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

Teach the Teacher Module

Student-assistants in CPT education

CP4T

Clinical Pharmacology and Therapeutics
Teach the Teacher Program

Introduction to CP4T

Mission statement:

As a result of our project, teaching and training of CPT in Europe (and perhaps beyond) will be harmonized and modernized, with the aim of promoting rational and safe prescribing.

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

Clinical Pharmacology and Therapeutics Teach the Teacher

Who are we?

GHENT UNIVERSITY

UNIVERSITAS MASARYKIANA BRUNENSIS

UNIVERSITY OF GOTHENBURG

University of Zagreb

ALMA MATER STUDIORUM UNIVERSITÀ DI BOLOGNA

Amsterdam UMC

Universidad de La Laguna

UNIVERSITÄT ZU LÜBECK

ERASMUS UNIVERSITEIT ROTTERDAM

CHU MONTPELLIER CENTRE HOSPITALIER UNIVERSITAIRE

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

Introduction to CP4T

Previous Teach the Teacher modules

- The European Prescribing Exam
- Hot topics in CPT education
- Flip-the-classroom (online via Zoom)
- How to integrate the (new) Guide to Good Prescribing and 6-step in education
- Curriculum development and changes

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Teach the Teacher Module

Student-assistants in CPT education

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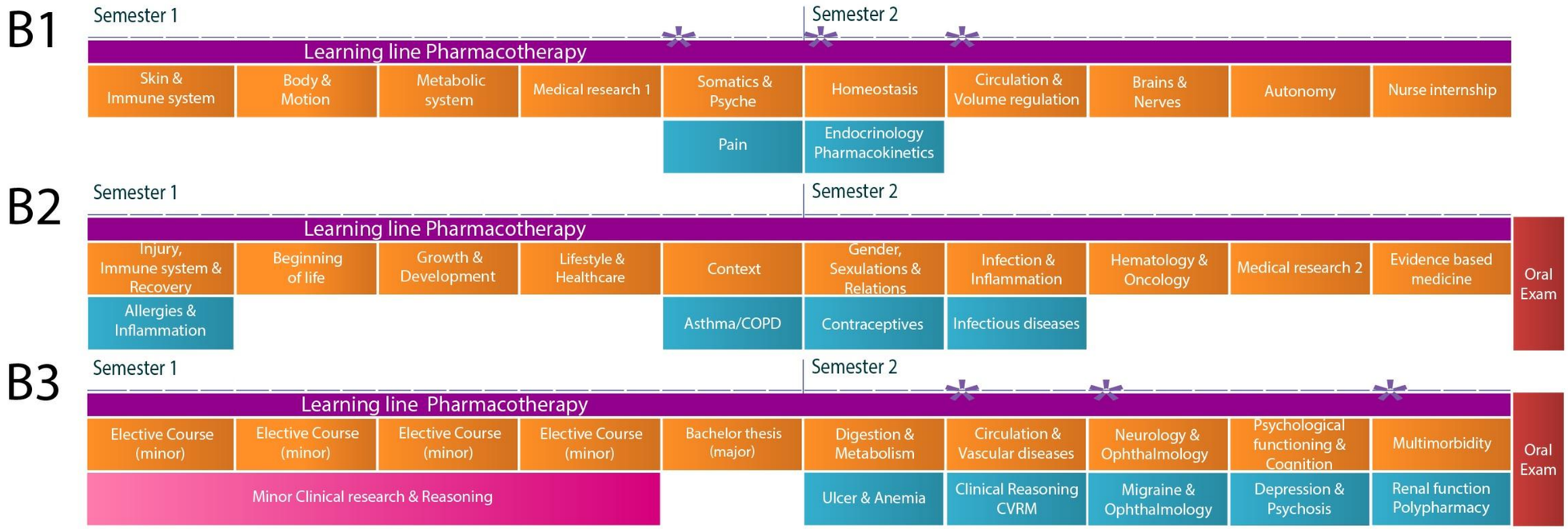
Today (17:00-18:30)

<u>How to set up a student-assistant system for CPT education?</u>

- Examples of practice
  - -Amsterdam
  - -Ghent
- How to implement this in your own education/curriculum?
- Working with students for ‘future proof’ education

Student-assistants for bachelor education



Student-assistants in clinical care

Studentenpoli
Amsterdam

[Student run clinic, subs - YouTube]

