



ESCP International Workshop
10–11 June 2016, Basel Switzerland



Medication adherence
from theory to daily patient care

Programme and Abstract Book

The aim of the European Society of Clinical Pharmacy is to develop and promote the rational and appropriate use of medicines by the individual and by society. For further information about the Society or its products portfolio, visit the website: www.escpweb.org or contact the ESCP International Office.

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Upcoming ESCP events:

45th ESCP International Symposium on Clinical Pharmacy, "Clinical pharmacy tackling inequalities and access to health care", Oslo, Norway, 5-7 October 2016

Masterclass of Excellence in Qualitative Research, "Getting started with qualitative research: from research questions to dissemination", Oslo, Norway, 4 October 2016

ESCP International Workshop 2017 by the ESCP Research Committee, June 2017, Leiden, Netherlands

46th ESCP International Symposium on Clinical Pharmacy, Heidelberg, Germany, 9-11 October 2017

Welcome to the ESCP International Workshop Basel !

Grüezi mitenand – dear colleagues,

On behalf of the European Society of Clinical Pharmacy, we proudly welcome you to the ESCP International Workshop in Basel, Switzerland, 10-11 June, 2016.

The theme of the conference **Medication adherence: from theory to daily patient care** is currently in vogue: this topic has been an area of high interest since the 1980s when the US Surgeon General C. Everett Koop famously stated “Drugs don’t work in patients who don’t take them”. Over the past decades, a shift occurred from a relatively passive patient role with professional supervision to complete autonomy and self-care, and the behavioural components of medication use have almost no secrets. Nevertheless every year, a plethora of papers demonstrate the extent of poor medication adherence and the negative consequences to patients and the healthcare system. Non-adherence remains the rate limiting step between effective treatment and optimum health outcomes, and burdens society and the health care system.

Thus, many ideas have been launched to increase medication adherence, such as cost reduction, more rationale and effective use of medicines, collaborative and managed care, educational and behavioural support, to name a few.

Pharmacists have started developing new concepts to address non-adherence, like structured informative sessions for patients at hospital discharge, or synchronizing a patient’s refills of chronic medicine on the same day every month in the community pharmacy.

Pharmacists have the relevant knowledge relating to medicines and health to provide the patients with information they need to improve health outcomes.. They can coach and motivate patients to increase health literacy, use medications correctly, and adhere to treatment regimens. Thus, they represent the transitional zone between theory and patient care.

In this Spring conference, our wish and vision is to promote methods of improving adherence to healthcare professionals, such as, but not limited to, pharmacists, physicians, nurses, dentists, psychologists, who think “A bird in the hand is worth two birds in a bush”.

Basel is a small but very cosmopolitan city in the heart of Europe, at the border of three countries. It has an international flair, a spectacular old town with its red sandstone cathedral (1019) and many museums along the river Rhine, not to mention Switzerland’s oldest University (1460), where the lectures and workshops will take place. If you stay for some more days, famous spots such as the Black Forest in Germany, the Vosges in France and of course the Swiss lakes and mountains are nearby and easily accessible.

This conference will provide the opportunity to create and maintain multidisciplinary networks between individuals, institutions and countries. Be part of the adherence forces! We look forward to welcoming you to Basel in June 2016.

Isabelle Arnet
Workshop President

Markus Lampert
ESCP President

Friday 10 June, 2016

Times	Session	room	Speaker
08:00 - 09:00	Registration Welcome coffee and tea	Kollegienhaus, Foyer level 1	
09:00 - 09:15	Welcome and Introduction President & Chair of the workshop	Kollegienhaus, Hörsaal 102	Markus Lampert, University of Basel <i>ESCP President</i> Isabelle Arnet, University of Basel <i>Workshop President</i>
09:15 - 09:30	Welcome by workshop-moderator: A patient-representative	Kollegienhaus, Hörsaal 102	Pam Richards (UK)
09:30 - 10:15	Plenary lecture 1: Medication adherence (multi-level) Interventions	Kollegienhaus, Hörsaal 102	Sabina de Geest <i>Institute of Nursing Science, University of Basel (CH) and KU Leuven (BE)</i>
10:15 - 10:45	Coffee-break – poster viewing – exhibition	Hall level 1	
10:45-12:00	Parallel sessions: workshops part 1	Seminarraum 103, 104, 105, 106, 107	
12:00-13:30	Lunch – poster viewing – exhibition	Garden, Hall	
13:30-15:00	Parallel sessions: workshops part 2	Seminarraum, 103, 104, 105, 106, 107	
15:00-15:30	Coffee-break – poster viewing – exhibition	Hall level 1	
15:30-16:15	Oral communications: abstract presentations	Kollegienhaus, Hörsaal 102	
16:15-17:15	Plenary lecture 2: Medication adherence: an important but not an ultimate goal	Kollegienhaus, Hörsaal 102	Liset van Dijk <i>Netherlands Institute for Health Service Research, Utrecht (NL)</i>
17:30-19:30	Welcome reception with Dr. Christoph Eymann, <i>Member of the Governing Council of the County of Basel, of the Swiss Parliament, and of the Board of the University of Basel</i>	Theater Fauteuil, Spalenberg 12, Kaisersaal	

Saturday 11 June, 2016

Times	Session	room	Speaker
08:30 - 08:45	Summary of the first day	Kollegienhaus, Hörsaal 102	Bart van den Bemt <i>Chair Scientific Committee Maartenskliniek/Radboud University Medical Centre, Nijmegen (NL)</i>
08:45 - 09:30	Plenary lecture 3: Shared decision making	Kollegienhaus, Hörsaal 102	Wendy Clyne <i>Centre for Technology Enabled health Research, Coventry (UK)</i>
09:30 - 10:00	Coffee-break – poster viewing – exhibition	Hall level 1	
10:00-10:45	Plenary lecture 4: E-health and adherence improvement	Kollegienhaus, Hörsaal 102	Helianthe Kort <i>Utrecht University/Eindhoven University (NL)</i>
10:45-12:15	Parallel sessions: workshops part 1	Seminarraum, 103, 104, 105, 106, 208	
12:15-13:45	Lunch – poster viewing – exhibition	Garden, Hall	
12:15-12:35	Parallel lecture European strategies of polypharmacy and adherence management in elderly: findings of the SIMPATHY Project	Kollegienhaus, Hörsaal 102	Przemyslaw Kardas, for the SIMPATHY Project. <i>Medical University of Lodz (PL)</i>
13:45-15:15	Parallel sessions: workshops part 2	Seminarraum, 103, 104, 105, 106, 208	
15:15-15:45	Coffee-break – poster viewing – exhibition	Hall level 1	
15:45-16:30	Oral communications: abstract presentations	Kollegienhaus, Hörsaal 102	
16:30:17:00	Wrap up and conclusions President & chair of the WS	Kollegienhaus, Hörsaal 102	Markus Lampert <i>ESCP President</i> Isabelle Arnet <i>Workshop President</i>
17:00-18:00	Farewell drink	Kollegienhaus, Foyer level 1	

WORKSHOPS

(1) Measuring adherence/detecting non-adherent patients

(moderated by Rob Heerdink, NL)

This workshop introduces the different methods of measuring medication adherence and illustrates the pros and cons of the different methods.

(2) Communication techniques for improving medication adherence

(moderated by Ulla Hedegaard, Lene Juel Kjeldsen, DK)

This workshop teaches participants skills/instruments to improve their communication skills with respect to conversations about medication adherence. Specific attention will be paid on motivational interviewing and the DRAW tool. The DRAW tool is an interview guide developed to help pharmacists assess and address multiple reasons for non-adherence. The tool includes a guide with suggested actions to address each reason identified during the interview. After the workshop participants will achieve knowledge of MI and be introduced to practical use of simple techniques of MI and the DRAW-tool.

(3) A digital revolution? The opportunities of eHealth for the pharmacy

(moderated by Helga Gardarsdottir/Annemieke Linn, NL)

In this workshop, you will learn how simple it is to apply eHealth in usual care and that you do not need to be tech-savvy to use it. Because of the continuous developments in this area the latest insights into these developments will be discussed. Practical examples of feasible eHealth applications will be provided and discussed with the participants. We will also discuss motives, barriers, expectations of eHealth applications and the value of eHealth as an add-on to usual consultations within the pharmacy setting.

(4) Implementation of interventions

(moderated by Liset van Dijk, NL/Melanie Lelubre, BE)

In this workshop participants will learn how they can implement adherence interventions in daily practice. All the aspects from intervention development to implementation and sustainability will be addressed.

(5) Sharing adherence care with patients and health care professionals across settings

(moderated by Wendy Clyne, UK/Kurt Hersberger, CH)

This workshop will consider how medication adherence care can be shared, multidisciplinary, and organized with the patient in the centre. Taking the ABC project taxonomy of medication adherence as a starting point, medication adherence shared care will be considered at each stage in the process: initiation of medication, implementation of the prescribed dosing regimen and discontinuation of therapy. Following a number of case studies we will explore how medication adherence care can be shared over time, with patients, between healthcare professionals, and across healthcare settings. We will consider the tools, resources and skills that pharmacists can use to contribute optimally to shared adherence care.

Participants will have the opportunity to discuss experiences of sharing adherence care in different health settings in different countries and consider the role that pharmacists can play. By the end of the workshop you will have considered your own role in sharing medication care to help patients achieve the outcomes that are important to them.

(6) Impact of health care professional's behaviour on patient adherence

(moderated by Marian Salek, UK/Bart van der Bemt, NL)

Healthcare-provider interaction strongly influences patient's (adherence) behaviour. In this workshop both different patient and health care provider types will be identified as well as barriers in the communication. Participants will be more aware on their impact on patient's adherence and learn methods to improve their interaction with the patient.

ABSTRACTS

ORAL COMMUNICATIONS I, Friday, 15:30-16:15

OR01.1

Patients' adherence to chronic treatment in lung diseases: Preliminary data from a randomized controlled trial

Claudia Gregoriano^{*1,2}, Simona Henny-Reinalter¹, Sabrina Maier¹, Anna-Lisa Flamm¹, Thomas Dieterle^{1,3}, Isabelle Arnet², Kurt E. Hersberger², Jörg D. Leuppi^{1,3}

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Background and Objective: Poor adherence to long-term therapies may result in poor health outcomes and increased health care costs. The objective of this study is to investigate the effects of an acoustic reminder on medication adherence in lung patients.

