Conclusion: For a particular drug, contraindications and method of administration comprise most of the essential ready knowledge. Other aspects include only common side effects, basic mechanism of action, and standard adult dosage. Little knowledge about interactions was identified as being essential. Junior doctors seem to have inadequate ready knowledge essential to good prescribing. Ready knowledge about mechanism of action and the major categories of drugs and method of administration is lacking most. This might be an indication to improve pharmacotherapeutical education on these aspects.

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PP048—A SYSTEMATIC REVIEW ON LEARNING IN A STUDENT RUN CLINIC
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Introduction: Medical students should be better prepared for their future role as therapeutic prescribers, to reduce medical errors and health costs. Context-based learning is widely known for its positive effects on learners; however, the extent to which context learning is applied in different pharmacotherapy-curricula varies. The optimal and most realistic form of context learning in pharmacotherapy education would be learning (to prescribe) in a learner-centered student run clinic (LC-SRC). In contrast to regular student-run clinics (SRCs), which are clinics organized and run by student-teams who mainly care for the underserved and homeless populations in the United States, LC-SRCs do not exist. In advance of our plans to start a LC-SRC, we aim to analyze student outcomes of (regular) SRCs on skills, knowledge, and attitudes.

Patients (or Materials) and Methods: A systematic literature review according to the PRISMA guidelines in the PubMed and ERIC databases was performed. Additionally, we used the SNOWBALL method, checking all references in included articles.

Results: Pubmed and ERIC database search yielded 205 unique hits; upon further analysis, 59 articles were on SRCs and 24 (41%) of this articles reported outcomes on students’ skills, knowledge, or attitudes. Only 5 articles (21%) had a (quasi-)experimental design, 1 “non-experimental” article was a literature review. Overall strength of findings was rated mean 2.56 on a 5-point scale. Snowball search of 865 references yielded 52 new hits, de-doubled 27 unique new articles on SRCs. The effect of participation of medical students’ skills, knowledge, and attitudes in SRCs is uncertain, mainly based on expert opinions and student surveys. Students report improved skills (ie, in history taking and physical examination), indicated they obtained knowledge they were unlikely to get elsewhere and valued the SRC as educationally relevant.

Conclusion: Quality of research on student participation outcomes is poor, research design is often inferior (observational not (quasi-) experimental), methods are poorly described, follow-up time if done is short, and conclusions could often not be based on results. Considering the theoretical benefits and the lack of evidence of student outcomes on participation in SRCs, further research should be performed. The best location for such research would be at a LC-SRC. The goal should be to gather conclusive evidence on learner outcomes. This highly promising concept could contribute to optimal context-based learning, improving pharmacotherapy education. Our results of the first evaluation of our pilot LC-SRC from March 2013 - June 2013 will be presented at the EACPT congress.

Disclosure of Interest: None declared.

PP050—SALIVA-BASED CYP1A2 PHENOTYPING USING CAFFEINE FROM BEVERAGES: A PRACTICAL COURSE FOR STUDENTS
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Introduction: Teaching in clinical pharmacology for students in medicine and biomedical disciplines is often focused on theory, while practical courses, which can introduce methods of research and clinical application to students, are underrepresented.

Patients (or Materials) and Methods: We adapted a saliva-based, noninvasive CYP1A2 phenotyping protocol to the needs of an afternoon practical course for third-year biomedical sciences students. Those students who freely decided to quantify their own CYP1A2 activity had to abstain from caffeine sources starting from the evening before the course day. The morning, students collected a saliva sample at home into a tube, which was handed out together with the course documentation some days before the course. Thereafter, they drank a cup of strong coffee, black tea, or caffeinated energy drinks and abstained from caffeine until the collection of the second saliva sample at the course site in the early afternoon, 5 to 6 hours after caffeine intake. The students then prepared their own saliva samples for the quantification of caffeine and paraxanthine using a published HPLC-UV method. The run-time per sample was 18 minutes, so that in the end of the afternoon, the evaluation of a limited calibration curve and the caffeine-to-paraxanthine clearances of 2 participants was possible. Clearance values were estimated using a published formula that translates the paraxanthine and caffeine concentrations to clearance values.

Results: Between 11 and 20 students participated per year in groups of 3 to 5 students. As expected, metabolic caffeine clearance was accelerated in smokers (2.18 mL/min/kg body weight; coefficient of variation, 61%) compared with nonsmokers (1.37 mL/min/kg body weight; coefficient of variation, 83%). Students’ satisfaction with the practical course was good.

Conclusion: The students got an estimate of their own phenotypic CYP1A2 activity and an impression of the interindividual variability in xenobiotic metabolism, in particular of the influence of smoking on CYP1A2 activity. As an advantage, no drug was used for this test. Additionally, students acquired knowledge of drug analysis and methods applied in clinical pharmacology.

Disclosure of Interest: None declared.

PP053—CHALLENGES IN UNDERGRADUATE PHARMACOTHERAPY EDUCATION: THE GHENT UNIVERSITY EXPERIENCE
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Introduction: Undergraduate pharmacotherapy teaching has to deal with the following facts. [1] Every practicing physician should be able to use medicines properly, taking into account important non-pharmacologic aspects like drug adherence and treatment cost. [2] Knowledge taught to students is often already outdated at the time they graduate. [3] Often not 1 therapy is correct but >1 therapeutic option is defendable. [4] Guidelines show first-choice treatments,
suitable for the majority of patients but not per se for the individual consulting patient.

