Mahmoud Soliman (8 papers)

1. Anti-Cancer Glycosidase Inhibitors from Natural Products: A Computational and Molecular Modelling Perspective
Ashona Singh, Ndumiso N Mhlongo, Mahmoud Soliman

Anti-Cancer Agents in Medicinal Chemistry (Formerly Current Medicinal Chemistry - Anti-Cancer Agents) (Impact Factor: 2.94). 05/2015; 15(999). DOI: 10.2174/187152615666150223123622

ABSTRACT The implementation of computational tools in pharmaceutics has proven an effectual strategy in creating harmony between the physical and chemical aspects of proteins and potential inhibitors. This is achieved by bringing to life the three dimensional retrospect of biological systems, which takes into consideration computational approaches such as quantum mechanics and molecular dynamics to facilitate drug design and discovery. In this work, we aim to provide a summary of the computational aspects of naturally derived anti-cancer inhibitors targeting the enzyme family of glycosidases. Our study offers insight into the evolution of drug discovery, molecular modelling and molecular binding modes of natural product inhibitors associated with glycosidase enzymes.

2. Single Active Site Mutation Causes Serious Resistance of HIV Reverse Transcriptase to Lamivudine: Insight from Multiple Molecular Dynamics Simulations
Soumendranath Bhakal, Suri Moonsamy, Mahmoud Soliman and Ross Walker

Cell biochemistry and biophysics (Impact Factor: 2.38). 05/2015

ABSTRACT Molecular dynamics simulations, binding free energy calculations, principle component analysis (PCA) and residue interaction network (RIN) analysis were employed in order to investigate the atomistic basis of the mystery of why the M184I single mutation leaves the HIV-1 reverse transcriptase (RT) totally resistant to lamivudine. Results showed that single mutations at residue 184 of RT caused; (1) distortion of the orientation of lamivudine in the active site due to the steric conflict between the oxathiolane ring of lamivudine and the side chain of beta-branched amino acids Ile at position 184 which, in turn, perturbs inhibitor binding, (2) decrease in the binding affinity by (~8 kcal/mol) when compared to the wild type, (3) variation in the overall enzyme motion as evident from the PCA for both systems and (4) distortion of the hydrogen bonding network and atomic interactions with the inhibitor.

The comprehensive analysis presented in this report can provide useful information for understanding the drug resistance mechanism against lamivudine. The results can also provide some potential clues for further design of novel inhibitors that are less susceptible to drug resistance.

3. Antipyrine–gamma cyclodextrin inclusion complex: Molecular modeling, preparation, characterization and cytotoxicity studies
Ramesh Gannimani, Amanda Perumal, Muthusamy Ramesh, Karen Pillay, Mahmoud Soliman, Patrick Govender
ABSTRACT A new inclusion complex for antipyrine with c-cyclodextrin was prepared by freeze-drying method. Molecular modeling approach revealed most favorable conformation of inclusion complex. The inclusion complex was characterized by solid state analytical techniques and NMR spectroscopy. The complex did not exhibit toxicity up to 500 mM concentration against MDCK-1 cells. Graphical abstract Molecular docking, semi-empirical and molecular dynamics studies were conducted for a, b and c-cyclodextrin-associated inclusion complexes of antipyrine. The results of molecular modeling were systematically analyzed to determine the stability of inclusion complexes. In preliminary computational screening, b and c-cyclodextrin inclusion complexes of antipyrine were found to be more stable as compared to a-cyclodextrin based on docking score and binding free energies. Further, inclusion complex of antipyrine with c-cyclodextrin was prepared by freeze drying method. Formation of the inclusion complex was investigated by solid state characterization techniques such as thermogravimetric analysis, differential scanning calorimetry, X-ray diffraction, Fourier transform infrared spectroscopy and scanning electron microscopy. The changes observed in decomposition temperature, diffractogram, vibrational frequencies and morphological appearance confirmed the formation of inclusion complex. In addition, results from 1 H NMR and 2D NOESY studies supported the inclusion phenomenon. The results obtained from computational studies were found to be in consistent with experimental data to ascertain the encapsulation of antipyrine into c-cyclodextrin. The inclusion complex was found to be non-toxic toward MDCK-1 cell lines. Thus, this approach may be helpful in the formulation of drug molecules using cyclodextrins.