Setting and Method: In this on-going prospective single-blind randomized controlled trial, in- and outpatients from several hospitals around Basel diagnosed with asthma or COPD and with prescribed inhalative medication were recruited. They must have experienced at least one exacerbation in the previous 12 months. The intervention group is provided with an acoustic reminder for inhalation and receives support calls when the medication is not taken as prescribed. Objective adherence was measured in both groups with the electronic devices "Smartinhalers" for puff inhalators and punch cards mounted with a "Polymedication Electronic Monitoring System" for powder capsules, which record date and time of each actuation. We present preliminary data on adherence patterns of the first 54 patients (154 patients are planned to enroll) recruited since January 2014 and who completed the study.

Main outcome measures: Adherence defined as percentage of days with correct dosing (correct number of prescribed inhalations).

Results: Of the 54 (76% male, 67.9±9.1 yrs) patients, 42 (78%) had COPD, 8 (15%) asthma and 4 (7%) asthma-COPD overlap syndrome. Adherence to puff inhalers was higher in the intervention compared to control group (80±19% vs. 51±21%; p<0.001). No difference was found for powder capsules between intervention and control group (92±9% vs. 88±14%; p=0.239). More days with correct dosing were observed for powder capsules compared to puff inhalers (88±12% vs. 66±27%; p<0.001) and for therapy plans with once-daily dosage compared to plans with multiple doses per day (89±13% vs. 66±27%; p<0.001).

Conclusion: These preliminary results suggest a beneficial effect of regular reminder on the adherence of lung patients. Moreover, adherence with once-daily dosage regimens and with devices allowing the administration of predefined doses appears to be higher compared to treatment plans with multiple doses per day and devices that have to be loaded by the patient. The higher adherence rate obtained with electronic punch cards containing powder capsules might be due to their function as visual reminder.

OR01.2

ANTI-HIV THERAPIES: COMPARISON OF THE ADHERENCE IN DIFFERENT THERAPEUTIC REGIMENS

Giulia Burroni^{*1}, Stefano Bianchi¹, Maria Capaldo¹, Chiara Pettinelli¹, Carlo Pieretti²

¹pharmacy, ²infectious diseases, Hospital Marche Nord, Pesaro, Italy

Background and Objective: A high therapeutic adherence is a necessary point to ensure the effectiveness of anti-HIV therapies. As a matter of fact, a suboptimal adherence can make the use of antiretroviral drugs completely useless.

The causes that most frequently interfere with a proper intake of a drug are the presence of a depressive syndrome, the side effects caused by the therapy itself, the prescribed therapeutic regimen and others.

Currently there is a debate on the importance of simplifying as much as possible antiretroviral therapies to once-daily dosing regimens.

This work intends to compare therapeutic adherence between two groups of patients, the first one in once-daily dosing regimen and the second one in multiple-daily dosing regimen.

Setting and Method: Data were collected from the Pharmacy of Marche Nord Hospital Pesaro Italy, between August 2015 and February 2016.

The study involved 507 patients, selected according to the therapy administration regimen and divided into two groups: 159 patients in once-daily dosing and 348 patients in multiple-daily dosing regimen.

In order to assess their adherence and persistence, the relationship between subsequent monthly dispensations of the packages of drugs (according to the number of tablets in each pack) and the prescribed doses was measured.

Main outcome measures: adherence in hiv patients.

Results: Over the six-month period of the study, the following results were observed:

- regarding the once-daily dosing group of patients, 4 (2.6%) discontinued the therapy after the first dispensation; 10 (6.2%) showed a less than 80% adherence, and 145 (91.2%) showed a adherence greater than 80%;

- regarding the multiple-daily dosing patients, 7 (2.0%) discontinued the therapy after the first dispensation, 39 (11.2%) showed a adherence less than 80%, and 302 (86.8%) showed a adherence greater than 80 %.

The applied statistical test (k square) found no significant difference.

Conclusion: The therapeutic adherence comparison between two groups of patients, the first one in once-daily dosing and the second one in multiple-daily dosing regimens, shows that the highest compliance is to be found in the once-daily dosing regimen group of patients.

OR01.3

Green light for compliance in patients treated for hepatitis C and addiction

Hélène Charlot^{*1}, Jean Baptiste Trabut², Camille Barrault³, Willy Kini-Matondo⁴, Richard Causse⁵, Murielle François⁶, Damien Carmona⁷, Marie Christine Sagnier¹, Christophe Hezode⁶, Brunie Vanida^{1,8}

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care EPICE, Creteil, ⁸Clinical Pharmacy, Faculty of Pharmacy Paris XI, Chatenay-Malabry, France

Background and Objective: In the addictology service, the prevalence of hepatitis C virus (HCV) infection is high. The current paradigm is to treat addiction before HCV infection. As direct-acting antiviral drugs (DAA) are well tolerated and effective, we decided to treat both addiction and HCV infection at the same time. Nevertheless, in these precarious patients, the treatment's cost constitutes a brake. Records of patients are thus examined by a multidisciplinary team. The aim of this study is to evaluate patient's compliance by checking supplying regularity.

Setting and Method: A retrospective multicentre case-control study was performed over 18 months, involving 2 hospitals, their pharmacies and 3 low threshold day-care structures delivering methadone. Inclusion criteria were advanced hepatic fibrosis, stable housing, clinical and biological check-up willingly completed by the patient. Every patient was matched with 2 controls. Supplying was considered as not regular if the patient had more than a day gap when renewing his prescription at the hospital pharmacy.

Main outcome measures: Supply regularity (odd-ratio). Factors associated with supply regularity (bilateral KHI2; $\alpha=5\%$).

Results: Thirty three patients were included and associated to 66 control patients. The two populations did not differ according to sex ($p=0.8$), age ($p=0.6$) and therapeutic strategy ($p=0.4$). The regularity rate in the addictology group was 73% versus 82% in the control group (odd-ratio=1.7 [0.62-4.5]). In the addictology group, 1 patient stopped his treatment after 3 days because of unexpected loss of his housing. In the control group, 2 patients stopped their treatment. Supplying regularity was not associated with social problem (KHI2=1.5; $p=0.22$), ongoing alcohol consumption (KHI2=0.55; $p=0.46$) or mental disorder (KHI2=3.0; $p=0.08$).

Conclusion: Despite its limits regarding estimation of compliance, the supply regularity is an interesting tool for patients' follow-up. Selected patients did not differ significantly from the control group. It seems possible to use AAD

in patient with ongoing alcohol consumptions, social problems and psychological disorder. In order to secure supplying, AAD should be managed as often as possible by low threshold day-care structures. The impact of HCV-treatment on the addiction should be further studied.

ORAL COMMUNICATIONS II, Saturday, 15:45-16:30

OR02.1

The Impact of HIV Associated Disorders (HAND) on cART Adherence

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Background and Objective: HIV associated neurocognitive disorders (HAND) are defined according to their diagnostic degrees as: asymptomatic neurocognitive impairment (ANI), mild neurocognitive disorder (MND) and HIV-associated dementia (HAD). As a high adherence rate to cART is required to maintain viral suppression among HIV positive patients, it is important to investigate the impact of HAND on medication adherence. Our study hypothesis is that HIV+ patients with HAND have a lower medication adherence than those that are without a deficit.

Setting and Method: This was an observational, exploratory, retrospective one centre study of 43 patients with adherence collected routinely in care over a long period of time. Patients' socio-demographic characteristics and clinical data were collected by reviewing the Swiss HIV Cohort Study (SHCS) database. Adherence was measured with electronic monitors (EMs). Repeated adherence measures were available through EMs stating whether or not a patient was taking the medication as prescribed at any time *t*.

Main outcome measures: Implementation was computed as the proportion of patients taking medication as prescribed across time. A Generalized Estimating Equation (GEE) model adjusted for neurocognitive diagnosis was used to estimate implementation patterns across time.

Results: 43 HIV positive patients, with age 50 (29–80) years median (IQR), 25(58%) male and median (IQR) CD4 count 646 (309–1328) cells/ μ l were studied. Out of 43 patients, 11 patients (25%) were normal, 7(16%) had ANI, 4 (9%) had MND, 3 (7%) had HAD and 18 (42%) had non HIV related neurocognitive disorders (e.g. depression).

Implementation over 3.5 years showed a significant decline in medication adherence among patients diagnosed with ANI, MND, HAD (implementation dropped to 50% after around 3 years of follow-up) in comparison with patients who had a normal diagnosis or a non HIV related cognitive deficit (implementation stayed approximately stable around 90% during follow-up).

Conclusion: Our findings support the hypothesis that HAND decreases cART adherence.

OR02.2

Tailored patient Education on correct drug Administration in Community Pharmacies (TEACH study): study protocol for a multi-centre, parallel-group, cluster-randomized controlled trial

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Background and Objective: Transferring pharmaceutical interventions from the study setting into routine care is often challenging with regard to practicability. Many studies do not determine the net resources needed for the intervention which would be a prerequisite to estimate suitability for daily use. Therefore, we suggest a study design that enables

determination of the net duration of the intervention facilitating a more realistic estimation of the practicability of the studied intervention.

Programme description: We describe a multicentre parallel-group single-blind cluster-randomized controlled trial in German community pharmacies to compare tailored with routine pharmaceutical consultation on correct drug administration in patients and family caregivers. Customers older than 18 years, who use eye drops, oral liquids, oral solutions in a dropper bottle, or transdermal patches, receive pharmaceutical consultation on correct drug administration. The primary outcome measure is the number of incorrectly performed drug administrations in the intervention group compared to the control group prior to counselling at the follow-up visit after six months. The pharmaceutical consultation comprises in both groups a baseline assessment of administration skills with an appropriate placebo, advices on correct drug administration, and evaluation of teaching success determined again by demonstration of drug administration with an appropriate placebo. In the intervention group pharmacists apply communication techniques from motivational interviewing to increase medicine users' awareness for taking a more active role in the administration process, whereas the control group provides routine care. Patients are invited for follow-up visits after one month, six and twelve months. Only after completion of the first pharmaceutical consultation, information on the study is provided and written informed consent is sought for the follow-up visits and for pseudonymous analysis of the pharmaceutical consultation at the first encounter.

Conclusion: The study sequence of first providing the pharmaceutical consultation for correct drug administration followed by often time-consuming study-specific information, allows a more realistic estimation of the net duration of a pharmaceutical intervention. The first pharmaceutical consultation reflects a standard counseling situation not requiring informed consent as such. However, to collect the data, match it with demographic data, follow-up over time and include it into a scientific evaluation, written informed consent is sought.

OR03.3

Pharmacist counselling for outpatient treated by oral chemotherapy

Elise Degui^{*1}, Camille Vinson¹, Veronique C. Pelagatti¹, Jean-Marie Canonge¹, Florent Puisset¹
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Background and Objective: With the increasing availability of new oral anticancer agents, medication adherence is one of the priorities in the treatment of cancer. As treatment's efficacy is conditioned by drug's exposition, optimal compliance is the key factor of therapy's success. Adherence may be enhanced by the part played by clinical pharmacist, through patient education and communication with patient's health providers. Our objective is to present a pharmacy-managed program to support outpatients and their community health services before starting an oral chemotherapy.