**Patients (or Materials) and Methods:** Based on these challenges, emphasis of the course is put on attitude training. The good management of a specific disease/condition comes in second line and is primarily a way for attitude training. The main attitudes to learn are: [1] how to choose the most suitable drug for a target condition and [2] how to accommodate this choice to the individual patient? Students are trained in choosing drugs according to the “WHO guide to good prescribing” and in doing a consultation in a systematic way (the 6-step approach). Key steps are the therapeutic goals and to check whether the first-choice treatment in the formulation/guideline would be suitable for the individual patient. The course consists of plenary lectures and tutorials prepared by homework. The expert clinician is asked to provide the knowledge of the diseases and therapeutic management during the plenary lectures. Tutorials are organized by the pharmacotherapy task force (PTF) in small groups (of ~15 students) with the aim to analyze and process the patient cases using the 6-step approach. Pharmacotherapeutic competence is tested in a separate examination.

**Results:** Threats and opportunities for implementation: [1] Not all pharmacotherapy taught by expert clinicians was evidence based. This led to discussions with clinicians to implement evidence-based pharmacotherapy. When evidence for a treatment is poor or even absent, different schools may teach their own “expert opinion.” This is also explained to students and examples are given. [2] Not all teachers were convinced of the utility of competence teaching and refused to participate or even disturbed the implementation. Therefore, a group of interested tutors has been trained in competence teaching, the PTF. [3] Students’ workload increased by the homework. Some students scored the pharmacotherapy tutorials very low, hoping to get rid of this extra homework. These complaints largely disappeared in the last year or during internships, when trained competences could be used in practice.

**Conclusion:** Students regularly get positive feedback from their trainers during internships and Erasmus exchanges about their acquired competence in pharmacotherapy.

**Disclosure of Interest:** None declared.

**PP054—PRESCRIBING COMPETENCE IN RELATION TO CONCEPTUAL AND CONTEXTUAL TEACHING AND LEARNING**

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**Introduction:** There is global concern about the quality of prescribing training in medical schools and the rational prescribing skills of junior doctors. In the Faculty of Health Sciences, University of the Witwatersrand, curricular change sought to reduce the factual burden of learning and enhance evaluative capacities through the introduction of an integrated syllabus delivered via problem-based learning.

**Patients (or Materials) and Methods:** Members of the graduating class of 2008 in the Faculty of Health Sciences, University of the Witwatersrand, were invited to participate in a directly administered cross-sectional survey using an Internet-administered questionnaire (assuring anonymous responses) through the Centre for Health Science Education (CHSE) electronic class noticeboard. In addition, their exit-level examination results were made available to calculate a “prescribing competence” mark.

**Results:** Despite the new curriculum, graduating students reported a lack of confidence to prescribe. To explore this finding, this paper analyzes prescribing competence in relation to Bernstein’s theoretical framework of the structure of knowledge. Prescribing is described as a regionalized skill in relation to several singular disciplines. For successful students, the disciplinary knowledge base necessary for rational prescribing decisions is a Bernsteinian vertical discourse with conceptual coherence. Other students, however, cannot distinguish beyond the context of each clinical problem presented, and their resultant learning is segmented and not transferrable. In addition, this contextual learning leads to a subjective increase in volume, since disciplinary knowledge is not incorporated into inclusive principles.

**Conclusion:** Thus, curricular components including problem-based learning and horizontal integration constrain epistemic access to the structure of rational prescribing knowledge for some students.

**Disclosure of Interest:** None declared.

**PP055—PERSISTENT FEVER IN A WOMAN FOLLOWING RIGHT KNEE HEMIARTHROPLASTY**

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**Introduction:** Drug fever is a disorder characterized by a febrile response coinciding temporally with the administration of drug in the absence of any other conditions that may cause the fever. It is important for clinicians to suspect drugs as a cause of fevers of unknown origin because failure of prompt diagnosis can lead to prolonged hospital stay. Here we illustrate a case of drug-induced fever.

**Patients (or Materials) and Methods:** A 45-year-old woman had intermittent fever after an elective revision of her right knee hemiarthroplasty. The initial suspicion was a partially treated septic arthritis, and she was treated with a prolonged course of intravenous teicoplanin and oral rifampicin. Her fever persisted despite antibiotics, prompting referral to our department.

Physical examination revealed a disproportionately well woman who was febrile (38.5). All her investigations showed no evidence of infection. After 5 days of antibiotic treatment, she remained febrile with a high C-reactive protein levels. The possibility of drug fever due to teicoplanin and/or rifampicin was discussed, and both drugs were discontinued. Upon discontinuation, her fever returned to normal and C-reactive protein levels normalized.

**Results:** Drug fever may have any pattern. The fever typically resolves within 48 to 72 hours, depending on the agent, its elimination rate, and the patient’s comorbidities. The single consistent characteristic of drug fever is the resolution of the fever when the responsible agent is stopped. In our case, the possibility of drug fever was considered because the patient appeared disproportionately well and was not mounting a tachycardic response to an infective process. Septic arthritis was excluded with a negative synovial fluid aspirate. Endocarditis was excluded with a negative trans-thoracic echocardiogram. Blood culture and urine culture did not grow anything. Persistence of drug fever by teicoplanin has been described in various case reports. The fever occurred at doses of 0.12 mg/d and is prolonged with the long half-life of teicoplanin. Rifampicin is less likely to cause fever.

**Conclusion:** Drug fever is a common but often overlooked condition. Prompt diagnosis is important as it can obviate expensive diagnostic workup and inappropriate use of antimicrobial agents. It should be considered in cases when the patient is disproportionately well with no clear source of infection.

**Disclosure of Interest:** None declared.

**PP057—THE OPERATIONALIZATION OF ELECTRONIC INN PRESCRIBING**

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