4. In Silico Identification of Irreversible Cathepsin B Inhibitors as Anti- Cancer Agents: Virtual Screening, Covalent Docking Analysis and Molecular Dynamics Simulations
Mbatba Sbonigile, Mahmoud Soliman

DOI: 10.2174/1386207318666150305154621
Source: PubMed

ABSTRACT Cathepsin B is a cysteine protease that belongs to the papain superfamily. Malfunctions related to cathepsin B can lead to inflammation and cancer. Via an integrated in-silico approach, this study is aimed to identify novel Michael acceptors-type compounds that can irreversibly inhibit cathepsin B enzyme via covalent bond formation with the active site cysteine residue. Here, we report the first account of covalent docking approach incorporated into a hybrid ligand/structure-based virtual screening to estimate the binding affinities of various compounds from chemical databases against the cathepsin B protein. For validation, compounds with experimentally determined anti-cathepsin B activity from PubChem bioassay database were also screened and covalently docked to the enzyme target. Interestingly, four novel compounds exhibited better covalent binding affinity when compared against the experimentally determined prototypes. Molecular dynamics simulations were performed to ensure the stability of the docked complexes and to allow further analysis on the MD average structures. Per-residue interaction decomposition analysis was carried out to provide deeper insight into the interaction themes of discovered hits with the active site residues. It is found that polar and hydrophobic interactions contributed the most towards drug binding. The hybrid computational methods applied in this study should serve as a powerful tool in the drug design and development process.

5. G-Protein Coupled Receptors (GPCRs): A Comprehensive Computational Perspective
M Ramesh, Mahmoud Soliman

DOI: 10.2174/1386207318666150305155545
Source: PubMed
ABSTRACT GPCRs are ubiquitous in most of the organs of the human body. These receptors were found to be the important targets to attenuate inflammation, cancer, cardiac dysfunction, diabetes, etc. The advanced technologies employed on GPCRs provided an opportunity to understand the physiological process of various diseases. Recently, GPCRs were viewed as viable therapeutic targets to deliver safer and more efficacious drug. In the literature, several computational studies were reported to describe the biological mechanism, function and three-dimensional structure of GPCRs. These studies revealed the multiple conserved transmembrane domains of GPCRs which were connected by intra and extracellular loops. In this review, we provide an updated overview on the computational tools and methodologies which were conducted to explore the structural and mechanistic features of GPCRs. The study also demonstrates the most recent computer-aided drug design approaches employed on GPCRs. This review provides the information that can be exploited toward the molecular understanding of GPCRs with an aim to design the novel ligands for GPCRs.

6. Understanding the Cross-resistance of oseltamivir to H1N1 and H5N1 Influenza A neuraminidase mutations using multi-dimensional computational analyses

Mahmoud Soliman, Ashona Singh


ABSTRACT This study embarks on a comprehensive description of the conformational contributions to resistance of neuraminidase (N1) of H1N1 and H5N1 to Oseltamivir, using comparative multiple molecular dynamic simulations. The available data with regards to elucidation of the mechanism of resistance as a result of mutations, in H1N1 and H5N1 neuraminidase is not well established. Enhanced post-dynamic analysis such as principal component analysis (PCA), solvent accessible surface area (SASA), free binding energy calculations and radius of gyration (RG) were performed to gain precise insight into the binding mode and origin of resistance of Oseltamivir in H1N1 and H5N1 mutants.

Three significant features reflecting resistance in the presence of mutations H274Y and I222K, of the protein complexed with the inhibitor are: (1) reduced flexibility of the a-carbon backbone; (2) an improved $\Delta$Eele of $\sim$15 (kcal/mol) for H1N1 coupled with an increase $\Delta$Gsol of $\sim$13 kcal/mol from wild-type to mutation; a low binding affinity in comparison to the wild-type, of $\sim$2 kcal/mol and $\sim$7 (kcal/mol) with respect to each mutation for the H5N1 systems; and (3) a reduced hydrophobicity of the overall surface structure due to an impaired hydrogen bonding network. We believe the result from this study, will ultimately provide useful insight into the structural landscape of neuraminidase associated binding of Oseltamivir. Furthermore, the results can be used in the design and development of potent inhibitors of neuraminidases.