Programme description: This pharmacist-managed program involved two steps, for three drugs selected: ibrutinib, idelalisib and cobimetinib (dispensed in hospital pharmacy and may be victim or cause of drug interaction). First, a patient counselling enables the pharmacist to expose drugs' mechanism, to explain modalities of taking medication, dealing with omitting doses, risk of drug-drug, aliment-drug and herb-drug interaction. A medication plan is worked out with patient including chemotherapy and treatment of co-morbidities. Secondly, hospital pharmacist phones community health workforces(pharmacist, primary care physician, nurse, specialist) to explain modality of treatment, risk of interactions and sides effects. Patient counselling and phone calls to health workers enable medication reconciliation as well as an analyse of drug interaction risks. A report is added to the discharge letter and integrated to electronic healthcare record.

Eight month after the program began, 48 patients benefited from the pharmacist's intervention. Sex ratio and median age are respectively 1.5 and 71,5 years [39.0; 92.0]. Of patients, 25 were using ibrutinib, 13 idelalisib, and 10 cobimetinib. 39 medication plans were set up with patients. 97 healthcare professionals were contacted (mean 2 prof. /patient). None of them knew the drug prescribed to their patient. A median of 4 co-medication per patient was identified [0; 12]. A risk of interaction was detected in 68.8% of cases. For 6.1 % of these patients, a change of prescription was necessary, and for 97.0 % a clinical or biological monitoring was advised.

Conclusion: With the rapid development of oral cancer chemotherapy, the role of hospital pharmacists has changed. Counselling is essential to provide their expertise of drugs and of their side-effects and possible drug interaction to patients and to healthcare professionals. Communication is also an essential part of medical care for cancer patients, because of a lack of knowledge about those drugs, and because a monitoring shared between hospital and community

health providers is necessary to improve both aspect of medication compliance: adherence and persistence. Evaluation of patients and healthcare professionals' satisfaction as well adherence to treatment is required to measure the influence of improved care implementation. In our centre, the aim is to extend patients' recruitment so as to monitor all oral chemotherapy treatment initiation.

POSTERS

PP01

The Failure to Adjust for Renal Failure

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¹Pharmacy, Hillel-Yaffe MC, Hadera, Israel

Background and Objective: Chronic kidney disease (CKD) represents worldwide health problems, which require early detection, intervention, and treatment, which may delay disease progression. Patients with CDK require appropriate medication dosing for disease severity and level of renal function for avoiding adverse drug events, preventing additional renal injury and optimizing patient outcomes.

Studies conducted in hospitals found renal dosing guidelines non-compliance ranging from 19% to 67%. The aim of this study was to assess the level of reported non-compliance with renal dosing guidelines in hospitalized patients.

Setting and Method: Retrospective and observational study. Medical files of internal medicine patients in Hillel-Yaffe MC during the period 01/08/2014 – 30/09/2014 screened. Inclusion criteria: patients with at least two serum creatinine results and an estimated Glomerular Filtration Rate of less than or equal to 50ml/min/1.73m². Patients with acute renal failure which was defined as a difference of more than 0.2mg/dl between two serum creatinine results were excluded. Demographic data, medication used, and doses have been reviewed and compared to renal dosing guidelines as in the physician leaflet.

Main outcome measures: percentage of non-compliance with renal dosing guidelines of medications in internal hospitalized patients.

Results: There were 252 of 1145 (22%) internal medicine patients that met our inclusion criteria.

1373 medication orders were written for our study group (252), 5.4 medications on average per patient. 288 of 1373 (20.9%) medication orders required renal dosage adjustment. Non-compliance with renal dosing guidelines was found in 170 (59%) medication orders. The most frequently prescribed medications with non-compliance with renal dosing guidelines were: Metformin, Cefuroxim sodium, Ranitidin, Ciprofloxacin, Piperacillin+Tazobactam, and Allopurinol (75%, 69%, 61%, 61%, 50%, 19%, respectively).

We also identified medications as complete non-compliance with renal dosing guidelines, such as Bezafibrate SR, Amoxicillin+Clavulanic acid, and Levofloxacin (100%).

Conclusion: The results of this study show high percentage of non-compliance to renal dosing guidelines (59%). Identifying list of medications with a high percentage of non-compliance to renal dosing guidelines can help the clinical pharmacists and physicians focus their efforts in a cost-effective issue. Clinical pharmacists interventions and medical staff education will ensure safe, effective medications prescribing, minimizing further kidney damage and disease progression.

PP02

Chronic dialysis, medication adherence and beliefs about medicines: a comparison between patients born in Switzerland and migrant patients (diana study)

Jennifer Celio^{*1,2}, Sabrina Maeder¹, Georges Halabi³, Pierluigi Ballabeni⁴, Olivier Bugnon^{1,2}, Menno Pruijm³, Marie-Paule Schneider^{1,2}

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Background and Objective: In the chronic dialysis unit of the Lausanne University Hospital, a large proportion of patients are migrants. It is actually unknown whether native patients (born in Switzerland) and migrant patients (born abroad, UNESCO definition) differ according to medication adherence and beliefs.

The aim of this qualitative study was to: (1) explore in-depth patients' perceptions and knowledge about their treatment and (2) describe the influence of the migration background.

Setting and Method: The study was realized in the chronic dialysis unit of the Lausanne University Hospital (CHUV). The research was performed in two phases using mixed quantitative-qualitative methodology. For the qualitative part, *in-depth interviews* were realized. Interviews took place according to participant preferences in the place, day, and time scheduled by them (often during dialysis sessions). For patients who do not speak French, an interpreter was requested. Each interview was recorded in high quality resolution and subsequently transcribed manually *verbatim* in digital format. Finally, interviews were analysed according to the *Grounded Theory*.

Main outcome measures: Major themes regarding perceptions and knowledge about the treatment were identified. For the analysis, patients were categorized according to their migration status.

Results: Forty-five out of 76 eligible patients (59 %) accepted to participate in the quantitative-qualitative study. Of them, 33 accepted the qualitative part; finally 18 interviews were performed with 16 patients undergoing haemodialysis and 2 peritoneal dialysis; 12 were men and 6 were women. Nine patients were Swiss, 3 had residence or settlement permit (permit B or C), 6 were provisionally admitted foreigners or had permit for asylum seekers (permit F or N). Interviews were realized in French (n=12) or with an interpreter (n=6), lasting from 24 to 60 minutes.

Analysis is ongoing. So far, themes identified were (1) perceived treatment necessity; (a) the majority of patients were aware of the risks associated with failing medication intake; (b) maintain or improvement of health condition through treatment (especially migrant patients); (2) doubts about the medication long-term effects and polymedication (especially native patients); (3) trust in physicians.

Conclusion: Considering patients' migration background, recognizing individual vulnerabilities and providing tailored answers about medications could improve native and migrant patients' care and chronic treatment use.

PP03

Evaluation of adherence to therapy in patients with Hepatitis C virus infection.

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Background and Objective: Hepatitis C virus (HCV) infection represent a public health problem. It is one of the major causes of chronic liver diseases including complications such as cirrhosis and hepatocellular carcinoma. The treatment of HCV has undergone major changes with the development of the direct acting antiviral agents (DAAS).

Setting and Method: This is a retrospective observational study of HCV patients treated with DAAS between 01/01/2015 and 31/08/2015. This study was conducted in Internal Medicine Clinics–Cardiovascular Geriatric Diseases Unit –“Mater Domini” University Hospital–Catanzaro (Italy).

The patients' data included demographic characteristics (age, sex), feature of HCV infection (genotype, subtype), clinical properties (treatment- experience/naïve), treatment dispensed, end of treatment response (EVR). 5 different drug regimens were used to treat HCV-patients: Scenario A - Sofosbuvir(SOF)+Ribavirin (RBV); Scenario B- Simeprevir+SOF±RBV; Scenario C- Ledipasvir+SOF±RBV; Scenario D- Daclatasvir+SOF±RBV; Scenario E- Paritaprevir, Ombitasvir and Ritonavir +RBV. In order to evaluate adherence to medical therapy, a Morisky-Green test was administered to each patients.

Main outcome measures: The patients' data included demographic-characteristics (age, gender), feature of HCV infection, clinical properties (treatment-experience or treatment-naïve), end of treatment response (EVR). 5 different drug regimens were used to treat HCV-patients: Scenario A - Sofosbuvir(SOF)+Ribavirin (RBV); Scenario B- Simeprevir+SOF±RBV; Scenario C- Ledipasvir+SOF±RBV; Scenario D- Daclatasvir+SOF±RBV; Scenario E-

Paritaprevir, Ombitasvir and Ritonavir+RBV. In order to evaluate adherence to the medical therapy to provide a clear overview of the respondents' degree of compliance with their medical therapy, a Morisky-Green test was administered to each patients.

Results: 79 patients were included (42F), mean age 64,32±9,93years. Regarding genotype, 69% had genotype 1 (5% subtype a; 58% subtype b), 19% genotype 2, 5% genotype 3, 6% genotype 4. Only 1% patients had simultaneously genotype 1b-4. The patients were 57% treatment-naïve and 43% treatment-experienced. Patients treated with Scenario B(58,2%); Scenario A (24,05%), or Scenario C (14%). The Scenario D and Scenario E were used in 6,3% and 1,3% patients, respectively. Mean adherence according to Morisky-Green test was 100% (95,24%>100,59%). During the treatment period, there was no patient non-responder. After finishing treatment, all patients had undetectable viral load(EVR=100%). Differences were not found between the different scenarios.

Conclusion: The optimal management requires interdisciplinary collaboration between different experts. The multidisciplinary team made it possible to overcome the problems, improve the compliance and to integrate theoretical information with the psychological aspects.

PP04

Governance and management of Hepatitis C treatment with Direct Antiviral Agents (DAAs) and AIFA Monitoring Register.

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Background and Objective: The new direct antiviral agents (DAAS) have radically changed the treatment of patients with hepatitis C virus (HCV). The Calabria Region has identified the patients eligible for treatment according to the AIFA (Agenzia Italiana del Farmaco) algorithm. Later it has identified and authorized some public health care Centre to prescribe and to monitor anti-HCV therapies. I DAAS are subjected to intensive monitoring by AIFA. They are included in special Registries Web-based, to promote the prescriptive appropriateness, collect post-marketing data and define the effectiveness in clinical practice of expensive innovative drugs.

