It is my great honour to serve you as the 15th President for the International Association of Therapeutic Drug Monitoring and Clinical Toxicology (IATDMCT) for the term 2019-2021, following the excellent past Presidents.

I am the first President elected from non-European and non-American members. I greatly appreciate the support from the IATDMCT membership worldwide. At the same time, you may recognize this is an important symbolic message that the IATDMCT has become a true international association. Actually, we have members from many countries and regions around the world. The mission of the IATDMCT is the promotion and advancement of the discipline of therapeutic drug monitoring (TDM) and clinical toxicology (CT), through Integration, Innovation and Influence on clinical science and practice.

The major activity is drug exposure-based quantitative integration of pharmacology and toxicology, resulting in continuous methodological and technological innovation enhancing scientific understanding and knowledge, which in turn has an impact on optimized medication therapies and maximized clinical benefits and human health. The core activities of the Association are the Annual Congress and Scientific Committees. Currently, we have 10 Scientific Committees with a variety of fields and we are about to launch a new Scientific Committee on ‘TDM of Biologics’. The Annual Congress is an important opportunity for members to learn the latest scientific knowledge and exchange research outcome and experiences, together with renewing mutual friendships. The Congress 2020 will be held in Banff, Canada and the Congress 2021 will be in Rome, Italy. I very much look forward to meeting all of you at the coming IATDMCT congresses.

We have currently members from about 70 countries and regions of 6 continents. The association has large diversity in membership. This diversity includes not only professional backgrounds but also different achievement of implementation of TDM and CT in different countries, but we all share a common goal. IATDMCT is offering educational activities for people who want to learn TDM and CT. The Member Resources Area of the IATDMCT web page provides you a variety of repository information and learning materials. I hope this will provide useful educational contents.

‘Therapeutic Drug Monitoring’ is the official journal of our association. The Editorial team completed transition last year from former Editor-in-Chief Michael Oellerich to new Editor-in-Chief Uwe Christians. I sincerely thank Michael Oellerich for his outstanding service and great contribution to the Journal. We expect Uwe Christians and his team will continue to serve and improve our Journal in order to increase the impact and visibility of the TDM and Clinical Toxicology sciences.

Precision Medicine has reached an outstanding success in oncology over the past decade. However, the Precision Medicine algorithm should include ‘right dosing’ as well as right medicine for the right patient. We are facing the era of precision dosing.

‘Time has come to the IATDMCT.’

I am pleased to work for the IATDMCT and members at this very important age and I look forward to moving forward with all of you.

“We may be separated by geography but we are united by science.”
Dr. Michael Neely visited Argentina and delivered a hands-on introductory workshop in Pmetrics and BestDose

By Paula Schaiquevich and Paulo Caceres Guido, Pediatric Hospital Garrahan, Buenos Aires, Argentina

Dr. Michael Neely, a longstanding IATDMCT member, delivered a lecture on the basis of pharmacometrics with special emphasis on the nonparametric approach and the importance of using pharmacometric tools for optimal individualization of drug therapy for routine patient care. Dr. Neely presented several examples regarding TDM of voriconazole and busulfan in the paediatric population at a clinical center of his home country and a comparison among mathematical approaches and methods for TDM in different well-established clinical centers. He also emphasized common mistakes in sampling collection times and therefore the need of obtaining reliable data to properly guide drug therapy and working with a multidisciplinary team.

In Argentina, pharmacometrics is still incipient and only few personnel of the health system are involved in TDM and optimal drug treatment. More than 70 participants enjoyed Dr. Neely’s presentation including physicians (specialists and clinicians), pharmacists, biochemists, nurses and several employees from the national authority of health (ANMAT). This was an excellent opportunity to educate and promote TDM with a special focus on pediatric drug optimization.

In addition, Dr. Neely delivered a hands-on introductory workshop in Pmetrics and BestDose. A group of researchers from Argentina and Uruguay participated in this workshop interested in the nonparametric approach for pharmacometric analysis and in support tools intended to individualized drug therapy.

The workshop was organized under the auspices of Sandoz, Lab. Montpellier and Fundación Garrahan by Dr. Schaiquevich and Caceres Guido.

On behalf of the organizing committee and attendants, we want to express our gratitude to Dr. Neely for sharing his experience on pharmacometrics and TDM in the pediatric population and hope that he could flavor the beauty of Buenos Aires, Argentina.
WELCOME THE NEW MEMBERS OF IATDMCT COMMITTEES

Young Scientist Committee
Samiksha Ghimire - I work as a postdoctoral researcher at the department of Clinical Pharmacy and Pharmacology, University Medical Center Groningen, the Netherlands. In 2015, I received a master’s degree in Medical Pharmaceutical Sciences. I obtained a PhD in clinical pharmacology of anti-TB drugs in 2019. My PhD research focused on establishing or revising the doses of currently used anti-TB drugs by understanding the triangular relationship between drug doses, exposure and response in individual TB patients. In addition, I have a long standing interest in evaluating and developing alternative samples for therapeutic drug monitoring such as saliva and dried-blood spots collected utilizing limited sampling time points. The research is conducted both in the Netherlands and Nepal. I am delighted to be a member of young scientist committee. As a member of alternative sampling strategies committee and anti-infective drugs committee, I strive to support and promote knowledge in the field of alternative samples for TDM and anti-infective drugs.