7. Possible allosteric binding site on Gyrase B, a key target for novel anti-TB drugs: homology modelling and binding site identification using molecular dynamics simulation and binding free energy calculations

Sarentha Chetty, Mahmoud Soliman

Medicinal Chemistry Research (Impact Factor: 1.61). 05/2015; 24(5):2055-2074. DOI: 10.1007/s00044-014-1279-3

ABSTRACT Although tuberculosis (TB) is a treatable disease, it still impacts highly on the morbidity and mortality of people in sub-Saharan Africa. This is largely attributed to drug resistance to the currently available drugs as well as co-infection with HIV. The emergence of multidrug-resistant and extensively drug-resistant TB has necessitated the urgent need for the development of new drugs. DNA Gyrase B, a previously validated target for the aminocoumarins poses an attractive enzyme to target for the development of novel potent drugs. Previous biochemical assays suggest that the inhibitor diospyrin, binds to a novel binding site, close to the ATP binding site of the N-terminal domain of Gyrase B. To date, however, no available crystal structure of diospyrin in complex with Gyrase B has been reported. Thus, to investigate the position of this potential binding site, a robust homology model was built and
validated, followed by docking and MD simulations. Thermodynamic calculations were used to estimate binding affinity. Binding free energy calculations revealed subtle differences in the binding at each site, however, the comprehensive computational analyses presented here, provide a substantially extensive illustration of the binding themes and affinities for each site, which offer value for the further design of novel inhibitors.

8. Heat Shock Protein 90 (Hsp90) as Anti-cancer Target for Drug Discovery: An Ample Computational Perspective
Hezekiel M. Kumalo, Soumendranath Bhakat, Mahmoud Soliman

Chemical Biology & Drug Design (Impact Factor: 2.51). 05/2015; DOI: 10.1111/cbdd.12582

ABSTRACT There are over 100 different types of cancer, and each is classified based on the type of cell that is initially affected. If left untreated, cancer can result in serious health problems and eventually death. Recently the paradigm of cancer chemotherapy has evolved to use a combination approach, which involves the use of multiple drugs each of which targets an individual protein. Inhibition of heat shock protein 90 (Hsp90) is one of the novel key cancer targets. Because of its ability to target several signaling pathways, Hsp90 inhibition emerged as a useful strategy to treat a wide variety of cancers.

Molecular modeling approaches and methodologies have become “close counterparts” to experiments in drug design and discovery workflows. A wide-range of molecular modeling approaches have been developed, each of which has different objectives and outcomes. In this review, we provide an up-to-date systematic overview on the different computational models implemented towards the design of Hsp90 inhibitors as anti-cancer agents. Although this is the main emphasis of this review, different topics such as: background and current statistics of cancer, different anti-cancer targets including Hsp90, the structure and function of Hsp90 from an experimental perspective e.g. X-ray and NMR are also addressed in this report.

To the best of our knowledge, this review is the first account, which comprehensively outlines various molecular modeling efforts directed towards identification of anti-cancer drugs targeting Hsp90. We believe that the information, methods and perspectives highlighted in this report would assist researchers in the discovery of potential anti-cancer agents.

Richard Caldwell
Description of an internal medicine outreach consultant appointment in western KwaZulu-Natal, South Africa, 2007 to mid-2014
Doc Caldwell; Bernhard Gaede; Colleen Aldous


ABSTRACT This is a description of an internal medicine outreach appointment in western KwaZulu-Natal Province (KZN), South Africa (SA), from 2007 to mid-2014, facilitated by the transport services of the Red Cross Air Mercy Service (AMS) and funded by the KZN Department of Health. The hospital visits represented ‘multifaceted’ as opposed to ‘simple’ outreach. The AMS database of outreach visits was analysed according to frequencies of visits, number of patient contacts and number of contacts with medical personnel. A brief history of the outreach visits is given and their nature described. From January 2007 to the end of June 2014, the outreach physician undertook 481 hospital visits and visited seven hospitals (out of 21) more than 40 times each. A total of 3 340 medical personnel contacts were made, and 5 239 patients were seen. Other internal medicine specialists undertook an additional 199 visits, during which they made 1 157 personnel contacts and saw 2 020 patients. The combined total was therefore 680 visits undertaken, 4 497 medical personnel contacts made and 7 259 patients seen. The appointment of a dedicated outreach consultant for a particular discipline together with a reliable air and road transport system was successful in providing access to
specialist care in rural settings. This strategy could be recommended throughout SA. Further studies would be required in order to assess outcomes.