Setting and Method: A retrospective observational study was done. The data collected from AIFA Monitoring Register were: prescriber center (hospital or territorial), AIFA eligibility criterion, therapeutic regimen (Daklinza+Sovaldi ± Ribavirina (RBV); Harvoni±RBV; Olysio±Sovaldi±RBV; Sovaldi±RBV; Viekirax±Exviera±RBV) frequency and quantities dispensed.

Main outcome measures: To evaluate use, safety and appropriateness of DAAS treatment were extracted and revised treatments initiated by different prescribers centers between March 2015 and March 2016.

Results: Analysed data shows that 1246 treatments were started. Patients were treated according to all the criteria identified by AIFA. The prescription of DAAS was carried out mainly by the Hospitals (79%) rather than by the Territorial (21%) Structures. Among the 11 Centre authorized, the “Mater Domini” University Hospital has initiated the largest number of treatments (35.6%). Bianchi-Melacrino-Morelli Hospital, “Annunziata”-Hospital and “Pugliese-Ciaccio”-Hospital have started treatment at 19.1%, 16.4% and 7.2%, respectively. Regarding therapeutic regimen, Harvoni (Ledipasvir+Sofosbuvir)±RBV has been the most widely used (37%) and it administered to 8w (0.08%), 12w (15%), or 24w (22%) in accordance with algorithm of AIFA. Other therapeutic regimens were used in 27% (Olysio ± Sovaldi±RBV), 16% (Daklinza+Sovaldi±RBV), 15% (Sovaldi±RBV) and 5%(Viekirax ±Exviera±RBV). The analysis of the monthly prescriptive trend of different regimen revealed that, after an initial peak of treatments started with Olysio ± Sovaldi ±RBV(March-April 2015), clinical shift their prescriptions to Harvoni ±RBV (May 2015). This trend remains constant throughout the duration of the study. 40% of the treatment were completed, 36% in accordance with the regimen. Clinicians have decided to stop treatment in 4% cases (2 deaths in patients treated with Sovaldi +RBV(24w), 2 Adverse Drug Reactions in patients treated with Viekirax±Exviera+RBV(12w) and Daklinza+Sovaldi +RBV(24w), respectively.

Conclusion: The continuous monitoring of AIFA Register by multidisciplinary team allows you to highlight the appropriateness of prescriptions and dispensations as well as toxicity problems, that often were not detected during the pivotal clinical trials of drugs.

PP05

Evaluation and implementation of behavioural and educational tools that improves the patients' intentional and unintentional non-adherence to cardiovascular medications in family medicine clinics

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Background and Objective: There are limited studies in the UAE that describe reasons and interventions deployed to resolve non-adherence to cardiovascular medications, in addition to interventions to resolve them.

Aims and objective

We aim to implement and evaluate behavioural and educational tools that resolve the reasons for non-adherence, and improve patient's adherence to their medications.

Setting and Method: Methods

In this prospective, controlled, cohort (pre and post) interventional study, we examined educational and behavioural tools to improve adherence. We recruited patients with cardiovascular diseases (n= 300) from three family medicine clinics in Al Ain, UAE. We assessed patients' responses to a validated brief medication questionnaire (BMQ). Additionally, we measured glycosylated haemoglobin (HbA1c), low density lipoprotein -cholesterol (LDL-C) and blood pressure; before and after interventions.

Main outcome measures: The primary outcome was the improvement in responses to BMQ scores (at 3, 6, 9 and 12 months post the interventions). The secondary outcomes were disease-related as fasting blood glucose (FBG), postprandial blood glucose (PPBG), glyated haemoglobin (HbA1c), low density lipoprotein-cholesterol (LDL-C) and blood pressure (BP).

Results: We reported a significant improvement in adherence pre- and post-interventions according to BMQ scores. All 'indication scores' for non-adherence significantly improved. The mean +/- SD score was 4.1 ± 0.2 vs. 3.0 ± 0.3 ; $P = 0.034$ for non-adherence to current regimen; 1.8 ± 0.4 vs. 0.9 ± 0.1 ; $P = 0.027$ indication of negative beliefs or motivational barriers (efficacy, bothersome side effects, other concerns); 1.6 ± 0.1 vs. 0.8 ± 0.1 ; $P = 0.014$ for indication of recall barrier; and 1.6 ± 0.2 vs. 0.7 ± 0.2 ; $P = 0.019$ for indication of access barrier all of which improved significantly from baseline vs. 12 months post-interventions, respectively. Mean post prandial blood glucose, HbA1c, and LDL, SBP, and DBP significantly ($p < 0.01$) decreased post interventions.

Conclusion: We have improved management of cardiovascular conditions via improving the adherence to prescribed cardiovascular medications.

PP06

Adherence to medications among patients with hypertension at Northern Emirates in United Arab Emirates-UAE

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Background and Objective: This study have been conducted with the aim to assess the adherence level to treatment and associated factors influencing treatment non-adherence among hypertensive patients at multicentre setting covering governmental and private sectors, in UAE. We aimed to assess medications adherence and factors predicting non-adherence inpatients with hypertension.

Setting and Method: A cross sectional multicentre study was conducted in northern Emirates of UAE. Study sites were 5 outpatient hypertension clinics in 2 hospitals (government and private) and 3 private clinics. 250 patients with hypertension were randomly selected from outpatient clinics. Participants were interviewed using a self-administered questionnaire. The level of adherence was assessed using Morisky's Medication Adherence Scale.

Main outcome measures: Primary outcome was the scores of Morisky's Medication Adherence Scale.

Results: Non-adherence to antihypertensive medications level was 45.6%. The predictors of adherence to antihypertensive medications among patients with hypertension were: hospital admission, number of medications, cost, medication perceived effectiveness and using traditional remedies. The patient-related predictors were: number of

children, methods of identification of medications and poor awareness of hypertension complications. The healthcare system-related predictors were: regular follow up at clinics, education and counselling, frequency of changing medications by physicians and awareness of doctor instructions.

Conclusion: Non-adherence rate was comparable to middle east studies. We urge for routine use of adherence questionnaire in routine practice.

PP07

Developing a Maastricht Utrecht Adherence in Hypertension Questionnaire short version: MUAH16

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Background and Objective: Maastricht Utrecht Adherence in Hypertension Questionnaire (MUAH) provides valuable information about the reasons for poor adherence to antihypertensive medication. However, data on convergent validity is difficult to interpret and the high number of items difficult its use.

We aimed to develop a short version of MUAH (MUAH16), comparing its construct validity and factorial structure with a confirmatory analysis (CFA) between the original and the short version, as well as estimating its convergent validity.

Setting and Method: Each item of original MUAH was inspected regarding its content and directionality toward its factor and the global score. Ambiguous items were eliminated. Questionnaires were administrated in 8 community pharmacies of Portugal on adult patients and taking at least one antihypertensive drug.

The factorial structure of both versions was analysed through CFA using two models: Model 1 tested the original version of MUAH, with 25 items loading positively on 4 correlated factors. Model 2 tested the MUAH16, with 16 items loading on 4 factors, which loaded into a global factor of adherence. Convergent validity of MUAH16 was assessed by evaluating the association between MUAH16 global score and two other adherence scales: 8-item Morisky Medication Adherence Scale (MMAS-8) and Measure Treatment Adherence (MAT).

Main outcome measures: Adherence score and adherence-related dimensions

Results: Questionnaires were administered to 423 patients. MUAH had a poor fit to the data (chi-square₂₆₉=663.41, $p < 0.001$, CFI = 0.695, RMSEA=0.06. MUAH16 had a very good fit to the data (chi-square₁₀₀=171.07, $p < 0.001$, CFI=0.92, RMSEA=0.04 suggesting that MUAH16 better represents adherence to antihypertensive medication. Regarding convergent validity, both global score and all the subscales of MUAH16 correlated positively and significantly with MMAS-8 and MAT scores.

Conclusion: The short version of MUAH, the MUAH16, measures adherence-related dimensions and global adherence to antihypertensive medication. It can be easily applied in the clinical setting, giving health professionals more extended information about the patient's reasons for poor adherence.

PP08

Targeted therapy adherence in an observational study of patients with cancer

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Background and Objective: Target-Vig is an observational study funded by the Italian Medicines Agency to compare the incidence of adverse reactions (ADRs) reported by the Summary of Product Characteristics (SPC) or to identify any unknown ADR of 10 anticancer targeted-therapies. Further objectives are to improve patients therapy adherence and to raise awareness on reporting treatment-related toxicities.

Setting and Method: Criteria of inclusion are: age > 18 years, patients treated at CRO of Aviano with one of the study drugs. Patients were observed for 2 years (2013–2015) with front and regular telephone interviews to assess health condition, adherence to treatment and ADRs. Patient compliance was assessed by a questionnaire. Through statistical and epidemiological analysis we evaluated the difference between real and SPC ADRs incidence or any unknown ADR.

Main outcome measures: The epidemiologist calculated the cumulative incidence in the observation period for each ADR, with its 95% confidence interval. Each ADR was considered in excess compared to what is reported in the SPC if the lower limit of the confidence interval of calculated cumulative incidence was higher than the maximum value given in the SPC itself. At the end of the study patients answered to a questionnaire, in which we asked if they appreciated the continuous monitoring, if they would have liked to be monitored after the study, and if the pharmacist's monitoring impacted on therapy adherence and the management of ADRs. It was observed the trend of alerts entered in the National Pharmacovigilance Network from 2013 to 2015.

Results: Patients enrolled in the study were 154. Results showed that 99% patients enrolled appreciated the presence of clinical pharmacist; 99% patients considered useful the presence of the pharmacist to increase the quality of care and compliance; 96% patients prior contacted the pharmacist whenever there were changes in the treatment or side effects; 98% wanted to be monitored after the end of the study. There was also an increase (89.18%) of spontaneous reports from 2013 to 2015. The collected data showed increased incidence for: erythema (5[33.3%]) with everolimus; lacrimation (5[41.7%]), oedema of the eyelids (8[66.7%]) with imatinib; neutropenia (8[40%]), desquamation (7[35%]) with sorafenib; hypothyroidism (26[96.3%]), increased creatinine (12[44.4%]) with sunitinib; headache (14[28.6%]) with bevacizumab; mucositis (7[58.3%]) with cetuximab. Identified unknown ADRs are: hyperglycaemia (7[50%]; 5[25%]) with lenalidomide and sorafenib, respectively; hypomagnesaemia (6[12.2%]) with bevacizumab; neutropenia (3[25%]) with cetuximab.

Conclusion: Some ADRs occurred with higher incidence and there was evidence of unknown ADRs. The increase of reports counteracts the underreporting and improves information about ADRs of targeted-therapies. The patient felt accompanied during the oncological care and this avoided autonomous suspension of the drug or self-regulations to handle the side effects. This gives a high value to the clinical pharmacist in the management of targeted therapies in patients with cancer.