Sophie Stocker – She is a Senior Hospital Scientist in the Department of Clinical Pharmacology and Toxicology at St Vincent’s Hospital, Sydney. She is also a senior conjoint lecturer of the St Vincent’s Clinical School, University of New South Wales. Her research program involves clinical and experimental pharmacology, ethnopharmacology, pharmacogenomics, therapeutic drug monitoring, pharmacometrics and qualitative research on the impact of intrinsic and extrinsic factors on drug disposition, efficacy and safety. Her research focuses on understanding variability in response to medicines and how this can be managed to optimise patient care.

TDM of biologics Committee
Zoë van Kempen - I am a neurologist working at the Amsterdam MS center located at the Amsterdam University Medical Centers in the Netherlands. During my residency, a special interest sparked for multiple sclerosis (MS) as it affects young individuals in the prime of their lives. I completed my residency in a large non-academic hospital and was attracted to projects that increase efficiency in health care.

Combining my ambition for efficient use of healthcare and my passion for MS, I set up a multicenter trial studying therapeutic drug monitoring of natalizumab in relapsing remitting MS patients. Over 85% of patients needed less infusions resulting in less hospital visits, immense cost reduction and decreased risk of serious complications. We are currently working to validate and implement this approach in the Netherlands. Furthermore, I am working on other projects for personalized dosing in MS. I truly believe we can gain so much by personalized medicine and am excited to be a part of the scientists committee of the IATDMCT.

Alternative sampling strategies committee
Melanie Bailey - I am a Reader (Associate Professor) in Forensic Analysis at the University of Surrey, UK. I have worked as an Expert Consultant of the international Atomic Energy Agency to develop new methodologies in forensic science. I currently work with local government, industry and police to develop new methods for recovering information from fingerprints. My research group are exploring the possibility of carrying out illicit and therapeutic drug testing from fingerprints. We also have a project which is exploring “omics” from fingerprints to assist with diagnosis of different diseases. I am excited about working with the alternative sampling strategies committee to see how fingerprints can complement the information given by other matrices.

Pharmacogenetics Committee
Dr. Jesse Swen - I’m an associate professor of pharmacogenetics and clinical pharmacist-pharmacologist at the Department of Clinical Pharmacy & Toxicology, Leiden University Medical Center. I’m the chair of the personalized medicines laboratory of the hospital pharmacy. My research efforts are in 2 areas. First, I’m interested in finding genomic biomarkers for the response to pharmacotherapy in oncology. Second, I’m interested in the clinical implementation of pharmacogenomics. I’m one of the primary investigators of the “Ubiquitous Pharmacogenomics” project (www.upgx.eu). This project aims to implement pharmacogenetics across 7 European sites by genotyping 8,100 patients. I have published multiple papers on the identification of barriers for clinical implementation of pharmacogenomics and the development of approaches to overcome them. In addition I (co)authored pharmacogenomic guidelines and am an active member of the Dutch Pharmacogenetics Working Group and the Clinical Pharmacogenetics Implementation Consortium. Within IATDMCT I will be following in the footsteps of Prof. Vincent Haufroid as chair of the Pharmacogenetics Committee. I very much look forward to leading this committee together with Prof. Nicolas Picard and hope to meet you all in Banff!
FINGERPRINTS - AN ALTERNATIVE SAMPLING MATRIX FOR THERAPEUTIC DRUG MONITORING?

By Melanie Bailey, Catia Costa, Cecile Frampas, Mahado Ismail, Min Jang, Katie Longman, University of Surrey, UK

On behalf of the Alternative Sampling Strategies Committee

Fingerprints have been used for a long time in forensic science to provide an association between a suspect and a crime scene. Although fingerprints are generally only used in forensic investigations to identify a suspect using characteristic ridge patterns, there is increasing interest in the forensic community for using a fingerprint for more than only its ridge detail (1). Natural fingerprints consist of excreted eccrine sweat, as well as traces of substances that a donor has come into contact with. In forensics, this means a fingerprint might be used to determine recent activities of an offender. For example, a number of recent articles have shown that drug residues can be detected in a fingerprint (2-4). It follows that a fingerprint could have much broader utility than identity determination, and here we consider the possibility of using a single fingerprint for drug testing.

