
- e) glycopeptides

Plausible answer options?
Are antibiotics indicated?

What type of pain?
Due to osteoarthritis
or neuropathic?

Optimal dosing of
paracetamol?

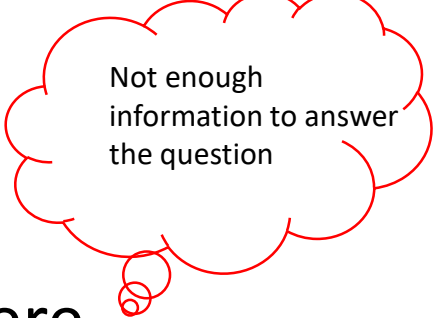
Better to describe
kidney function, we do
not assess knowledge
of the CKD stages

65 old man with osteoarthritis of the knee and diabetic nephropathy (CKD 3b). He is coming to you because of mild to moderate pain. A part of the renal impairment the rest of the lab test results where normal. The patient is not reaponding to paracetamol. Which therapy option would you choose?

- a) Local diclophenac
- b) Oral Codeine
- c) Oral Gabapentin
- d) Oral Celecoxib
- e) Oral Ibuprofen

All options are oral,
except the correct
answer.
Sometimes better to
reduce answer options.

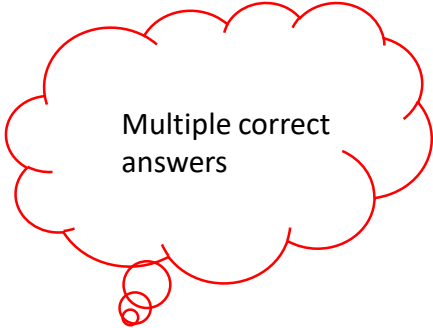
Never make What-would-you-choose-
questions. All options are correct.
Change the question to: what is most
appropriate....



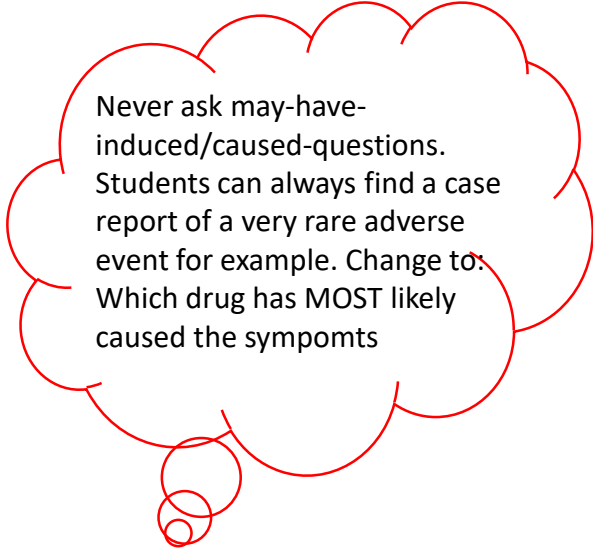
Not enough information to answer the question

Ms Y, 45 years old, is hospitalized in your department for severe depression. Since a few days, she complains of dizziness, and her speech seems more and more confused. Among her treatments, which one may have induced these symptoms?

- a) Citalopram
- b) Lithium
- c) Diazepam
- d) Amlodipine
- e) Metformin



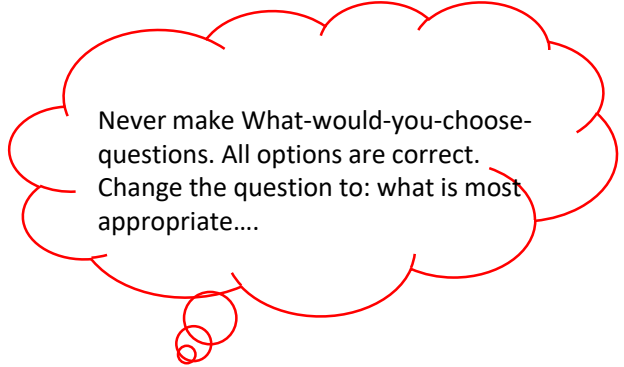
Multiple correct answers



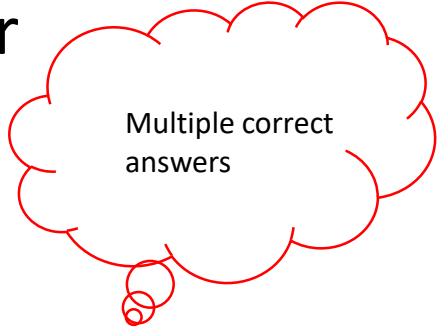
Never ask may-have-induced/caused-questions. Students can always find a case report of a very rare adverse event for example. Change to: Which drug has MOST likely caused the symptoms

Thirty five year old woman who is planning a pregnancy and has a history of essential hypertension, who is on ramipril 5 mg once per day is coming to you for counseling regarding medication use during pregnancy. Which therapeutic alternatives should you have in mind for this patient in case of pregnancy?