PP09

Evaluation of drug-drug Interactions in tele-pharmaceutical intensive care

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Background and Objective: Tele-medical services can become a promising concept to improve high quality medicine in sparsely populated areas. Since 2012, ICU tele-medical services have been successfully implemented at RWTH Aachen University Hospital and surrounding area. In 2015, a pharmacist supported the tele-medical-ICU-team.

Setting and Method: From March 2015 to July 2015, 103 patients [2] received tele-medical service, including tele-pharmaceutical care. Data were anonymously recorded. All drug-related problems (DRP) were documented and analysed using APS-Doc [1]. In a sub analysis we reviewed all drug-drug interactions (DDI) detected by the software ID Diacos Pharma Check. Based on the results a small pocket card with most common and severe DDI interactions was developed.

Main outcome measures: The aim of the sub analysis was to analyse status-quo of medication safety considering particularly DDI interactions in tele-medical ICU-patients.

Results: On average, 2 drug-related problems per patient were detected in 51 tele-pharmaceutical consultations. The total number of detected DDI by the software were 1129 (11 per patient) Only 89 DDI (7.9%) were assessed as relevant in the current patient case by the clinical pharmacist and were followed by a recommendation to the tele-medical team.

Conclusion: The close cooperation between the clinical pharmacist and the tele-medical-ICU-team contributed essentially to detect relevant DDI and avoid over alert by the software.

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Griesel C and Lenssen R equally contributed to this abstract.

PP10

Dried blood spot (DBS) analysis to evaluate allopurinol adherence

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Background and Objective: Allopurinol is the first line medication for the management of hyperuricaemia and to prevent acute gout. A week or more of treatment may be required before its full effects are manifested, reflecting the accumulation and slow clearance of oxypurinol, the active metabolite of allopurinol, which has the main hypouricaemic effect.

A systematic review indicated that adherence to allopurinol treatment (measured by indirect assessment approaches) ranges from 17 – 46%. Monitoring the level of oxypurinol in the blood would be a useful direct method to assess patient exposure to the medicine and therefore to evaluate adherence in patients. The aim of the present study was to develop a dried blood spot (DBS) assay for oxypurinol which would allow adherence assessment using finger prick blood sampling.

Setting and Method: An HPLC method (with UV detection) was developed for the quantification of allopurinol concentrations in DBS samples. DBS disks were extracted using methanol and acetonitrile (70:30 v:v). Separation was performed on a C18 column; the mobile phase consisted of sodium acetate buffer (pH 4.5) while UV detection was at 254nm.

Main outcome measures: The method was shown to be specific for the measurement of oxypurinol and allopurinol

Results: The method was shown to be specific for the measurement of oxypurinol and allopurinol. Recovery of oxypurinol using the method described was high (95%) and there was no interference from endogenous compounds. The limit of quantification (438ng/ml) is much lower than the effective trough level of oxypurinol concentration in blood during routine treatment. The DBS samples were shown to be stable for at least two months at -80 degrees C and at room temperature. Plans are now in place to use the assay to evaluate adherence in patients who have been prescribed allopurinol.

Conclusion: The method developed for measuring oxypurinol concentration in blood is reproducible, accurate and cost-effective for evaluation of oxypurinol exposure in patients and thus in evaluating adherence to allopurinol. This direct method of adherence evaluation will provide more robust and clinically relevant data on actual patient adherence to the medicine (when compared to self-report approaches).

PP11

The Evaluation Of Phenytoin Treatment According To The Corrected Phenytoin Levels

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Background and Objective: Phenytoin is an antiepileptic drug which is eliminated by CYP2C9, CYP2C19 (less important: CYP2C18, CYP3A4) enzyme. Therapeutic concentration range is very important due to the narrow therapeutic drug levels. Targeted therapeutic concentration range is 10–20 mg/L (40–80 μmol/L) in blood serum for adults and children older than three months. Phenytoin has highly variable pharmacokinetics due to its complex of binding to Albumin (%90). It is difficult to determine the correct dosage of this drug because of significant dose related toxicity. It is also important for inpatient in intensive care unit.

Setting and Method: A retrospective study was conducted in all inpatients (n=72) that including phenytoin treatment at the university hospital in 2015. All laboratory data were collected from the hospital medical record system. 11 different departments were examined to monitor therapeutic concentration range during phenytoin treatment. Corrected phenytoin

levels were calculated from total phenytoin concentration by winter-tozer equation according to albumin level for hypoalbuminemic patients.

Main outcome measures: The aim of the study that evaluation of phenytoin treatment according to the corrected phenytoin levels.

Results: Phenytoin level monitoring for a year in the hospital (n=315) have checked for hypoalbuminemia and 90 results are calculated again because of hypoalbuminemia. After reconsideration 25 of the 76 patients evaluated as therapeutic range, according to the calculation results, not in the target range actually in the toxic range. 12 of the 41 results out of target range were calculated within the target range. There have been found a significant difference ($p \leq 0,01$) between the laboratory result and the corrected calculation of the clinical pharmacist. Also there have been found a significant difference ($p \leq 0,01$) between the drug monitoring of phenytoin level of different inpatient service. The %83.3 of phenytoin-treated patients in the intensive care unit at 2015 is monitored for phenytoin level beside most of the services do not check for phenytoin level for phenytoin-treated patients even once.

Conclusion: In conclusion phenytoin-treated patients should monitored for phenytoin level for monitoring of the treatment and for avoiding the sub-therapeutic or toxic levels of phenytoin. The results have to recalculate if necessary by considering the albumin level and renal failure of the patients.

PP12

The Determine of Possible Drug Interaction of Clarithromycin

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Background and Objective: Clarithromycin is a macrolide antibiotic which is often used in the antimicrobial therapy. Also it is very important for drug interaction because it is a potent inhibitor of CYP3A4. The pharmacokinetic changes in concomitant medication use was observed in the studies may lead to cause an increase in the concentration of the other drug. Especially when used in combination with drugs that are substrates of CYP3A4 such as statin by causing an increase of statin plasma concentrations as rhabdomyolysis has led to more frequent occurrence of side effects.

Setting and Method: 100 adult and paediatric inpatients in the university hospital that taking clarithromycin treatment, evaluated for the retrospective study. Patients selected randomly by using the hospital's medication record system. All the patients checked for drug interactions during treatment and the data recorded as "serious-use alternative" "significant-monitor closely" "moderate" or "minor"

Main outcome measures: The aim of the study is to determine drug interaction with clarithromycin in patients taking drugs interacting frequency ratio.

Results: It was determined average 3,65 drug interactions for a patient, 1,53 of them is serious. It was observed a significant difference between different inpatient services. Cardiology clinic is at the top with average 5.36 interactions. It also has to be considered that average age of the inpatients is higher at this clinic. Geriatric population has greater risk of the polypharmacy. It was determined a significant correlation between the number of total drugs using and the number of drug interactions ($p \leq 0,01$). Also there are another significant correlation ($p \leq 0,01$) between the number of total drugs and the importance of interactions for each classification such as serious-use alternative, significant-monitor closely, moderate and minor.

Conclusion: Monitoring for drug interaction to review the drug choice according to the interactions and pharmacist consultation for drug interaction for the physicians may reduce the number of medical events caused by medicines. Therefore clinical pharmacists are vital for improving inpatient treatment if they should check for drug interactions.

PP13

Bevacizumab in brain radionecrosis (BRN): 2 cases reported in breast cancer with CNS (central nervous system) metastasis

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Background and Objective: CNS metastasis represent 36% of metastasis in Breast Cancer (BC) and remains a challenge for treatment. Stereotaxic radiotherapy is considered as a standard of care. However BRN is a late iatrogenic complication, it may deteriorate the functional prognosis and patient outcome. Although conventional treatment is corticosteroids, BRN remains a medical need in case of treatment failure. Bevacizumab is a monoclonal antibody which reduces the permeability of the blood-brain barrier by neo-angiogenesis inhibition. Approved in several cancer types, it showed interesting results in glioblastoma and has more recently been proposed (off label) for the treatment of refractory BRN⁽¹⁾.

Programme description: We prospectively assessed the efficacy and tolerance of bevacizumab for BRN in 2 patients followed for advanced BC. The patients developed BRN, diagnosed by magnetic resonance imaging (MRI), 10 months after stereotaxic irradiation of malignant brain damage in 2013. Patients were treated with bevacizumab according to the regimen proposed by Levin⁽¹⁾ : bevacizumab infusion of 7.5mg/kg every three weeks for 4 infusions. Response to treatment was evaluated on 3 points : the evolution of clinical symptoms, the decrease in minimum effective dose of corticosteroids and changes in the control MRI performed several weeks after stopping the infusions.

Before bevacizumab infusion, main clinical symptoms for both included : decreased visual acuity, headaches, neurological deficiency with upper limb numbness, delirium, ataxia, dysarthria and fall. Both patients received 4 administrations of bevacizumab. The treatment was well tolerated : no grade II, III toxicity were reported (hypertension, proteinuria, epistaxis, ...). The improvement of clinical symptoms appear after the second infusion, and a significant improvement is noted after the fourth infusion : reduced neurological disorders (gnosis, praxis), decreased headaches and functional recovery of the lower limbs. The dose of corticosteroids was reduced by 50% (20mg/day to 10mg/day) for one and stopped for the other. Brain MRI showed reduced brain oedema in the 2 patients. Symptoms reappeared 5 months after the last infusion for 1 patient.

Conclusion: The use of bevacizumab as a treatment of symptomatic BRN seems to be effective without any toxicity in this population. This approach have to be confirmed in large prospective studies.

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Keywords : Bevacizumab, Radionecrosis, Efficacy

PP14

Evaluation of the financial loss related to the unused remnants injectable cancer drugs except DRG

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Background and Objective: The cost of cancer drugs includes the good medical practice and optimization of their use, in particular during the step of preparing. Monitoring of unused remnants is performed in our centralized preparation unit. The aim of our study is to evaluate the economic impact of the unused of remnants of cancer drugs except DRG (Diagnosis related groups) and discuss areas for improvement.

Setting and Method: The prospective data have been collected for 8 months from April 2015 to January 2016. Data's were extracted on a daily basis from the manufacturing orders via the Computer Engineering Chimio® software. After preparation, the technician recorded monthly the date, name of specialty and the unused volume expressed in milliliter. Then we sorted by specialty and by day.

For each pharmaceutical specialty, we determined the cost of unused product and the frequency of the remnants' destruction. All of this data was used to calculate the cost of the remnants and financial loss.