FACULTY OF MEDICINE AND HEALTH SCIENCES

EACPT WORKING GROUP EDUCATION WORKSHOP:

PHARMACOTHERAPY STUDENT ASSISTANTS AT GHENT UNIVERSITY (BELGIUM)

DR ELLEN VAN LEEUWEN

LEAD PHARMACOTHERAPY EDUCATION

EUROPEAN ASSOCIATION OF CLINICAL PHARMACOLOGY CONFERENCE HELSINKI, 29/06/2025

PHARMACOTHERAPY EDUCATION AT GHENT UNIVERSITY

- Problem-based pharmacotherapy teaching in the medical curriculum from year 3 to 5
- Small groups sessions with solving clinical cases e.g. hypertension, diabetes, depression…
- Supervised by clinicians and pharmacist from the hospital
- Growing number of students (500 started in year 1 in 2024!

➔ Expected problem in year 3:

Lack of doctors/pharmacists to supervise small group sessions

SOLUTION?!

Student-assistants Pharmacotherapy

- Inspired by Amsterdam UMC
- Trust in my own education
- Start project SA in 2023-2024

Format:

- SA's in Year 4 teach Year 3 students
- Each SA do 2 tutorials (topics) per semester, min. 2 sessions
- Alone or with 2 if they want
- Preparation required: SA-specific training session + self-study of cases
- Seeing them as one of the teaching colleagues, although no mini-professors

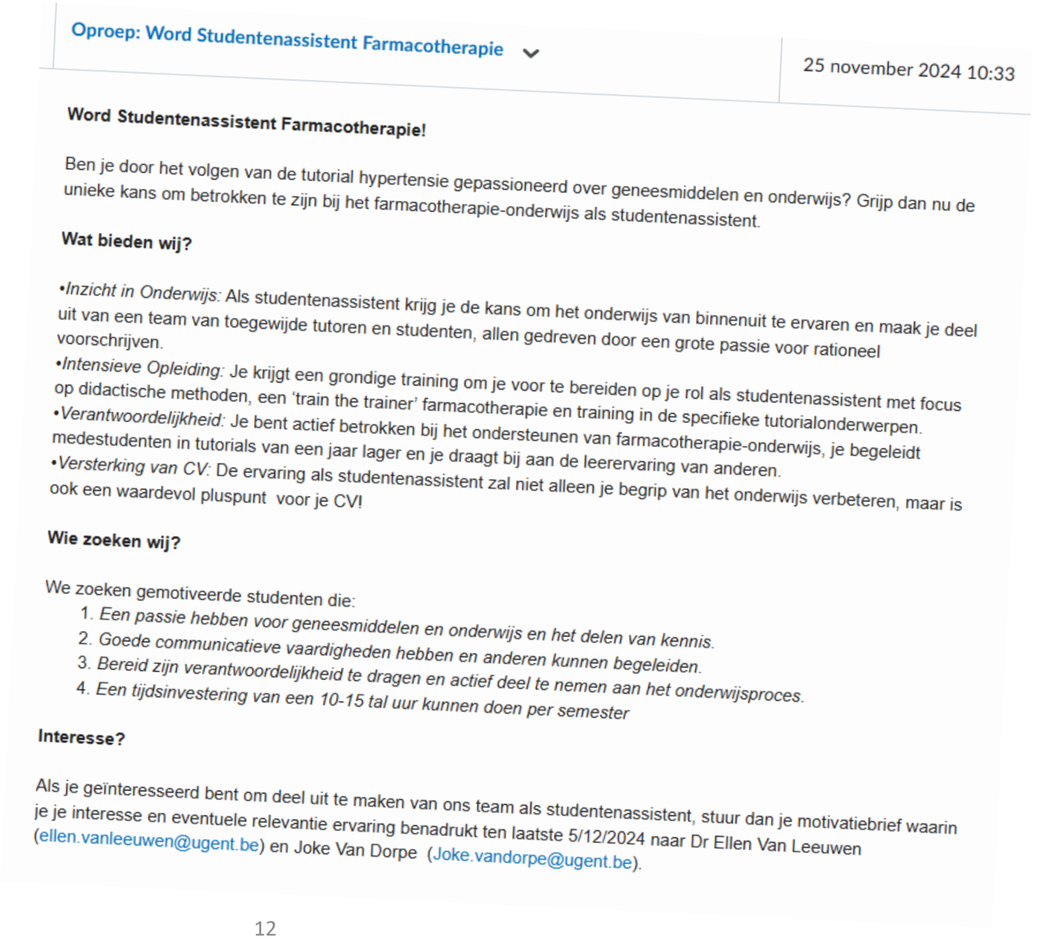
RECRUITMENT

Announcement made during my course and via the student forum in December of Year 3