A fingerprint provides some attractive advantages for drug testing, because fingerprint samples can be donated by patients quickly and painlessly, and are easy to transport and store. Additionally, the ridge details embedded in a fingerprint can be used to ensure traceability. In a drug testing scenario, a finger can be washed prior to deposition of a fingerprint, with the aim of removing environmental contaminants. Ismail et al. showed that cocaine and its metabolite benzoylecgonine, as well as heroin and its metabolite 6-AM, can be detected in the fingerprints of drug users before and after hand washing (5). It has also been shown that it is possible to distinguish between ingestion and contact with cocaine and/or heroin via consideration of relevant metabolites (6). Costa et al. additionally showed that the ridges of a fingerprint can be visualised prior to rapid analysis using paper spray mass spectrometry (7).

As well as illicit drugs, a number of therapeutic drugs have also been detected in fingerprints. For example, Goucher et al detected lorazepam and its glucuronide in pooled fingerprint samples (8). Costa and Frampas demonstrated that the antipsychotic drug quetiapine could be detected alongside its metabolite in fingerprint samples, using both a rapid (1 minute) paper spray mass spectrometry screening test and lengthier liquid chromatography mass spectrometry as a confirmation test (9).

A drawback of fingerprint testing is the current inability to make quantitative measurements of drug levels. Although it has been possible to show that contact residues can be removed from a fingerprint, there is no standard fingerprint, making validation difficult (10). There is furthermore data on whether a fingerprint can relate to (for example) blood plasma levels of a drug. Future studies should explore this, as well as strategies to account for or control the sample volume. An early approach used creatinine normalisation to smooth the elimination profile of lorazepam, but this approach needs further validation (8).

Even as a qualitative test, a fingerprint could still offer some advantages to the drug testing community at large. For example, it might be used by a patient to demonstrate to a clinician that they are compliant with a medication regime. Alternatively, a fingerprint may find utility in clinical trials as a quick and painless test to ensure that participants are adhering to their treatment. Other possible uses for fingerprints are for drug screening in prisons, probation and custodial settings. The potential range of applications for this technology is largely unexploited and there is certainly great scope for future work in this area.

References


REPORT ON THE SYMPOSIUM THERAPEUTIC DRUG MONITORING OF IMMUNOSUPPRESSANTS: CLINICAL CHALLENGES AND ANALYTICAL ISSUES AT THE 16TH CONGRESS OF THE ASIAN SOCIETY OF TRANSPLANTATION

By Dr. Smita Pattanaik, Emory University, Chandigarh, India

The 16th congress of the Asian Society of Transplantation was held in New Delhi, India from 29th of September to 2nd of October 2019. This was the joint meeting of 30th Annual Conference of Indian Society of Organ Transplantation (ISOT), 5th Centre for Liver and Biliary Sciences (CLBS) Symposium, Annual Meeting of Indian Society for
The symposium “Therapeutic Drug Monitoring of Immunosuppressants: Clinical Challenges and Analytical Issues” was held on 2nd October 2019. The scientific session was hosted by the President of Indian Society of Organ Transplantation, Dr. Anant Kumar introducing the speakers to the audience followed by opening remarks by Dr. Smita Pattanaik, to emphasize the importance of TDM of ISDs. The audience was appraised about the current status of organ transplantation in India and shared the statistics of the Global Observatory on Donation and Transplantation data of 2017, which states that India has the second largest transplantation program in the world preceded only by the United States. She also presented the data about the rapidly increasing cadaveric transplantations in India. This presentation set the stage for the first talk by Dr. Amitava Dasgupta, who spoke on “Why Liquid chromatography combined with mass spectrometry is the gold standard for monitoring immunosuppressants”. He discussed the strengths and weaknesses of the immunoassay, especially the problem of non-specificity, laboratories using immunoassays adjust reference ranges accordingly to keep it a little higher than the recommended range by the LC-MS/MS method. However, whenever a drug concentration estimated by immunoassay does not match clinical picture, the sample must be sent to a reference laboratory for confirmatory testing using LC-MS/MS.

Though LC-MS/MS instrument is expensive compared to the immunoassay analyzers, the recurring cost of the reagents etc. are very less compared to the immunoassay analyzers, the specific mass spectrometry methods coupled with high sensitivity, certainly has impressed the TDM community to adopt it increasingly. Though majority of the transplant centres rely on immunoassay methods for clinical care, LC/MS-MS method is certainly called in where there is ambiguity and confirmation is needed. The second talk was by Dr. Pattanaik, who spoke on the “Special Challenges of the Therapeutic Drug Monitoring of Immunosuppressant Drugs in the Indian subcontinent”. She deliberated on the TDM framework existing in India which is either academic medical centre based or private owned standalone laboratories. Majority of the TDM for patient care is dependent on these laboratories as only a handful of medical centres perform TDM. She also emphasised that increasing involvement of clinical pharmacologists and clinical pharmacists are needed for a well-developed support system to foster for the transplant surgeons and physicians in the developed countries helping them to rely on the accuracy of the assay, proposing drug dose adjustments using principles of pharmacometrics and model informed precision dosing and handling drug interactions. The third talk was by Dr. Feroz Aziz on “Clinical and analytical issues of therapeutic drug monitoring of immunosuppressants”. Although LC-MS/MS is the gold standard for TDM of ISD, approximately 80% hospital laboratories in US use immunoassays for monitoring ISD because of the ease of performance of the test and less upfront investment for setting up the logistics. LC-MS/MS analysis requires expert technologists and the equipment cost is (around $250,000) also high. Since the immunoassay is known to suffer from non-specificity, laboratories using immunoassays adjust reference ranges accordingly to keep it a little higher than the recommended range by the LC-MS/MS method. However, whenever a drug concentration estimated by immunoassay method does not match clinical picture, the sample must be sent to a reference laboratory for confirmatory testing using LC-MS/MS.