Main outcome measures: During the study period, we realized 2300 molecules except DRG. The total cost is 2979812 €. 2016 out of 2300 preparations generated remnants that have not been reused. Financial loss due to the unused of remnants is 82414 euros (which represents 3.4% of the total cost). 11 out of 22 molecules generated 91% of the financial loss, according to the Pareto law. The most destroyed remains concerns the following molecules : azacitidine, temsirolimus, trastuzumab, pemetrexed.

Results: Azacitidine represents the greatest monetary loss (15932,73€:19%), followed by temsirolimus (12246,73€:15%), trastuzumab (11381,26€:14%), cabazitaxel (7255,91€:9%) and trastuzumab emtansine (6608,87€:8%).

But reported to the frequency of preparation, the greatest loss concerns cabazitaxel (1814€), followed by trastuzumab emtansine (1652€), brentuximab vedotin (1447€), rituximab (1171€) and bevacizumab (548€).

Conclusion: Remnants' loss have been divided into 2 categories : the avoidable and the non-avoidable.

The non-avoidable loss are not only due to the low stability of reconstituted medicine but also to the unadapted dosages of some marketed products. This problem concerns the following specialities : azacitidine, temsirolimus, cabazitaxel, trastuzumab, brentuximab vedotin, and cladribine.

The avoidable loss are caused by the unit of preparation related issues such as the availability of a single dosage, a poor inventory control or non rounded values of dosages. This problem concerns the following specialities : rituximab, trastuzumab emtansine, bevacizumab, pemetrexed.

Keeping the stability data up to date is needed to reduce waste. The availability of more dosages can reduce financial loss at the cost of logistical constraints. In our medical centre, regrouping medical appointments can not limit losses because of the low number of patients for each prepared speciality and the 10000 yearly preparations.

This study shows that dosage of available drugs should be adapted to standard posology and the physician may prescribe the rounded doses.

PP15

ADHIÉRETE Programme

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Background and Objective: Long life expectancy brings with it an increase in chronicity, use of medicines and an increase in the likelihood of adherence problems. Lack of adherence is one of the leading causes of morbi-mortality according to the World Health Organisation. 20-50% of all patients do not take their medication as prescribed.

The main objective of the study was to evaluate adherence in elderly (≥ 60 years), chronic and polypharmacy (≥ 5 medicines) patients with adherence problems before and after the intervention of a community pharmacist. Pharmaceutical Care Services and Personalized Dosage Systems (PDS) and/or ICT (apps), were used as support tools. As secondary objectives the detection of Drug Related Problems and/or Negative Medicine Outcomes, the evaluation of the impact of each adherence support tools used or the assessment of Quality of Life, among others, were considered.

Setting and Method: Naturalistic (pre-post), prospective, randomized, uncontrolled study. Each community pharmacy recruited 5 patients: a) 2 PDS, b) 2 App – monitoring system and c) 1 PDS + App – alarm system. Each patient made at least 7 visits to the community pharmacy. Each pharmacist had access to an online tool to create patient profiles and to send customized messages and warnings.

Main outcome measures: The Morisky-Green Test and the EuroQoL 5D Questionnaire were used as methods to assess adherence and patient's quality of life, respectively. Adherence was also measured by the rate of medication uptake.

Results: 174 patients recruited, 114 valid for analysis. 74 patients completed the study. 40 patients concluded the study early; the cause cited most often involved the use of ICT (22 patients). 56.1% of patients used 5-8 medicines; 34.2% used 9-12 medicines. The most prevalent diseases were hypertension (74.3%), hypercholesterolemia (55%) and cardiovascular disease (52.3%). Adherence, assessed by Morisky-Green Test, evolved from 35% in Visit 3 to 75.7% in the Final Visit. Adherence, assessed by the medication uptake, went from 62.1% (Visit 3) to 89.2% (Final Visit). The average difference between the Final Visit and V1 for the Quality of Life was 0.078 points. Patient Satisfaction scored 81.28 over a total value of 100. For the App-monitoring system group, adherence, quality of life and satisfaction results, though improving, were lower than in the other groups.

Conclusion: Regardless the support tool used, the pharmacist's intervention seemed to be effective for the improvement of adherence. The results in the App-monitoring system group were significantly lower than in the PDS and PDS+App – alarm system groups. The improvement of adherence might be linked to an improvement in the quality of life.

PP16

Impact of a community pharmacy-based information program on type 2 diabetic patients' adherence to their oral treatment: IPhODia, a cluster randomized study vs usual practice.

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Background and Objective: Despite significant improvements in the follow up of type 2 diabetes patients, the latest results of Entred 2007-2010 show an insufficient level of control, with too many patients with HbA1C > 7%

In spite of regular controls, physicians encounter difficulties informing patients due to a lack of time and means. Thanks to their number, expertise and accessibility, pharmacists could play a beneficial role in patient adherence.

The IPhODia study aims to assess the impact on adherence of specific information provided by community pharmacists

Programme description: The intervention consists of three different 30 min interviews over 6 months, covering thematic information on diabetes, namely (1) diet for diabetics, (2) monitoring drug treatment and (3) the diabetes complications.

Two groups of pharmacists have been randomized, one providing interviews in addition to the usual drug delivery, one delivering drugs in usual settings. The criterion for evaluation is the Medication Possession Ratio (MPR). In total 182 pharmacists (91 + 91) recruited 529 patients (280 +249).

45% of pharmacists are in rural area, 85% have a confidentiality space and 65% have already been trained on therapeutic education (no difference between 2 groups).

Among 529 patients, 57,6% are men (55,7 –60,2, Non-Significant difference between the two groups = NS), with a mean age of 65,7 years (65,1 – 66,4, NS) and a diabetes duration of 10,4 years (10,7 – 10,1, NS); 44,9% are overweight (44,2 – 45,7, NS), Antidiabetic treatments are : monotherapy for 31,4% of patients (29,54 – 33,5, NS), dual therapy for 43,2% (42,1 – 44,3, NS) and tritherapy for 25,5% (28,4 – 22,2, NS). 69,7% (67,8 – 71,9, NS) of patients are treated with an antihypertensive medication and 64,7% (62,5 – 67,1, NS) with a lipid lowering agent. Mean HbA1C level is 7,8% (7,9 – 7,7, NS).

Conclusion: This study will be able to assess the impact on adherence of specific information provided by community pharmacists to type 2 diabetes patients. 6 month results will be presented.

PP17

Dimeticone 4% Lotion versus Permethrin 1% Shampoo for Pediculosis Capitis: A Randomized Controlled Trial

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Background and Objective: Pediculosis Capitis occurs worldwide particularly in the developing countries. Resistance to Pediculicides such as Permethrin were widely reported around the world. In addition, there are some concerns about potential neurological side effects of pediculicides. Studies have been shown 4% Dimeticone lotion is effective to eradicate head lice infestation. This study was designed to compare the efficacy and safety of the Dimeticone 4% lotion with Permethrin 1% Shampoo.

Setting and Method: We performed this study as a single centre, randomized controlled, open label, parallel group, community based trial in Tehran, Iran. 67 children and adults with active head louse infestation were enrolled in the study. Each patient received two applications seven days apart of either 4% Dimeticone lotion, applied for eight hours or overnight, or 1% Permethrin shampoo applied for ten minutes. Outcome was assessed as cure (no evidence of head lice) 1, 6 days after the first treatment and 6 days after second treatment, degree of itching, the patients' acceptance, and clinical pathology.

Main outcome measures: Main outcome was evaluation of cure (no evidence of head lice) 1, 6 days after the first treatment and 6 day after the second treatment, degree of itching, the patient's adherence and clinical pathology.

Results: Cure rates were 28/ 35 (80%) and 19/32 (59.4%) for the Dimeticone and Permethrin groups after 1 day of first intervention (P= .065) respectively. After 6 days of first treatment, cure rates were 22/ 35 (62.9%) and 15/32 (46.9%) for

the Dimeticone and Permethrin groups ($P=0.189$) respectively. Cure rates were 31/35 (88.6%) participants received Dimeticone and 20/ 32 (62.5%) received Permethrin 6 days after second treatment ($P= 0.012$). Itching was significantly reduced in the Dimeticone versus the Permethrin group ($P= 0.001$). The patients' acceptance was significantly better in the Dimeticone group ($P= .005$). No adverse events were recognized.

Conclusion: Although Permethrin is effective for patients with head lice but Dimeticone lotion is more effective alternative option for most patients. Dimeticone significantly reduces the itching intensity and increases the patient's acceptance and adherence.

PP18

Use of medicinal plants for the elderly as an economically viable and safe alternative to the use of traditional medicines.

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Background and Objective: The use of medicinal plants represents an important resource for treatment, cure and prevention of countless diseases. This study aimed to determine the traditional use of medicinal plants by the elderly and the importance of this practice as an economical and safe alternative to the use of traditional medicines.

Setting and Method: The study is an exploratory, descriptive and field type, with voluntary participation of 351 elderly (60 or older), in Maringá, Brazil. This study was approved by the ethics committee. The interviewer applied to the participants a semi-structured questionnaire containing socio-demographic information (gender, age, education, monthly income) and issues related to the consumption of medicinal plants (what parts of the plant were used, how and why making use, where they get the plant and if they indicate the use of medicinal herbs to others).

Main outcome measures: The sample calculation assumed confidence level of 95%, a margin of error of 5%, based on calculations made in *Statdisk Software* Version 8.4. The data were statistically analysed with the help of the software *Statistica 8.0*. The evaluation of averages and standard deviation was performed for quantitative variables. As for the qualitative variables were used frequency tables with percentage and contingency tables using the chi-squared test to check for possible significant associations between the variables of interest. The level of significance adopted was 5%, i.e. the associations considered significant were the ones whose $p < 0.05$.

Results: The results demonstrated that the use of medicinal plants is an important therapeutic resource for the elderly, since 78,4% of them made use of medicinal plants. Regarding the socio-demographic data, this study showed the prevalence of females in using medicinal plants (58,7%), but there was a significant statistic difference between genders ($p=0,00041$). Regarding the monthly income of the respondents, 65.5% were retired, of which 59.3% earned a minimum wage and 13.1% received two minimum wages ($=0,00041$). Regarding the place where they acquired medicinal plants, mostly used to obtain in the backyard, these data demonstrate the influence of the economic factor in the acquisition of medicinal plants as the fact that many of them are grown in backyards, what makes them accessible to a large population.

Conclusion: The use of medicinal plants by the elderly was 78.4%, among the mentioned plants, hortelã, boldo, erva doce, melissa, camomila, guaco, capim santo, alecrim, arruda, arnica, carqueja, espinheira santa, berinjela, chuchu e sabugueiro deserve special mention, because they are easily found and grown in backyards, representing savings for their users. The form and part of the plant used, mostly coincided with the literature, reflecting popular knowledge about medicinal plants. Most seniors use medicinal plants safely representing a low-cost option for these users.