Students apply with a CV and motivation letter

Kick-off meeting and explanation of expectations, basic CPT training session (WHO 6-steps)

Signing contract (credential added to their CV)



Oproep: Word Studentenassistent Farmacotherapie

25 november 2024 10:33

Word Studentenassistent Farmacotherapie!

Ben je door het volgen van de tutorial hypertensie gepassioneerd over geneesmiddelen en onderwijs? Grijp dan nu de unieke kans om betrokken te zijn bij het farmacotherapie-onderwijs als studentenassistent.

Wat bieden wij?

•*Inzicht in Onderwijs:* Als studentenassistent krijg je de kans om het onderwijs van binnenuit te ervaren en maak je deel uit van een team van toegewijde tutoren en studenten, allen gedreven door een grote passie voor rationeel voorschrijven.
•*Intensieve Opleiding:* Je krijgt een grondige training om je voor te bereiden op je rol als studentenassistent met focus op didactische methoden, een 'train the trainer' farmacotherapie en training in de specifieke tutorialonderwerpen.
•*Verantwoordelijkheid:* Je bent actief betrokken bij het ondersteunen van farmacotherapie-onderwijs, je begeleidt medestudenten in tutorials van een jaar lager en je draagt bij aan de leerervaring van anderen.
•*Versterking van CV:* De ervaring als studentenassistent zal niet alleen je begrip van het onderwijs verbeteren, maar is ook een waardevol pluspunt voor je CV!

Wie zoeken wij?

We zoeken gemotiveerde studenten die:

1. *Een passie hebben voor geneesmiddelen en onderwijs en het delen van kennis.*
2. *Goede communicatieve vaardigheden hebben en anderen kunnen begeleiden.*
3. *Bereid zijn verantwoordelijkheid te dragen en actief deel te nemen aan het onderwijsproces.*
4. *Een tijdsinvestering van een 10-15 tal uur kunnen doen per semester*

Interesse?

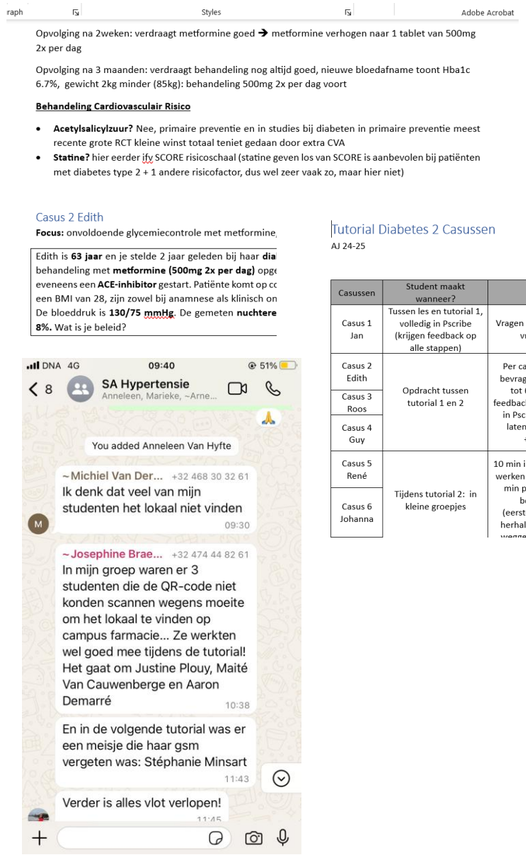
Als je geïnteresseerd bent om deel uit te maken van ons team als studentenassistent, stuur dan je motivatiebrief waarin je je interesse en eventuele relevantie ervaring benadrukt ten laatste 5/12/2024 naar Dr Ellen Van Leeuwen (ellen.vanleeuwen@ugent.be) en Joke Van Dorpe (Joke.vandorpe@ugent.be).

12

First call: 13 students!