**Preshani Reddy**
The management of stress urinary incontinence: A case report

**South African Journal of Physiotherapy 05/2015; 71(1 (2015)):1. DOI: 10.4102/sajp.v71i1.229**

**ABSTRACT** Introduction: Conservative management is the first option for patients with stress urinary incontinence (SUI). However, successful management of women diagnosed with SUI is dependent on a proper assessment and a tailored treatment plan. This case report aims to show the effectiveness of physiotherapy management in a 42-year-old patient diagnosed with SUI.

Patient presentation: The patient’s main complaints were involuntary loss of urine on coughing, sneezing and lifting of heavy objects, which started following the birth of her third child.

Management and outcome: The patient was taught the ‘Knack’ manoeuvre and provided with a tailored pelvic floor exercise programme. Improvement was noted at the third visit and the patient no longer had involuntary episodes.

Conclusion: This case report shows the successful outcome of conservative management in a patient with stress urinary incontinence.

**Rajesh Rane (co-authored)**
Recent Advancement in Discovery and Development of Natural Product Combretastatin-inspired Anticancer Agents


**Anti-Cancer Agents in Medicinal Chemistry (Formerly Current Medicinal Chemistry - Anti-Cancer Agents) (Impact Factor: 2.94). 05/2015; DOI: 10.2174/1871520615666150526141259**

**ABSTRACT** The natural stilbenoids combretastatin A-4 (CA4) and combretastatin A-1 (CA1) are potent antitubulin agents demonstrating antimitotic activity as well as tumor vascular disruption property. Due to structural simplicity and potent cytotoxicity of CA4 and CA1, they are considered as promising leads for the development of potent anticancer agents. In fact, scientific fraternity is motivated to synthesize several derivatives of CA4 and CA1 as novel therapeutic agents. In the literature, several studies have been carried out to evaluate the medicinal chemistry, pharmacology and structure–activity relationships (SAR) of a variety of modified combretastatin derivatives. The present report aimed at comprehensively revising the recent advancements (2006-2014) in the medicinal chemistry and SAR of diversified combretastatin analogues. The published data concerning new combretastatin A-4 analogues as antimitotic anticancer agents are presented and SAR is reviewed and discussed.
Rajesh Rane
Editorial (Thematic Issue: "Discovery and Development of New Anticancer Drugs Inspired from Natural Product Leads" Part 1)
Rajesh Rane, Rajshekhar Karpoormath

Anti-Cancer Agents in Medicinal Chemistry (Formerly Current Medicinal Chemistry - Anti-Cancer Agents) 05/2015; 15(5):2015. DOI:10.2174/187152061505150514130306

Hoosen Coovadia (co-authored)
Maternal age matters: for a lifetime, or longer
Haroon Saloojee, Hoosen Coovadia

The Lancet Global Health 05/2015; 44. DOI: 10.1016/S2214-109X(15)00034-0

Pregnancies in adolescents (10–19-year-olds) and in older women (≥35 years) are hazardous for the mother and the child. Despite an almost universal decline in the adolescent birth rate since 1990,1 adolescent fertility still accounts for 11% of all births worldwide,2 with 95% of these births occurring in low-income and middle income countries (LMICs).2 In 2014, the average global birth rate among 15–19-year-olds was 49 per 1000 girls (1 in 20), with startling differences in rates between countries (from 1 to 299 per 1000), the highest rates occurring in sub-Saharan Africa.3 Early marriage remains a strong factor underlying adolescent fertility, with most adolescent childbearing (90%) occurring within marriage,4 although premarital conception for first births that occur within marriage is common.1 Recently, attention has shifted towards identifying adverse outcomes in older mothers. In the USA, first-birth rates for women aged 35–39 years increased by nine times from the mid-1970s to 2012 (from 1·7 to 11·0 per 1000).5 Similar temporal trend data in LMICs are lacking. As described in The Lancet Global Health, 6 the COHORTS Collaboration was able to muster the enhanced statistical power of pooling data from 19 403 participants located in five birth cohorts in Brazil, Guatemala, India, the Philippines, and South Africa, to identify an increased risk of low birth weight, preterm birth, stunting at 2 years, failure to complete secondary schooling, and lower adult height in children of young mothers (≤19 years) compared with mothers aged 20–24 years. Although mothers aged ≥35 years had an increased risk of preterm birth, their children had less stunting and better school progression and adult height attainment, the latter two being novel findings in LMIC settings. This new evidence is both timely and important.