PP19

How to set up tools for pharmaceutical interviews ?

Educational diagnosis test applied to patients coming at the hospital pharmacy.

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Background and Objective: The aim of our study is to improve the quality when dispensing medical treatments by setting up pharmaceutical interviews. The plan is to draft documents which will be used to explain and educate patients

about their treatment. Our first aim is to identify each patient's expectations, needs and understanding of the medicine they are taking in order to adapt our tools to their needs.

Programme description: Setting up a questionnaire which will be presented to patients and their helpers. People included: patients or helpers who come to the hospital pharmacy for medication for chronic illnesses. Ambulance personnel will not be included.

The questionnaire will include 15 questions about different themes: population characteristics, hospital discharge or not, the patient and his treatment, adverse effects (AE), follow-up, effects on everyday life.

Thirty-day study, 537 dispensations were done by the hospital pharmacy, 119 questionnaires completed (22%). Seventy five percent of people coming are patients, 22% are helpers.

Seventy nine percent of patients know all of the medicines they are taking, 13% only some of them and 6% nothing at all; 87% of patients take their medicine without help; 98% know what their medicine is for and use precise vocabulary to describe their illness.

Open-ended questions show that patients lack knowledge about: pharmacology (AE, usage warnings, contra-indications), the rules surrounding delivery of medication, what to do if they forget to take their medicine, availability in city pharmacies.

Patients know that they have regular follow-ups (blood tests, imagery).

Specific details emerge depending on the illness:

Oncology: physical decline, progressive isolation (patients and helpers), frequent sick leave.

Infectious diseases: HIV patients lack precise knowledge about their illness. Those patients whose anti-infectious treatment is alongside chemotherapy often mix up the roles of their different treatments.

Patients with plasma-derived medicinal products (coagulation factor, immunoglobulin): 70% of patients have not had AE, their difficulties are linked to immunoglobulin injections and patients did not know how to deal with the situation. Sixty percent of patients do not know of any AE or what to do in case of AE.

Endocrine pathologies: patients do not forget their treatment for more than 24 hours because of the noticeable symptoms that show up quickly if they are late taking their medicine.

Conclusion: Only 22% of patients included because of the various exclusion criteria (non-chronic patients, people not close enough to the patient, too busy).

Assessing the needs and knowledge of patients is an essential step before the setting up of a therapeutic education programme. It helps to set up tools that are adapted to those concerned. This first important step helped to identify needs with themes that will be contained in our future tools.

Our study identified disease specific lacks in knowledge, our tools will be able to include these specific information.

PP20

Pharmaceutical care consultations and multidisciplinary educational program for improving adherence in oncology

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Background and Objective: Recent development of oral anticancer drugs makes medication adherence a major concern in oncology. Healthcare system should be reorganized because of the increased number of patients treated by oral anticancer drug and the chronicity of this disease. Pharmaceutical care consultations together with Patient Educational Program dedicated for new patients on oral chemotherapy was initiated in Paul Strauss Cancer Centre (Strasbourg, France) in June 2014. The main objectives of this program are maintenance of adherence to oral anti-neoplastic therapy, promotion of a better understanding about treatment regimen and potential side-effects, patient safety and implementation of self-care management.

Setting and Method: We investigated risk factors of non-adherence detected during pharmaceutical care consultations performed at initiation of oral anti-cancer drug.

Main outcome measures: For patients following the educational program, medication adherence was assessed with Morisky Green's scoring after 15, 30, 60, 90 days of treatment.

Results: 131 patients were included in the program. 143 pharmaceutical care consultations were performed (some patients being treated with two different treatments). Mean age of the patient was 63 (min=21; max=86). Most of them were treated for colorectal cancer (57%). Most frequently prescribed drugs were capecitabine (52%) and regorafenib (15%). Pharmacist interventions allow the detection of 3.8 risk factors per patient. The most frequent risk factors are side effects (established or potential for 86% of patients), age over 65 (52%), overmedication (49% of patients take more than 5 different drugs), gender (41% of female), comorbidities (34%), previous treatment failure (28%), disease duration (26%), social factors (14%). Other risk factors rarely detected were treatment duration, psychological or cognitive disorders, severity of symptoms, and functional status. Majority of patients (59%) had between 2 and 4 non adherence risk factors and 31% displayed more than 4 factors. Anticancer drug treatment duration was not correlated with the number of risk factors per patient. Morisky Green scoring was investigated through 297 interview meanly in the first 3 months of treatment and was equal to zero in most of case (92%).

Conclusion:

Early detection of risk factor for low adherence in patients receiving oral anticancer drug give the opportunity for the development of personalized medicine. Oncology pharmacist intervention together with nurse follow-up through an educational programme allow the maintenance of adherence.

PP21

Ask the Pharmacist: Is it suitable to repackage Lamotrigine dispersible/chewable tablets into Multidrug punch cards?

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Background and Objective: Lamotrigine is a phenyltriazine anticonvulsant used either alone or in combination with other drugs in the management of seizures and in the maintenance therapy of bipolar disorder [1]. Poor adherence to medication is an important issue among patients with these diseases [2]. This situation makes lamotrigine an ideal candidate for use in systems to improve drug management, such as Multidrug Punch Cards (MPCs). Dispersible/chewable tablets (DCT) is the pharmaceutical form most commonly used (and the only marketed in our country) for oral administration of lamotrigine. The sensitivity to the effects of moisture of DCT increases the need to obtain information regarding its stability once repackaged into MPC. The aim of the present study was to determine the stability of lamotrigine DCT repackaged into MPC.

Setting and Method: Lamotrigine 100mg DCT were randomly repackaged into one-week cold-sealed MPCs and evaluated for physicochemical stability over a 21 day period in controlled conditions corresponding to Climatic Zones I/II (25±2°C; 60±5% relative humidity). At scheduled times, various tests were performed on tablets in its original packaging (day 0; control samples) and on tablets repackaged into MPCs (day 21; MPC samples).

Main outcome measures: Chemical stability: A validated high-performance liquid chromatography (HPLC) method, adapted from the U.S. Pharmacopeia, was used to quantify lamotrigine 100 mg DCT [3]. Physical stability: Physical appearance, dissolution test, uniformity of mass, friability and resistance to crushing were evaluated according to compendial requirements [3, 4].

Results: Chemical stability: Lamotrigine content remained within the U.S. Pharmacopeia acceptance range of 90-110% during the 21 day study (day 21: 97.7%). Physical stability (at day 21): There were no noticeable appearance changes in the tablets. As for dissolution testing, the amount of lamotrigine released in 15 min was not less than 80% of the labelled amount. None of the individual masses deviated by more than 5% from the average mass. The resistance to crushing of the tablets decreased by 6.6% when compared with control samples. However, the friability was low (0.2%).

Conclusion: The present study shows that lamotrigine DCT maintained their stability for at least 21 days when repackaged into MPC under the storage conditions of Climatic Zones I/II.

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PP22

Evaluation of use of a pictorial medication labeling system to improve comprehension of drug regimen information: A randomized controlled trial among low-literate patients attending emergency department in a public hospital in Qatar.

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Background and Objective: Inadequate comprehension of medications regimens is a very important challenge for a lot of health care providers, which usually leads to low adherence.

The use of pictorial aids was suggested to avoid major harm to illiterate patients due to improper use of their medications, as found in many studies before

The effectiveness of using pictograms in medication comprehension was tested before in many studies in different countries having different cultures but further investigation was needed.

The main aim of this study is to investigate the effectiveness of using pictorial aids in combination with verbal instructions compared with traditional written labels in combination with verbal instruction, among low literate patients in Qatar, and to examine the difference in comprehension using pictorial aids according to age range, and detect which of the following (dosage, drug indication, frequency or proper usage) could be mostly improved using pictograms.

Setting and Method: The study was conducted in male area of emergency department, AL-Wakra hospital, Qatar. 96 multi-ethnic low-literate patients with less than 8 years of education, their age was ranging from 18-60 years old.

The medication counselling about indication, frequency, dosage and proper use was carried out using pictorial aids where pictograms for each medication instructions were printed and attached to medications packages in combination with verbal instructions.

A scoring system from (0 to 4) was used to evaluate the degree of comprehension of the medical information, for each medication prescribed one point was given for correct answer for the question about the medication Indication, dosage, frequency and Proper use, where the comprehension of all of these items was scored 4 and the Incomprehension of all of them was scored zero.

Main outcome measures: The median score for the scores of each group (control group and investigational group) was calculated which then tested for statistical difference

Results: Main results: Significant difference was found between scores of pictogram group (median 4, IQR 3.5, 4) and control group (median 3.5, IQR 3, 4) (P=0.0001).

The comprehension of medications instructions using pictorial aids was found to decrease as the age range increased, about 21 patients were ranging from 18-30 years old (mean score 3.9024 SD±0.24), 20 patients were 31-40 years (mean score 3.74 SD±0.44915), 6 patients were 41-50 years (mean score 3.63 SD±0.54283) and 1 patient was 51-60 years (score 3.5) (p<0.05).

Conclusion: The pictogram labelling system in combination with verbal instructions can improve the comprehension of medications instructions among low literate patients when compared with traditional labelling system with written text instructions plus verbal instructions even if the verbal instructions were in a language that patients can understand.

PP23

Medication adherence, persistence and clinical response in second-line tyrosine kinase inhibitor treatment. One year of analysis on dasatinib and nilotinib in real-life.

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Background and Objective: Medication Adherence to tyrosine kinase inhibitors is a significant factor in the achievement of a good clinical response in chronic myeloid leukaemia (CML). Nilotinib and dasatinib represent second line treatment in patients who were resistant or intolerant to imatinib. Some studies have evaluated Medication Adherence to second-line CML treatment using Medication Possession Ratio (MPR) and Proportion of Days Covered (PDC), giving as a result respectively 0.793 for dasatinib, 0.80 for nilotinib and a better rate of adherence (13%) for nilotinib compared to dasatinib. The RDD/PDD method (PDD=Prescribed-daily-dose, RDD=Received-daily-dose) is a useful strategy to evaluate medication adherence when posology is variable in basis of patient characteristics, for example dasatinib could be administered at the dose of 50,80,100,140 mg/die and nilotinib dose could be adjusted for example in case of haematological toxicities.