- a) change the treatment to alpha methyldopa
- b) continue with an ACE inhibitor treatment
- c) consider replacing ramipril with losartan
- d) consider replacing rampiril with a thiazide
- e) discontinue the antihypertensive treatment altogether



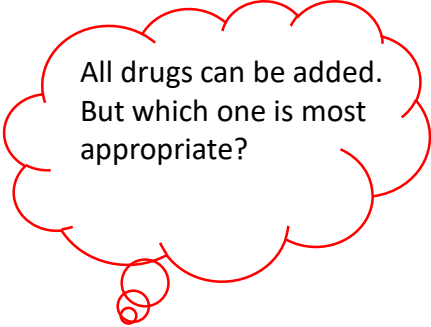
Never make What-would-you-choose-questions. All options are correct. Change the question to: what is most appropriate....



Multiple correct answers

68 years old obese female patient with BMI 35 kg/m², diabetes mellitus type 2 and normal renal function (eGF 109 ml/min) is taking metformin 2000 mg daily for 4 months. The target glucose fasting level has not been achieved (10 mmol/L). Which of the following drugs can be added to metformin to control both her diabetes and obesity?

- a) Liraglutide
- b) insulin degludec
- c) Glimepiride
- d) pioglitazone
- e) sitagliptin



All drugs can be added.
But which one is most appropriate?

A 26-year old male patient comes to the hospital complaining of tremor and restlessness. He is currently using paracetamol, propranolol, quetiapine and cephalexin.

Which drug is the most probable cause of the tremor and restlessness?

- a) Quetiapine
- b) Paracetamol
- c) Propranolol
- d) Cephalexin

Your patient (78 years old) suffers from Chronic Heart Failure NYHA III and T2DM. With which antidiabetic drug would you treat T2DM?

- a) Empagliflozin
- b) Metformin
- c) Glibenclamide
- d) Pioglitazone

Mr D., 75 years old, has a history of ischemic heart failure with reduced ejection fraction, chronic kidney disease with an estimated GFR of 23 mL/min, hypertension, and depression. You just diagnosed acute on chronic heart failure because of new-onset atrial fibrillation with an heart rate of 130 /min. Which of the following drugs is the most appropriate for rythm control?

- a) Amiodarone
- b) Flecainid
- c) Sotalol
- d) Diltiazem
- e) Apixaban

72-year-old woman was admitted to hospital because of a femur fracture.

Medical history:

- Since 1 month: peptic ulcer
- Since 1 week: Low back pain
- Since 2 years: essential hypertension

Medication:

Omeprazole
Paracetamol
Codeine
Enalapril

Select the drug that is MOST likely to be contributing to the fracture risk?

- a) Omeprazole
- b) Paracetamol
- c) Codeine
- d) Enalapril

Ms Y, 45 years old, is hospitalized in your department for severe depression. Since a few days, she complains of dizziness, and her speech seems more and more confused. She does not have any other symptoms.

Her newly introduced treatment is citalopram.

She is also treated with

- Valium
- Lithium
- Amlodipine
- Metformin

Which mechanism is the most probably involved in her symptoms?

- a) SIADH
- b) Serotonergic syndrome
- c) Malignant neuroleptic syndrome
- d) Hyponatremia
- e) Hyperkalemia

Mr D., 75 years old, has a history of ischemic heart failure with reduced ejection fraction, chronic kidney disease with an estimated GFR of 23 mL/min, hypertension, and depression. You just diagnosed atrial fibrillation with an heart rate of 130 /min. Which of the following drugs is the most appropriate for anticoagulation?

- a) Apixaban
- b) Dabigatran
- c) Dalteparin
- d) Unfractionated heparin

A 19-year old patient is complaining of severe headache and nausea. You diagnose them with migraine.

Which of the following treatments is appropriate for a migraine patient?

- a) Ibuprofen
- b) Oxycodone
- c) Codeine
- d) Tramadol

A pregnant woman in her first trimester, 30 years old, is diagnosed with urinary tract infection. Which is the most appropriate drug to prescribe in this situation?

- a) Fosfomycin or nitrofurantoin
- b) Tetracycline
- c) Ciprofloxacin
- d) Gentamicin

A patient is prescribed ketoconazole for a fungal infection. He is already on the following drugs. Which one should be stopped in view of potential drug drug interactions?

- a) Atorvastatin
- b) Metoprolol
- c) Acetylsalicylic acid
- d) Metformin

A 50-year old male is taking escitalopram for depression. He is allergic to penicillin and is diagnosed with community acquired pneumonia. His doctor orders an EKG. What is he monitoring?

- a) QT interval
- b) RR interval
- c) PR interval
- d) QRS interval