Kovin Naidoo (co-authored 2 papers)
1. Factors Affecting the Academic Performance of Optometry Students in Mozambique
Kajal Shah, Kovin Naidoo, Luigi Bilotto, James Loughman

Optometry and vision science: official publication of the American Academy of Optometry (Impact Factor: 2.04). 05/2015; DOI: 10.1097/OPX.0000000000000606

Source: PubMed

ABSTRACT The Mozambique Eyecare Project is a higher education partnership for the development, implementation, and evaluation of a model of optometry training at UniLúrio in Mozambique. There are many composite elements to the development of sustainable eye health structures, and appropriate education for eye health workers remains a key determinant of successful eye care development. However, from the first intake of 16 students,
only 9 students graduated from the program, whereas only 6 graduated from the second intake of 24 students. This low graduation rate is attributable to a combination of substandard academic performance and student dropout. The aim of this article was to identify factors affecting the academic performance of optometry students in Mozambique.

Nine lecturers (the entire faculty) and 15 students (9 from the first intake and 6 from the second) were recruited to the study. Clinical competency assessments were carried out on the students, semistructured individual interviews were conducted with the course lecturers, and a course evaluation questionnaire was completed by students. The results were combined to understand the complexities surrounding the optometry student training and performance.

One student out of nine from the first intake and three students out of six from the second were graded as competent in all the elements of the refraction clinical competency examination. Analysis of data from the interviews and questionnaire yielded four dominant themes that were viewed as important determinants of student refraction competencies: student learning context, teaching context, clinic conditions and assessment, and the existing operating health care context.

The evaluations have helped the university and course partners to better structure the teaching and adapt the learning environments by recommending a preparatory year and a review of the curriculum and clinic structure, implementing more transparent entry requirements, increasing awareness of the program, and improving Internet infrastructure.

2. Visual profile of students in integrated schools in Malawi
Dinesh Kaphle, Sanjay Marasini, Khumbo Kalua, Angela Reading, Kavin Naidoo.

Clinical and Experimental Optometry (Impact Factor: 1.26). 05/2015; DOI: 10.1111/cxo.12269

Source: PubMed

ABSTRACT Blindness and visual impairment are very common in African countries and are often loosely linked to inadequate resources. We designed this study to assess clinical visual and ocular characteristics of children in three integrated schools in Malawi, so that students needing low vision services or those with correctable refractive error will be identified.

We included 95 students, who underwent a detailed optometric examination. The assessment included distance visual acuity measurement in logMAR notation, near visual acuity, oculo-motor assessment, pupillary assessment and anterior as well as posterior segment evaluation. Non-cycloplegic refraction was done in all the participants.

Mean age of students was 13.84 ±4.61 years. Almost 90 per cent of students had presenting visual acuity worse than logMAR 0.54. Visual acuity improved significantly after refractive correction by more than two logMAR lines in 31.8 per cent (p < 0.0001). Refractive error was very common (36.5 per cent) and the most common causes of visual impairment were lenticular (21.2 per cent), corneal (20.0 per cent) and albinism (15.3 per cent). One-tenth (10.5 per cent) of the students were wrongly enrolled in the schools, even though they did not have visual impairment. The compliance to spectacles wear was very poor (37 per cent). An adequate refractive correction improved visual acuity in more than a third (36.5 per cent) of the students. Students benefited from spectacle magnifiers (18.8 per cent), handheld magnifiers (4.7 per cent) and telescopes (5.9 per cent). Mobility canes were advised for 36.5 per cent of the students.
Nine out of ten students in three integrated schools in Malawi had visual impairment and 41 per cent had low vision. Inappropriate placement in the integrated schools and poor spectacle compliance are very common. Well accepted optical and non-optical devices could improve visual performance in visually disabled children, for which public awareness and parental education is important.