At the end of the 3 talks there was an open house discussion, where the audience raised the queries mostly regarding issues they face in day to day patient care and TDM based dose-modifications. Dr. Pattanaik and Dr. Dasgupta addressed them and also offered some of the possible alternative approaches to deal with them. Finally, Dr. Feroz Aziz summarized the proceedings with take home messages and concluded the symposium thanking both the speakers and the audience to make it a success.
Critically ill patients on the intensive care unit (ICU) are known for being amongst the most complex and expensive within healthcare. In this population 70% receive antibiotics during their stay on the ICU. This indicates that bacterial infections are prevalent. Despite these high numbers, both incidence of infections and associated mortality in the ICU have not improved in the last 30 years. International studies, amongst all the DALI study(1), and own research have shown that the current standard treatments, a ‘one-dose-fits-all’ approach, are not adequate for many patients. Suboptimal exposure can lead to longer ICU and hospital stay and eventually higher health costs. With a multidisciplinary collaboration between the departments of Hospital Pharmacy, Intensive Care and Medical Microbiology and Infectious Diseases, coordinated from Erasmus University Medical Center (The Netherlands), we want to further investigate and address these issues.

Critically ill patients undergo extensive physiological alterations that will have impact on antibiotic pharmacokinetics. Augmented renal clearance is prevalent, even with normal serum creatinine levels. Frequent changes in the renal function, volume of distribution and extravascular loss of fluids are also prevalent, which results in even more variability. Furthermore, parameters frequently used in patients on the regular wards, such as the above mentioned serum creatinine, might not be reliable in ICU patients.

Dosing regimens used are designed for non-severely ill patients and derived from studies in healthy volunteers. This results in a reported target attainment of only 60% of beta-lactam use in ICU patients(1). Ciprofloxacin, a fluoroquinolone has a reported target attainment of less than 30% in ICU patients(2). Not reaching these targets increases the chance of therapeutic failure, resulting in increased mortality, morbidity, and antibiotic resistance. In our former EXPAT study, we also observed these numbers.

Given the problems described above, it is surprising that dose individualization of beta-lactams and fluoroquinolones is hardly practiced in ICU patients. However, randomized controlled trials (RCT) with primary patient outcomes showing the benefit of TDM are lacking so far. In light of this knowledge, the DOLPHIN trial (Dose individualization of Antibiotics in ICU patients: to TDM or not to TDM and the effects on outcome was designed(3). The DOLPHIN trial is a multi-centre RCT investigating whether early model-based therapeutic drug monitoring of beta-lactams and fluoroquinolones is superior to standard drug dosing on clinical outcome in critically ill patients. Other outcomes are survival, disease severity, safety, quality of life after ICU discharge, and cost effectiveness will be included. Patient enrollment has already started. The trial is anticipated to include 450 patients in 8 ICUs in the Netherlands over a 24-month period. The design is quite unique in TDM studies, since it uses clinical endpoints as outcome parameters. At the moment, we have included 200 patients.

Patients are being randomized into two study groups: the intervention group, in which a dose advice will be communicated on the same day as sampling; and the control group, in which no dose advice will be given and samplings will be analyzed in bulk later. Within 36 hours of starting antibiotics, the first trough and peak sample will be collected. Sampling will be repeated every 48 hours until the 7th day of admission or cessation of the target antibiotic.

Dose advice will be generated with peer-validated models on a cloud-based service called InsightRX. InsightRX is precision dosing software, which is used to determine an individualized, effective and safe dose with greater accuracy using quantitative pharmacology models and Bayesian forecasting.

Until now, the effect of early TDM of beta-lactam and fluoroquinolones on clinical outcome in the critically ill has not yet been investigated in a multi-centre RCT. This makes the DOLPHIN trial unique in its field, its findings may lead to new insights and more evidence based clinical management of ICU patients receiving antibiotics. In near future we will come back with updates on the study.

The DOLPHIN study team: Alan Abdulla, Tim Ewoldt, Henrik Endeman, Anouk Muller, Birgit Koch and many others

References:

ASSESSING BIOEQUIVALENCE OF TOPICAL DRUG PRODUCTS BY TAPE-STRIPPING THE STRATUM CORNEUM. ARE WE THERE YET?