TRAINING AND SUPPORT

- One intro didactic session
- Detailed written tutorial instructions
- WhatsApp group for practical and urgent questions
- Follow-up by email
- End-of-semester debrief with informal feedback and sandwiches
- Student/SA evaluations used to improve the process



raph Styles Adobe Acrobat

Opvolging na 2weken: verdraagt metformine goed → metformine verhogen naar 1 tablet van 500mg 2x per dag

Opvolging na 3 maanden: verdraagt behandeling nog altijd goed, nieuwe bloedafname toont Hba1c 6.7%, gewicht 2kg minder (85kg): behandeling 500mg 2x per dag voort

Behandeling Cardiovasculair Risico

- **Acetylsalicylzuur?** Nee, primaire preventie en in studies bij diabeten in primaire preventie meest recente grote RCT kleine winst totaal teniet gedaan door extra CVA
- **Statine?** hier eerder ifv SCORE risicoschaal (statine geven los van SCORE is aanbevolen bij patiënten met diabetes type 2 + 1 andere risicofactor, dus wel zeer vaak zo, maar hier niet)

Casus 2 Edith

Focus: onvoldoende glycemiecontrole met metformine

Edith is **63 jaar** en je stelde 2 jaar geleden bij haar **dia** behandeling met **metformine (500mg 2x per dag)** opge eveneens een **ACE-inhibitor** gestart. Patiënte komt op cc een BMI van 28, zijn zowel bij anamnese als klinisch on De bloeddruk is **130/75 mmHg**. De gemeten **nuchtere 8%.** Wat is je beleid?

DNA 4G 09:40 51%

8 SA Hypertensie
Anneleen, Marieke, ~Arne...

You added Anneleen Van Hyfte

~Michiel Van Der... +32 468 30 32 61
Ik denk dat veel van mijn studenten het lokaal niet vinden
09:30

~Josephine Brae... +32 474 44 82 61
In mijn groep waren er 3 studenten die de QR-code niet konden scannen wegens moeite om het lokaal te vinden op campus farmacie... Ze werkten wel goed mee tijdens de tutorial! Het gaat om Justine Plouy, Maité Van Cauwenberge en Aaron Demarré
10:38

En in de volgende tutorial was er een meisje die haar gsm vergeten was: Stéphanie Minsart
11:43

Verder is alles vlot verlopen!

Tutorial Diabetes 2 Casussen

AJ 24-25

Casussen	Student maakt wanneer?	Tutor	Focus
Casus 1 Jan	Tussen les en tutorial 1, volledig in Pscribe (krijgen feedback op alle stappen)	Vragen of hierover nog vragen zijn	Diagnose, niet-medicamenteus beleid, opstart metformine
Casus 2 Edith	Opdracht tussen tutorial 1 en 2	Per casus 1 student bevragen over stap 4 tot 6 (ze krijgen feedback op stap 1 tot 3 in Pscribe) + ruimte laten voor vragen +- 25min	Onvoldoende glycemiecontrole met metformine, compliance + CVR
Casus 3 Roos			Onvoldoende glycemiecontrole met maximaal metformine
Casus 4 Guy			Onvoldoende glycemiecontrole met maximaal metformine bij patiënt met CV antecedent
Casus 5 René	Tijdens tutorial 2: in kleine groepjes	10 min in groepjes laten werken aan 1 casus + 5 min per casus voor bespreking (eerste stappen zijn herhaling en kunnen weggelaten worden	Behandeling met metformine en SU met vermoeden hypoglycemie-aanvallen
Casus 6 Johanna			Maag-en darmklachten na snelle opbouw metformine

WHAT SA FOUND VALUABLE?

Responses from 13 SAs

- Gaining confidence in public speaking
- Reinforcing their own pharmacotherapy knowledge
- Developing teaching and communication skills
- Helping fellow students in a meaningful way
- Feeling part of an educational team

Teaching and guiding students was really rewarding. I felt they dared to ask questions and it helped me understand the material better too

WHAT SA FOUND CHALLENGING?

Responses from 13 SAs

- Finding confidence to teach peers
- Acting as an authority without clinical experience
- Managing time and covering all case content
- Answering complex or unexpected questions
- Balancing preparation with other work

The hardest part is having enough confidence to lead a group with enthusiasm. You have to act like an authority — even though you're not really one

WHAT STUDENTS APPRECIATED

Responses from 21 students with 1 or more session with SA

- Clear explanations and relevant examples
- SA shared practical tips and relevant experience
- Safe environment to ask questions
- Easy to connect with a near-peer teacher

The SA explained things clearly and in a way that made sense to us

WHAT COULD BE IMPROVED?