**Damian Clarke (co-authored)**

**Toward a standard approach to measurement and reporting of perioperative mortality rate as a global indicator for surgery.**


*Surgery (Impact Factor: 3.11), 05/2015; DOI: 10.1016/j.surg.2015.03.024.*

**ABSTRACT** INTRODUCTION: The proportion of patients who die during or after surgery, otherwise known as the perioperative mortality rate (POMR), is a credible indicator of the safety and quality of operative care. Its accuracy and usefulness as a metric, however, particularly one that enables valid comparisons over time or between jurisdictions, has been limited by lack of a standardized approach to measurement and calculation, poor understanding of when in relation to surgery it is best measured, and whether risk-adjustment is needed. Our aim was to evaluate the value of POMR as a global surgery metric by addressing these issues using 4 large, mixed, surgical datasets that represent high-, middle-, and low-income countries.

METHODS: We obtained data from the New Zealand National Minimum Dataset, the Geelong Hospital patient management system in Australia, and purpose-built surgical databases in Pietermaritzburg, South Africa, and Port Moresby, Papua New Guinea. For each site, we calculated the POMR overall as well as for nonemergency and emergency admissions. We assessed the effect of admission episodes and procedures as the denominator and the difference between in-hospital POMR and POMR, including postdischarge deaths up to 30 days. To determine the need for risk-adjustment for age and admission urgency, we used univariate and multivariate logistic regression to assess the effect on relative POMR for each site.

RESULTS: A total of 1,362,635 patient admissions involving 1,514,242 procedures were included. More than 60% of admissions in Pietermaritzburg and Port Moresby were emergencies, compared with less than 30% in New Zealand and Geelong. Also, Pietermaritzburg and Port Moresby had much younger patient populations (P < .001). A total of 8,655 deaths were recorded within 30 days, and 8-20% of in-hospital deaths occurred on the same day as the first operation. In-hospital POMR ranged approximately 9-fold, from 0.38 per 100 admissions in New Zealand to 3.44 per 100 admissions in Pietermaritzburg. In New Zealand, in-hospital 30-day POMR underestimated total 30-day POMR by approximately one third. The difference in POMR if procedures were used instead of admission episodes ranged from 7 to 70%, although this difference was less when central line and pacemaker insertions were excluded. Age older than 65 years and emergency admission had large, independent effects on POMR but relatively little effect in multivariate analysis on the relative odds of in-hospital death at each site.

CONCLUSION: It is possible to collect POMR in countries at all level of development. Although age and admission urgency are strong, independent associations with POMR, a substantial amount of its variance is site-specific and may reflect the safety of operative and anesthetic facilities and processes. Risk-adjustment is desirable but not essential for monitoring system
performance. POMR varies depending on the choice of denominator, and in-hospital deaths appear to underestimate 30-day mortality by up to one third. Standardized approaches to reporting and analysis will strengthen the validity of POMR as the principal indicator of the safety of surgery and anesthesia care.

**Khathutshelo Percy Mashige (co-authored)**

A cross-sectional survey of optometrists and optometric practices in Ghana

**Samuel Bert Boadi-Kusi, Michael Ntodie, Khathutshelo Percy Mashige, Andrew Owusu-Ansah, Kwaku Antwi Osei**

Clinical and Experimental Optometry (Impact Factor: 1.26). 05/2015; DOI: 10.1111/cxo.12291

**ABSTRACT** The study was conducted to profile optometrists and optometric practices in Ghana.

An online survey was conducted among 146 optometrists, who were registered with the Ghana Optometric Association (GOA). It included questions on their demographics, equipment, ophthalmic procedures routinely conducted and the barriers to providing a full scope of optometric services.

Ninety registered optometrists (62 per cent) responded, their mean age being 28.97 ± 3.36 years. There were more males (68.9 per cent) than females and most had the Doctor of Optometry (OD) degree, the profession's highest degree in Ghana. There were more practitioners in urban centres (71.1 per cent) and most practices had basic optometric instruments, such as direct ophthalmoscopes, slitlamp biomicroscopes and retinascopes. Many optometrists routinely conducted direct ophthalmoscopy (100 per cent), slitlamp biomicroscopy (87.5 per cent) and contact tonometry (55.7 per cent); however, few provided contact lens (10.2 per cent) and low vision (9.1 per cent) assessments, with 76 per cent stating that it was due to the unavailability of low vision devices, poor sources of contact lenses (27 per cent) and perceived insufficient training (11.2 per cent). Many practitioners (97 per cent) reported the use of diagnostic pharmaceutical agents and therapeutic pharmaceutical agents (96.6 per cent). Most practitioners (52.9 per cent) preferred conferences for the delivery of continuous professional development over publications (26.4 per cent) and internet resources (12.6 per cent).