By M. Begeña Delgado-Charro, PhD, FHEA, FAPS, Department of Pharmacy and Pharmacology, University of Bath, Bath, UK

On behalf of the Alternative Sampling Strategies Committee

The stratum corneum (SC) or outermost layer of the skin, has been sampled to assess chemicals (wanted and unwanted) exposure and permeation, and to extract biomarkers related to the skin and systemic health. Intercellular lipids and keratin filled corneocytes are remarkably
structured in this thin membrane (10-20 µm) as to present a formidable barrier to chemical penetration and to water loss. Epidermal differentiation is highly regulated, on average the SC is completely renewed every 2 weeks, a process accelerated following barrier disruption and elevated transdermal water loss (TEWL). Whilst sampling the SC is not novel, the potential regulatory acceptance by EMA of the tape-stripping technique as a tool with which to assess bioequivalence (BE) has raised great interest among drug developers and pharmaceutical scientists. Topical delivery is convenient to treat dermatological and local conditions; the area involved is targeted and systemic exposure is diminished. However, establishing the BE of topical drug products is challenging both following innovator product changes and to support generic applications. Until recently, the vasoconstriction test for corticosteroids and clinical trials were the main tools available to establish topical BE. With a few exceptions, topical delivery does not lead to measurable systemic drug levels so the standard pharmacokinetic based BE assessment is often impractical. The topical classification system, an approach inspired by the biopharmaceutics classification system (BCS) – based bio waivers failed to get support. Waivers for oral IR products containing BCS 1 class actives enable establishing BE through in vitro release tests [2] based on the assumption that formulation impacts primarily on drug release, a step subsequently followed by drug absorption. In contrast, topical formulations impact directly upon both the release and absorption of an active. Indeed, to attain effective drug delivery through the SC, excipients and solvents often modify drugs diffusivity across and/or the partitioning into this barrier. Currently, the complex interactions between topical products and the skin barrier cannot be adequately simulated with artificial membranes and thus, in vitro release tests are considered as a quality tool only. Current consensus among skin scientists, is that surrogate methods must incorporate the skin as in the case for in vitro skin permeation tests, open flow micro perfusion and micro dialysis methods, and tape-stripping (TS) of the SC. So far, the FDA approach to topical BE has focused on developing product-specific guidelines whereas the EMA released a draft guideline on quality and equivalence of topical products for public consultation on October 2018 until June 2019 [1]. In the latter, the methods considered suitable for equivalence testing with respect to efficacy in lieu of a clinical therapeutic study include permeation kinetics studies (in vitro skin permeation; stratum corneum sampling (TS), pharmacokinetic bioequivalence and pharmacodynamic studies (vasoconstriction assay for corticosteroids and anti-septic and anti-infective studies) [1]. Until recently, only the PMDA accepted TS as a surrogate method for topical BE and the potential acceptance by EMA recognizes the substantial development and optimization of the method in recent years. The protocol described on the EMA draft guideline differs from the PMDA method and is based on the “two-times method” an improved procedure developed by Bunge [2,3] to overcome the flaws and limitations observed in a previous protocol proposed by a draft, FDA guideline, later withdrawn. Briefly, reference and test products are applied on the forearm of healthy volunteers. After the “uptake time”, the formulations are removed and the skin is cleansed. The cleansed sites are tape-stripped either immediately (uptake samples) or after an additional period of time “clearance time” (clearance samples). The amount of SC sampled with each tape is determined and the drug is extracted from the tapes and quantified. The method is combined with transepidermal water loss measurements to estimate the depth of SC reached and ensure sufficient sampling [2-4]. In addition, to demonstrate the power of the protocol to discriminate non-equivalent products a negative control is required [5]. The equivalence parameters: mass of drug recovered from the uptake and clearance sites, are statistically compared, according to the EMA Guidelines on the Investigation of Bioequivalence [2-5].

A priori, TS may look simple, yet this laborious procedure (Fig.1) requires thoughtful and careful implementation [2-5]: (a) potential artefacts due to drug lateral diffusion are avoided by tape-stripping within the application area, (b) accounting for inter- and intra-subject variability by site replication within subjects and testing both products in all subjects, (c) a cleaning procedure that removes residual formulation from the skin but neither pushes nor extracts drug from the SC, (d) ensuring complete (75%) SC sampling by TEWL measurements as an equal number of tapes reaches different relative SC depths across subjects, (e) inclusion of the first two tapes into the analysis as they contain a large fraction of the drug absorbed, (f) validation of extraction and quantification methods, including correct grouping of tapes to improve analytical power and (g) measurement of the SC sampled in each tape, done by either relatively tedious gravimetric methods, by measurement of SC lipids or proteins or by imaging techniques.

Fig 1: Tape strip containing stratum corneum (SC). Up to 20-30 tapes can be taken per skin site, and 12 skin sites are required to compare test, reference and negative control (uptake and clearance samples, two replicates). The mass of drug and SC must be determined from all the tapes.