Setting and Method: This retrospective observational study is aimed at evaluating medication adherence of home therapy with dasatinib and nilotinib in patients in II line CML using the Received Daily Dose/Prescribed Daily Dose method . This study was carried out in the Pharmacy and Haematology of Pescara Hospital. On the first refill, pharmacists record patient's personal data and stage of disease, at each refill pharmacists insert date, dose refill and update the posology. The clinical response of patients were evaluated by haematologists as molecular response (BCR-ABL1/ABLratio).

Main outcome measures: The aim of this retrospective study is to evaluate correlation between medication adherence and clinical response at first year of treatment with dasatinib and nilotinib.

Results: Forty-three patients were considered, 21 in treatment with dasatinib and 22 with nilotinib. PDD was 99.35 ± 19.83 mg for dasatinib and 668.50 ± 192.61 mg for nilotinib. Adherence for dasatinib was of 0.91 ± 0.12 mg while for nilotinib 0.90 ± 0.12 mg. Patient's percentage with level of BCR-ABL1/ABLratio < 0.1 were 95.24 for dasatinib and 95.46 for nilotinib and for these patients the average of adherence were 0.92 and 0.89 respectively.

Conclusion: Real life analysis of therapy at first year described a posology that differs from the standard. For the dasatinib the dose recommended is of 100 mg per day and for nilotinib is of 800 mg per day, in this study PDD instead was respectively 99.35 mg per day and 668.50 mg per day. The difference between the PDD and the Defined Daily Dose is due to the necessity of adjust the dose during the treatment in relation to intolerance or adverse reactions. From the clinical point of view, the 95% of patients at first year of treatment was disease free and the cut-off of adherence to achieve the complete response was major of 0.89 in both groups of patients. These data confirm that the adherence is a key factor to achieve the clinical outcome.

PP24

Adherence, persistence and switching to DPP4-inhibitors in home therapy in diabetes. Two years of analyzes in real-life.

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Background and Objective: Adherence and persistence to treatment are two fundamental aspects to achieve desired clinical outcome like a decreasing HbA1c levels, in the rate of hospitalization and mortality. Adherence studies in diabetic treatment described levels ranging from 36% to 93% or that 58% of patients are considered adherent.

Setting and Method: This retrospective observational study took into account all patients treated with studied drugs that have administered the oral therapy for type 2 diabetes for at least 6 months from 1st January 2011 to 31st December 2015. The data collected were: age, gender, drug, date of refill, quantity refilled, therapeutic switch. Adherence to treatment was calculated using the ratio between the Received Daily Dose (RDD) and Prescribed Daily Dose (PDD).

Main outcome measures: The primary object of this analysis was to compare the levels of adherence, persistence and % of switching of the DPP-4 inhibitors. The secondary outcome is to calculate the cost per day of therapy for each drug.

Results: The number of patients analysed were 1987. The % of switch, PDD, RDD, adherence and cost per RDD were sitagliptin [19.70%, 0.09(0.01), 0.08(0.02), 0.86(0.17), 1.07584 €], sitagliptin/metformin [11.16%, 0.09(0.01), 0.08(0.02), 0.86(0.17), 0.94426 €], vildagliptin [10.06%, 0.09(0.02), 0.07(0.02), 0.82(0.20), 0.86(0.17), 1.1609 €], vildagliptin/metformin [10.00%, 2.00(0.00), 1.72(0.53), 0.83(0.23), 1.1609 €], saxagliptin [29.14%, 5.04(0.44), 4.41(0.93), 0.86(0.14), 1.18174 €], saxagliptin/metformin [7.84%, 1.94(0.24), 1.88(0.49), 0.90(0.17), 1.25893 €], linagliptin [1.32%, 5.01(0.48), 4.67(1.11), 0.89(0.19), 1.25122 €], linagliptin/metformin [7.40%, 2.00(0.00), 1.85(0.36),

0.90(0.17), 1.23916 €]. The persistence at first and second years was 76% and 58% for sitagliptin/metformin, 69% and 57% for vildagliptin/metformin, 68% and 48% for sitagliptin, 60% and 42% for saxagliptin, 56% and 36% for vildagliptin.

Conclusion: The adherence to treatment profile is for all studied drugs upper than 80% denoting, therefore, a good medication management regardless of the active principle used, the formulation (with or without metformin) and the decrease for vildagliptin (36% in two years) against the formulation with metformin to 58%. The formulations with metformin (sitagliptin/metformin, vildagliptin/metformin) have a comparable profile and always superior to the formulations without metformin. From the analysis of the results and the comparison between adherence and persistence to treatment it shows a substantial difference between the first and second parameter. In fact, although the adherence is good, the persistence tends to suffer a high decrease passing from the first year to the second. This puts the focus on the need to monitor this long-term therapies in order to understand what are the causes of abandonment of therapy and any switch.

PP25

Comparative study of the prescribing errors between medical words and medical critical unit at Al Wakra hospital.

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Background and Objective: This study investigated and evaluates the incident rates, types, and severity of prescribing errors in medical units and medical critical care unit in Al-Wakra hospital (AWH).

Prescribing errors was reported through electronic reporting system called (OVA)

Setting and Method: All prescriptions for admitted patients between Nov.2014 and April 2015 in medical ICU and medical word of Al-Wakra hospital are checked by the dispensing pharmacists. All errors reported to the quality department are checked retrospectively.

Main outcome measures:

Primary objectives :

Analysis of the data collected and review the errors and use the results of this data in creating specific focused education sessions for the prescribers who are working on the area of the research to enhance their prescribing habits, improve impact of patient care plan, and medication use, effect of improving the dispensing pharmacist knowledge by continuous education and providing updated references.

Compare in type, rate and time of errors between medical words and medical ICU.

Evaluation of severity of errors based on medication errors severity index by (NCC MERP)

Secondary objectives:

To determine if such prescribing errors can be decreased by the presence of clinical pharmacist covering all shifts, analyze any other reasons for the prescribing errors, and then use this data in making the case to make strategies to improve pharmacy services and decreasing admitting period.

Also, to determine factors associated with most common errors.

Results: A total of (6016) ordered medications by medical ICU with (56) errors (0.9%) and (15658) ordered medications from medical words with (69) errors (0.4%). The majority of prescribing errors in ICU were related to the dose 21%, dilution 17% and incomplete orders 16% but in medical word the majority of errors were due to dose 23%, missing data 17% and route administration 13% respectively. It was also found that the rates of prescribing errors in evening shift are significant higher when compared to morning and night. The percentage of physician acceptance to pharmacy recommendation to correct errors in medical ward by consultants was less than specialist and resident but in the ICU the acceptance of specialists was almost same to consultants.

Conclusion: The prescribing error prevalent rate within medical unit and medical ICU in Al-Wakra hospital was moderate in comparison to other studies and this indicates that there are multiple causes of errors. This highlights the importance of updating local policies, guidelines, tailor educational programs, and routine evaluation of the service to enhance prescribing habits and patients' safety. These findings highlighted the importance of pharmacists and clinical pharmacist in decreasing prescribing errors. and the importance of pharmacy service expansion all over the hospital.

PP26

Adherence to azithromycin therapy in Ukrainian families with cystic fibrosis child

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Background and Objective: Cystic fibrosis (CF) is the most common inherited disease mostly affecting lungs and pancreas. Pharmacotherapy of CF consists of many drugs including azithromycin (AZM). AZM long-term therapy improves pulmonary function in patients with CF colonized *Pseudomonas aeruginosa* infection because of its anti-inflammatory properties. There are different factors that can impact on adherence to AZM treatment.

Setting and Method: Parents (n=32) whose children suffer from CF were surveyed with 10-questions anonymous questionnaire. The range of children's age was from 1 year to 12 years old. Survey results were subjected to Multiple Correspondence Analysis (MCA) using statistical package FactoMineR.

Main outcome measures: The highest correlation values for adherence were observed with the following factors: the age of a responding parent (r=-0.26, p=0.18; the older parents demonstrate lower adherence score); the age of a child (r=-0.24, p=0.24; the older age of children is associated with lower adherence score; the amount of prescribed drugs (r=-0.23, p=0.20); the severity of the disease (r=-0.17, p=0.37).

Results: MCA on the survey data extracted two latent factors with 73.2% of variability explained. According to the factor loadings, the first factor coincides with intentional non-adherence while the second factor represents unintentional non-adherence. Thus factor scores are interpreted as intentional and unintentional non-adherence rates. Our sample contained 2 (6.25%) parents that demonstrated intentional non-adherence and 8 (25%) parents with unintentional non-adherence.

Conclusion: Despite of CF severity and its poor prognosis the majority of parents demonstrated good adherence to AZM pharmacotherapy. Our questionnaire for CF helps us to reveal reasons of non-adherence and to impact on them for better outcome.

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The development of clinical pharmacy in Ukraine

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Background and Objective: The Clinical Pharmacist legitimacy is from 1999 year in Ukraine. Nowadays it is prepared on the undergraduate level by 7 medical universities. About 30 clinical pharmacists are working today in Ukrainian hospitals. In most cases clinical pharmacists work in private pharmacies, as medical representatives of pharmaceutical companies etc.

20 domestic legal documents were prepared that regarding to the professional activity of clinical pharmacist. In Ukraine there is processed organizational and methodological principles of creation and activity of clinical pharmacy services in hospitals and pharmacies. There are all conditions for the development of clinical pharmacy in Ukraine. However, it is not as active as we would like.

Programme description: We studied the problems using the methods of systematic analysis, deduction, predicting, modelling and identified realistic ways of the modern clinical pharmacy development in Ukraine.

There are 3 priority problems of clinical pharmacy in Ukraine: 1) the passivity of the state; 2) the employment of clinical pharmacist in the hospital; 3) the conflict of interests between the clinical pharmacist activities (pharmacotherapy rationalization and humanistic position of the profession) and the commercialization of the existing health care system, including the "shadow" of its nature including decreasing humanistic aspects and irrational expenditure money of the state and patient.

We defined 8 directions for the clinical pharmacy development in Ukraine: 1) the employment of clinical pharmacist in university clinics; 2) the participation in the grant programs about the pharmaceutical care development; 3) the

involvement of clinical pharmacists to work in the pharmacovigilance system (active drugs side effects monitoring in the Health Care Institutions); 4) the employment of clinical pharmacist to medical insurance organizations as rational pharmacotherapy experts; 5) the participation of clinical pharmacist in the development of the national e-Health system; 6) the implementation of the development basic principles of clinical pharmacy services in hospitals and pharmacies; 7) the introduction of discipline "Clinical Pharmacy" in the training for doctors of all specialties (format 2 credits); 8) the creation of drugs information centres in medical universities.

Conclusion: The successful modern clinical pharmacy development in Ukraine can be made with implementing next 4 steps: staff restructuring in the hospitals; GPP implementing in pharmacies; the pharmacovigilance system development and National Drug Policy.

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