Responses from 21 students with 1 or more session with SA

- More time needed for deeper discussion and cases at the end
- Level of interactive teaching varied per SA
- Some SAs were unsure about content or format

The SA knew the first part well, but rushed the second half due to time limits

WOULD STUDENTS WANT TO BE SA THEMSELVES?

Responses from 21 students with 1 or more session with SA

- Mixed responses: ~50% yes, ~50% no
- YES: to reinforce own knowledge, help others, enjoyed peer model
- NO: due to lack of time, confidence, or unclear value
- Motivation increased after a positive SA experience

Yes, because my SA was inspiring and made pharmacotherapy more interesting.

PERSONAL REFLECTIONS

- Great support: ¾ of the tutorials by the SA in year 3
- Rewarding project
- Cycle with high turnover!
  - New call in year 3: 23 students (+13 earlier SA go to year 5)
- We received teaching assistant 0.2%FTE
- SA: Model for our future faculty education

UNIVERSITEIT GENT

FACULTEIT GENEESKUNDE EN GEZONDHEIDSWETENSCHAPPEN

Schakel een student-assistent in en geef je onderwijs een boost

Doctor-assistent Ellen Van Leeuwen: "*Door de **inzet van student-assistenten** kunnen we, ondanks het stijgend aantal studenten, **toch in kleine groepen blijven lesgeven**. Ze bereiden zich grondig voor, denken actief mee over het bereiken van leerdoelen, groeien in didactiek en tonen echte **passie voor onderwijs**.*" Net als Ellen interesse om student-assistenten in te schakelen in je (praktijk)onderwijs? Het project kreeg een grondige update, met een **vernieuwd leerpad** en **praktische boostsessie**. Ook als lesgever krijg je **extra tools** in handen voor de selectie, opleiding en begeleiding van student-assistenten.

FACULTY OF MEDICINE AND HEALTH SCIENCES

Ellen Van Leeuwen@ugent.be

Contact: ellen.vanleeuwen@ugent.be

Student-assistants in YOUR EDUCATION?

Discuss (10 minutes):

Do you want this? Why? (what are the benefits or cons)?

Where could this be implemented in you education?

Student-assistants in YOUR EDUCATION?

Discuss (10 minutes):

Do you want this? Why (what are the benefits or cons)?

Where could this be implemented in you education?

How to make it happen?

Barriers and potential solutions?

Student-assistants in YOUR EDUCATION?

Requirement:

WIN-WIN-WIN-WIN-WIN

Working with students for ‘future proof’ education

AI in Clinical Pharmacology teaching

CP4T

Clinical Pharmacology and Therapeutics
Teach the Teacher Program

• PROF. EMILIO J. SANZ. UNIVERSITY OF LA LAGUNA. TENERIFE. SPAIN

Therapeutics and Clinical Pharmacology.	Medicine 5º Year
Flipped Class-room (pre-class and workshops)	20 %
Clinical Assigments (Intensive Care Units)	10%
European Prescribing Exam (Knowledge & Skills)	50%
Personal Formulary	
Group work (Step 1-4)	10%
Personal Work (P-Drug App) (Step 5-6)	10%

Development of the Personal Formulary

Work in Groups (3-6 students)

Step 1: Define the patient's problem
Step 2: Define the therapeutic objective
Step 3: Identifiy the most appropriate Pharmacological groups
Step 4: Propose the Preferred Pharmacological Group(es)

WIKI

AI: Compulsory. At least two different Apps and a reflective commentar

Individually

Using the available group reports, choose the preferred / personal drug(s)
(Maximun 40 drugs for 20 diseases)

Pdrugs.ull.es

https://pdrugs.ull.es

https://pdrugs.ull.es

Example of the work in groups

CÓDIGO CIE	ENFERMEDAD
E11	DIABETES MELLITUS TIPO II

1. Definición del "paciente tipo"

Características Demográficas y Clínicas

- Edad: Adultos mayores de 40 años, con mayor prevalencia entre los 50-70 años, aunque puede presentarse en edades más jóvenes debido al aumento de obesidad. Afecta a ambos sexos por igual.
- Índice de Masa Corporal (IMC): Frecuentemente sobrepeso (IMC 25-29.9) u obesidad (IMC ≥30), aunque también hay pacientes con peso normal, especialmente en ciertas poblaciones (asiáticos)
- Glucosa en ayunas ≥126 mg/dL (7.0 mmol/L) en 2 ocasiones. HbA1c ≥6.5%.