Compared to the (also proposed by EMA) in vitro permeation studies, tape-stripping accounts for circulation effects and enables testing over an extended time including application of multiple doses; however, it only samples the SC. In summary and to be fair: “all surrogate tests have limitations but they do not all have the same limitations”. It follows that the results of one test complement those of another and that topical BE assessment can be accomplished through the use of appropriately selected in vitro and/or in vivo surrogate tests.

References

When looking at the performance of a journal, the first thing that comes to mind is the impact factor. With 2.047, Therapeutic Drug Monitoring’s impact factor did not improve this year. This may seem a bit disappointing, but it also did not drop as most other journals in the same field. This led to Therapeutic Drug Monitoring climbing in the rankings of journals in the relevant fields of Pharmacology and Pharmacy, Toxicology and Medical Laboratory Technology. We hope that our ranking will further improve in the next years. In this regard, consensus documents have played and will continue to play an important role. Additionally, we hope that the introduction of focus review series will further boost the importance and impact of Therapeutic Drug Monitoring. Currently ongoing focus topics are “Therapeutic Drug Monitoring and Clinical Toxicology during Pregnancy and Nursing” and “Therapeutic Drug Monitoring in Oncology”. Nevertheless, it is also critical to attract more high-quality and high-impact original articles. One important incentive for authors to consider Therapeutic Drug Monitoring is the review process and especially the time from submission to first decision. This time dropped from an average 41.3 days the previous year by 25.9% to 30.1 days 2019. The main reason for this substantial improvement was that our reviewers turned manuscripts around much faster. Comprehensive and constructive reviews are essential for the quality and success of our journal. As such, they take a lot of time, effort and expertise on behalf of the reviewers. Reviewers provide expert guidance to the authors and the reviews significantly improve the quality of submitted manuscripts. However, as the review process is inherently anonymous, reviewers never receive the recognition they deserve. Therefore, as last year, Therapeutic Drug Monitoring, the official journal of IATDMCT, has decided to honor the ten top reviewers of the year with the Best Reviewer Awards.

On behalf of the Editor-in-Chief, Dr. Uwe Christians, the Editorial Office and IATDMCT would like to extend the sincerest appreciations and congratulations to the 2019 award winners:

- Anders Asberg, School of Pharmacy, University of Oslo, Oslo, Norway
- David Berry, Independent Toxicology Consultant, East Grinstead, West Sussex, United Kingdom
- Christoph Hiemke, Department of Psychiatry and Psychotherapy, University of Mainz, Mainz, Germany
- Zhengjiao, Clinical Pharmacy Laboratory, Huashan Hospital, Fudan University, Shanghai, China
- Cecilie Johanessen Landmark, Department of Life sciences and Health, Oslo Metropolitan University, Oslo, Norway
- Anil Maharaj, Department of Pharmacometrics, Duke Clinical Research Institute, Durham, North Carolina, USA
- Michael Reed, Department of Pediatrics, Case Western Reserve University, Cleveland, Ohio, USA
- Oliver Scherf-Clavel, Institute for Pharmacy and Food Chemistry, Julius-Maximilians University Würzburg, Germany
- Cristina Sempio, Department of Anesthesiology, University of Colorado Anschutz Medical Campus, Aurora, Colorado, USA
- Ksenia Zagorodnikova, Department of Therapeutics and Clinical Pharmacology, North-Western State Medical University, St. Petersburg, Russia

We grade each reviewer based on both the quantity, quality and turnaround time of the work and these ten reviewers received top grades for their outstanding commitment to our journal in 2019.

It is the hope of IATDMCT and the Editorial Office that this award and the certificate sent to the awardees will show that these reviewers’ exceptional commitment to the academic peer-review process and Therapeutic Drug Monitoring is highly appreciated.

**THERAPEUTIC DRUG MONITORING**
**A LOOK BACK AND INTO THE FUTURE**

By Erik DeBloois, Managing Editor, Therapeutic Drug Monitoring

- Christina Sempio, Department of Anesthesiology, University of Colorado Anschutz Medical Campus, Aurora, Colorado, USA
- Ksenia Zagorodnikova, Department of Therapeutics and Clinical Pharmacology, North-Western State Medical University, St. Petersburg, Russia

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**2020 IATDMCT MEMBERSHIP RENEWAL REMINDER**

We are proud to announce that there were 575 members in 2019. We look forward to inspiring many further colleagues who share with us the idea of an optimized and personalized drug treatment to join us in IATDMCT.

Please ensure you renew your membership in order to retain your IATDMCT member benefits.

**Also benefit from a 10% discount if you pay for 2 years.**

Join us in maintaining the IATDMCT membership at a high level!

Visit the website [www.iatdmct.com](http://www.iatdmct.com) to complete the renewal form.
Dr. Wei Qin received his PhD in Pharmacy (2015) from Peking Union Medical College and is currently working as a pharmacist in the China-Japan Friendship Hospital, located in Beijing, the host city of 2022 Winter Olympic Games. His professional interests focus on TDM of antibiotics, immunosuppressive drugs and the role of drug transporters in pharmacokinetics. His current projects include a National Natural Science Foundation of China (NSFC) project and a Fundamental Research Fund for the Central Universities. In addition, the lab he is working at mainly focuses on providing patients with the analysis of drug plasma concentration and drug gene polymorphism for individualized drug use.