2. Especifique objetivo terapéutico a conseguir en este tipo de pacientes

→ El objetivo principal en el manejo de la DM-2 es lograr un control glucémico adecuado para prevenir o retrasar las complicaciones microvasculares (retinopatía, nefropatía, neuropatía) y macrovasculares (enfermedad cardiovascular, ictus), mientras se mejora la calidad de vida del paciente. Entre los objetivos específicos:

a. **Control glucémico**:

- Mantener la hemoglobina A1c (HbA1c) en un rango personalizado, generalmente <7% (según guías como las de la ADA - Asociación Americana de Diabetes), aunque puede ajustarse:
- <6.5% en pacientes jóvenes, sin comorbilidades y con diagnóstico reciente.
- <8% en pacientes ancianos, con comorbilidades significativas o riesgo elevado de hipoglucemia.
- Glucemia en ayunas: **80-130 mg/dL.
- Glucemia posprandial: **<180 mg/dL.

3. Grupos farmacológicos que pueden usarse

3.1 - INSULINAS

A. RÁPIDAS

INSULINAS RÁPIDAS

3.1 - INSULINAS

A. RÁPIDAS

INSULINAS RÁPIDAS						
Nombre del fármaco	**Código ATC**	**Principales principios activos**	**Características farmacológicas**	**Eficacia**	**Seguridad**	**Aplicabilidad**
NovoRapid	A10AB05	Insulina Aspart	Insulina rápida que actúa en 10-20 minutos.	Controla los picos de glucosa postprandial en diabetes tipo 1 y 2.	Riesgo de hipoglucemia, aumento de peso.	Para diabetes tipo 1 y tipo 2, tras las comidas.
Fiasp	A10AB05	Insulina Aspart + Niacina	Acción más rápida (5 min) gracias a la niacina.	Eficaz para controlar la glucosa postprandial, con inicio más rápido que NovoRapid.	Riesgo de hipoglucemia, reacciones alérgicas por niacina.	Para diabetes tipo 1 y tipo 2, con inicio rápido.
Glulisina	A10AB06	Insulina glulisina	Unión a receptores de insulina en células musculares y adiposas, promoviendo captación de glucosa e inhibición de gluconeogénesis. Inicio de acción: 10-15 min. Pico de acción: 1-2 horas. Duración: 3-5 horas. Administración subcutánea. Rápida absorción y eliminación renal.	Altamente eficaz en reducción de picos de glucemia postprandial.	Efectos adversos: Hipoglucemia (principal riesgo), reacciones locales del sitio de inyección y aumento de peso leve. Contraindicaciones: hipoglucemia o alergia conocida. Requiere ajuste en insuficiencia renal o hepática.	Se utiliza en DMII para el control de glucemia postprandial, requiere educación del paciente para su correcto uso.
Lispro	A10AB04	Insulina lispro[4]	Administración subcutánea o con bomba: Inicio: 15 min y pico: 1 h Duración: 3–5 h Administración subcutánea o con bomba Metabolismo hepático, renal y muscular[1].	Control eficaz de glucosa postprandial[2] Reducción de HbA1c Funciona en esquemas basal-bolo o intensificación Útil en terapias personalizadas.	Riesgo bajo de hipoglucemia (comparado con insulina regular) Reacciones locales poco frecuentes Posible aumento de peso leve Ajuste en insuficiencia renal/hepática.	DM-I como terapia basal-bolo y bombas de insulina[3] DM-II en esquema de intensificación cuando la basal no es suficiente.

AI App used by the students

Disease	Pages	Nº AI	CHATGPT	Perplexity	Gemini 2.0	DeepSeek	Open Evidence	Consensus	OPEN EVIDENCE	COPILOT	GROK	PUBMED GPT	Claude 3.7 Sonnet
Arthrosis	37	4	X		X				X	X			
Insomnia	23	4	X	X	X		X						
Hyperlipidemia	34	4	X	X		X							X
Nausea & vomiting	28	3	x			X		x					
Renal Colic	29	3	X	X			X						
UTI	9	3	X	X	X								
Asthma	7	3	X		X			X					
Hypertension	12	2	X	X									
Diarrhoea	5	2	X				X						
Dispepsy & Ulcer	47	2	x		x								
Diabetes	30	2	X								X		
Anemia	28	2	X						X				
Miocardial Infarction	21	2	X									X	
Influenza	31	2		X			X						
Pharingoamigdalitis	6	2	X			X							
Pneumonia	10	2	X		X								
Otitis / Sinusitis	40	2		X			X						
Anxiety	10	2		X		X							
Depression	10	2	X			X							
COPD	24	2	X	X									
20	22	2,5	**17**	**9**	**6**	**5**	**5**	**2**	**2**	**1**	**1**	**1**	**1**
Min	5												
Max	47												
Median	23,5												

CONCLUSIONS

- The medical students **use AI Apps daily**
- They are **aware** of the risks of **misinformation** and check with other AI Apps and factual information
- The results produced by the AI are extensive and **need refinement and condensation**
- They learn how to **search**, how to **check** and how to **extract**!

Working with students for Planetary Health education in CPT

- 14 lessons bachelor – Teacher's manual + powerpoint

de CO_2-assistent

SpringLab VU zie | ontdek | doe

Effects of analgesics on the environment

- NSAIDs are responsible for 15% of the total pharmaceutical residues in surface water worldwide. They cause ecological toxicity:
  - Tissue damage in fish
  - Reduced reproduction in fish and amphibians
  - Behavioral changes and growth restriction
- Paracetamol concentrations in surface water are below the risk limits
  → An additional reason to be cautious with NSAIDs and to recommend PCM first!

1. Parolini, M. (2020). Toxicity of the Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) acetylsalicylic acid, paracetamol, diclofenac, ibuprofen and naproxen towards freshwater invertebrates: A review. *The Science of the Total Environment*, *740*, 140043. https://doi.org/10.1016/j.scitotenv.2020.140043
2. Faber, M., Montforts, M., & Roex, E. (2024). Risico's van pijnstillers in het oppervlaktewater. Keuzes voor gebruik op basis van milieueffecten. *rivm.openrepository.com*. https://doi.org/10.21945/RIVM-2023-0117

Painkillers

What reason, besides the risks of side effects, can you think of to prefer paracetamol over NSAIDs as the first step in pain treatment?

Environmental impact

NSAIDs are responsible for 15% of the total pharmaceutical residues in surface water worldwide [1]. This is likely due to the large-scale use of these drugs, their slow degradation process, and their difficult purification [2]. Although the total amount of paracetamol in surface water is even greater than that of NSAIDs, paracetamol does not exceed its risk threshold for harm to organisms, whereas NSAIDs do [3]. Examples of NSAID toxicity for freshwater animals include tissue damage caused by DNA changes, growth restriction, behavioral changes, and reduced reproduction [2,4]. From an environmental risk perspective, an optimal dose of paracetamol is therefore always preferred over an NSAID.

Which NSAID has the least environmental impact?

At this moment, it is not (yet) possible to make a clear distinction in environmental burden between the different NSAIDs, due to comparable risks in water and a lack of information on the total environmental impact of each drug [3,4].

Which opioid is preferred in terms of (ecological) sustainability?

Although morphine is the most commonly detected opioid in surface water internationally, there is still insufficient research on the ecological impact of all opioids, making it impossible to determine which opioid is least harmful to the environment [5]. However, a sustainable choice between opioids can be reasoned in another way. Oxycodone has the highest risk of addiction and misuse among opioids [6-8]. A hospital study showed that replacing oxycodone with morphine on the ward led to a 35% reduction in oral opioid use and 41% fewer patients being discharged with oral opioids, while the pain scores of these patients remained the same [9]. Since less medication use is inherently more sustainable, morphine could potentially be a more sustainable choice than oxycodone.

European survey on medicines and the environment

- Input really valuable in determining the desired focus for this topic in education for (future) prescribers

- Already >90 CPT teachers and >100 prescribers
- Already >200 medicine students, but we want more!

- Share this survey with your medicine students (and colleagues)?
  Contact j.piet@amsterdamumc.nl and/or leave your e-mail before leaving ☺

Working with students for ‘future proof’ education

Other ideas?

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Evaluation + Teach the Teacher certificate

Please share your e-mail adress before leaving ☺

Thank you!