H. (Herman) Veenhof, PharmD – In February of 2020 I will defend my thesis entitled ‘Implementing Dried Blood Spot sampling in transplant patient care’. My research focuses on analytical, clinical and practical requirements of DBS assay before they can be used in clinical care. I have worked in the University Medical Centre Groningen (UMCG), The Netherlands for the past 4 years under the supervision of Prof. D.J. Touw and Prof. J.W.C. Alffenaar. I am strongly interested in bringing novel micro sampling techniques to clinical practice. Especially, for immunosuppressant TDM. I hope I can continue to pursue these ambitions when I start my 4 year residency as a hospital pharmacist in 2020 in the UMCG.

Pharm D. Florencia Oricchio. (Chemistry University, Universidad de la República. Montevideo- Uruguay). I was born in 1992 in Uruguay. I work at the Therapeutic Drug Monitoring Service in “Hospital de Clínicas, Dr. Manuel Quintela” in Montevideo. We do extensive pharmacovigilance with a focus on the patient, looking for effective and safe therapies. My post grade research is called “Active Pharmacovigilance in the clinical setting”. Actually, I am evaluating therapeutic adherence in patients treated with mycophenolic acid by determination of plasma levels simultaneously to the application of questionnaire to the patient. The other two studies in which I am working are intensive pharmacovigilance of oral dosage forms of Cannabidiol and Quetiapine, both in the clinical setting. I attended the last IATDMCT congress in Foz do Iguacu and I really enjoyed it. I am so glad to join this great organization. I consider it as a huge opportunity to learn and share views with others members.

My name is Léonard De vinci Kanda Kupa and I was born in Kinshasa, capital of the Democratic Republic of the Congo, in 1986. I arrived in Brazil in 2008, where I conducted my academic studies through a Brazilian undergraduate scholarship program. In 2013, I received a bachelor degree on Pharmacy from the University of Blumenau. In 2015, I received a Master degree in Toxicology from the University of São Paulo. In 2019, I received a PhD degree also from the University of São Paulo. My thesis focused on TDM and PK/PD modelling of antibiotics. Both performed in real-time, at the intensive care burn unit of the Hospital of Clinics, which is the Medical School of the University of São Paulo. Currently, I am working as a postdoctoral fellow at the Department of Medical Clinic of the University of São Paulo where I am researching TDM of drugs for treatment of autoimmune diseases. It is my honour to be a member of the International Association of Therapeutic Drug Monitoring and Clinical Toxicology given its enormous importance in fostering education, research and practice in TDM and CT. My main areas of interest are new sampling strategies and optimization of bioanalytical methods (LC-MS/MS), pharmacokinetic modelling, and personalized medicine.

Dr. Andreas Austgulen Westin. I am an MD and clinical pharmacologist living in Trondheim, Norway. I work at the Department of Clinical Pharmacology at St Olav University Hospital, where we do both therapeutic drug monitoring (including antipsychotics, antidepressants, antiepileptics, antihypertensives, anticoagulants), and drugs of abuse testing, including post mortem toxicology. It is a great place to work. I was lucky to have Prof. Dr. Olav Spigset as my supervisor for my PhD thesis, titled: “The impact of pregnancy on maternal serum concentrations of antiepileptic, antipsychotic and antidepressant drugs. Evidence from therapeutic drug monitoring”, finished in 2018. After that, I have become interested in laboratory informatics, and how electronic health records (EHR) and laboratory information management systems (LIMS) interoperate. Currently I am part of a regional procurement and installation of a new EHR and LIMS in Mid-Norway.
EXPLORE NEW FRONTIERS IN THE CANADIAN ROCKIES!

Invitation to Attend IATDMCT Congress in Banff

The 18th International Congress of Therapeutic Drug Monitoring & Clinical Toxicology will be held in Banff, Alberta, Canada from Sunday, September 13 to Wednesday, September 16, 2020 – just a 90-minute scenic drive from the Calgary International Airport.

The theme for the congress is “Exploring New Frontiers in TDM and Toxicology”, with a global faculty of experts guiding us to new knowledge in the areas of Therapeutic Drug Monitoring and Clinical Toxicology. IATDMCT Banff 2020 will feature plenary presentations, symposia, short presentations, posters, and a commercial exhibit, plus a social program to promote active discussion and networking among delegates.

The modern conference facilities of the Banff Centre provide an excellent venue for the congress activities, and the magnificent natural surroundings of Banff National Park offer a unique Rocky Mountain experience for delegates. Those wanting to see and experience more of the Park or surrounding area may want to include some extra days in their itinerary.

We look forward to seeing you in Banff for IATDMCT 2020.

David Kinniburgh and Penny Colbourne
Co-Chairs, IATDMCT 2020

Scientific program

The scientific program is posted on the Congress website: www.iatdmct.org/events/iatdmct-congress.html.

The Congress Organizing Committee (David Kinniburgh, Penny Colbourne, Loralie Langman, Dylan Thomas, Nicolas Venisse, Gina Chew and Jennifer Martin) received many worthy proposals and had a difficult time creating a program that reflects a balanced representation of our members activities, interests, and geographic and member inclusivity. We hope the program will be educational, informative and enjoyable for all our delegates.

Abstract submission open for IATDMCT Banff 2020

The IATDMCT 2020 Congress scientific program committee invites you to submit abstracts of your original research. Abstracts can be submitted for presentation as a poster or oral presentation. The deadline for submission is March 31, 2020.

For more information, please refer to the Congress website: www.iatdmct2020.org

**IMPORTANT DATES**

March 31: Deadline for submission of abstracts
May 31: Abstract notification to authors
June 30: Deadline for early registration
September 13–16: IATDMCT Banff 2020
About Banff, Alberta

Banff National Park, established in 1885, is Canada’s oldest national park. With snow-capped Rocky Mountain peaks, turquoise glacial lakes, a picture-perfect mountain town and village, abundant wildlife and scenic drives, Banff is widely regarded as the flagship of the nation’s park system.

Over 3 million people visit the park every year for a variety of activities including hiking, biking, skiing and camping in some of the world’s most breathtaking mountain scenery. The Town of Banff was a service centre for tourism for about 100 years before it was incorporated as a governing municipality in 1990. And of course, the Rocky Mountains have been part of the traditional lands of Indigenous People for more than 10,000 years.

Banff has a rich and vibrant cultural and natural history, recognized globally by the United Nations, which designated the area of the Canadian Rockies as a UNESCO World Heritage Site in 1984.

The Banff townsite covers 3.93 square kilometres (2.5 square miles) and has an elevation of 1,383 metres (4,537 feet) making it the highest town in Canada.

Getting to Banff

It’s easy to get to Banff – which is just a 90-minute drive from the Calgary International Airport. Convenient airport-to-Congress shuttle services are available via the Banff Airporer. The Congress has arranged for a 15% discount on transfers from Calgary International Airport and the Town of Banff, through The Banff Airporer. The bus will bring delegates to the door of the Banff Centre, and will also make stops at various locations within Banff for those people who are staying at alternate locations.

The modern conference facilities of the Banff Centre provide an excellent venue for the congress activities, including accommodation and conference activities. Alternate hotel accommodations are available nearby in the town. See the Congress website for accommodation information.

Stay tuned for more information on the Congress and how to make the most of your visit to Banff and Banff National Park.

If you have any questions, please contact us at info@iatdmct2020.org.
IATDMCT COMPASS

The Compass is published quarterly by the International Association of Therapeutic Drug Monitoring & Clinical Toxicology and distributed to the members by the Association. Letters to the Editor must be signed and should not exceed 200 words in length. Chairs of Committees are requested to submit announcements and reports of activities.

All IATDMCT members are encouraged to send contributions to the editorial team of COMPASS about professional achievements, new books in relation to the aims of the society, or workshops and symposiums related to TDMCT and held under the auspices of the IATDMCT.

Deadlines for submission:
- 1st quarter issue: February 7
- 2nd quarter issue: May 7
- 3rd quarter issue: August 7
- 4th quarter issue: November 7

Views and reports appearing in Compass do not necessarily have the endorsement of the Association. Address general communications to the Editor care of the IATDMCT Head Office.

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MEMBER-GET-A-MEMBER CAMPAIGN 2020

Invite Your Friends and Colleagues!

Be active for the IATDMCT.
The top "Recruiter" will receive free registration for the IATDMCT Congress 2020!

Why Should You Participate?
- Every time you recruit a new member, you strengthen IATDMCT.
- A vital and growing IATDMCT means improved educational and networking opportunities for all members and advancement of TDM and CT worldwide.
- IATDMCT members recognize how beneficial their membership is in their personal lives.
- Get the word out about the benefits of IATDMCT membership!

Campaign Rules
- To receive credit for each new referral, the application form must include the name of the member who recommended them, and the application must be approved.
- The referral must be a paying member and must be enrolled for membership in order for the recruiter to be eligible for the prize of one free registration fee for the Banff Congress 2020.

How Do You Participate?
- Know your IATDMCT Member benefits.
- Contact potential members. Share how IATDMCT has benefited you, give them the IATDMCT Membership Application Form or direct them to Join IATDMCT on our website at http://iatdmct.org/member-join. The application form has a section for the new member to place your name as the person who recommended them for membership.
- Send an email to the IATDMCT Office with the potential member’s name and email address and the IATDMCT office staff will follow up with them personally.
- When the new member’s application arrives with appropriate payment and is approved, you will be advised by email.

Visit the IATDMCT webpage for complete participation details!