The data elicited in this study provide a basis for addressing the country's unmet eye-care needs and can be used to determine training and support guidelines for the profession.

**Gert Kruger (co-authored)**

Ninhydrin in synthesis of heterocyclic compounds

**Ghodsi Mohammadi Ziarani, Negar Lashgari, Fereshteh Azimian, Gert Kruger, Parisa Gholamzadeh**

ARKIVOC: archive for organic chemistry 05/2015; (vi):1-139. DOI: 10.3998/ark.5550190.0016.601

**ABSTRACT** Ninhydrin has been utilized in many heterocyclic preparations and considered as an important building block in organic synthesis. There is a wide range of reactions that include ninhydrin in the synthesis of heterocyclic compounds. This review highlights the advances in the use of ninhydrin as starting material in the synthesis of various organic compounds and
drugs in a fully comprehensive way, from its first isolation in 1910 to the end of 2013. There is also a diversity of multi-component reactions of ninhydrin and we highlight the recent reports in this review.

**Nesri Padayatchi (co-authored)**
Care of the patient with XDR-TB who has failed treatment
Karen Blake Jacobson, Matthew Tate, Francois Eksteen, Anthony Moll, Nesri Padayatchi, Gerald Friedland, Sheela V Shenoi


**ABSTRACT:** In early 2014, a man aged 46 years with HIV and a distant history of tuberculosis treatment was admitted to the communal medical ward of a district hospital in rural KwaZulu-Natal, South Africa, in respiratory distress. He was initially treated empirically for bacterial pneumonia. Sputum taken on day 5 of his hospital stay was positive for acid-fast bacilli with rifampicin resistance on line probe assay. After 11 days in hospital, his doctors learned that he had previously failed treatment for extensively drug-resistant (XDR) tuberculosis and had been discharged without being given further treatment options.

**Mosa Moshabela (co-authored)**
Jana Fried, Bronwyn Harris, John Eyles, Mosa Moshabela


**Source:** PubMed

**ABSTRACT** Achieving equitable access to health care is an important policy goal, with access influenced by affordability, availability, and acceptability of specific services. We explore patient narratives from a 5-year program of research on health care access to examine relationships between social constructions of illness and the acceptability of health services in the context of tuberculosis treatment and antiretroviral therapy in South Africa. Acceptability of services seems particularly important to the meanings patients attach to illness and care, whereas-conversely-these constructions appear to influence what constitutes acceptability and hence affect access to care. We highlight the underestimated role of individually, socially, and politically constructed healthworlds; traditional and biomedical beliefs; and social support networks. Suggested policy implications for improving acceptability and hence overall health care access include abandoning patronizing approaches to care and refocusing from treating “disease” to responding to “illness” by acknowledging and incorporating patients' healthworlds in patient-provider interactions.
Social support among HIV-positive and HIV-negative adolescents in Umlazi, South Africa: changes in family and partner relationships during pregnancy and the postpartum period

Lauren Hill, Suzanne Maman, Allison K Groves, Dhayendre Moodley

Source: PubMed

ABSTRACT Pregnancy is common among adolescents in South Africa, yet the social experiences of adolescents during the pregnancy and postpartum period remain understudied in this context. We aimed to explore how adolescent women's discovery and disclosure of both their pregnancy and HIV status affected their relationships with family members and sexual partners, with a particular focus on whether and how support changed throughout this time period.

We conducted in-depth semi-structured interviews with 15 HIV-positive and HIV-negative adolescent women who were either pregnant or had delivered in the last 18 months from one urban clinic in Umlazi, South Africa. Interviews were audiorecorded, transcribed, translated, and coded for analysis.

Young women described stress and instability in their relationships with family and partners during pregnancy and the postpartum period, though prior to and during HIV-status disclosure women generally experienced less stress than in disclosing their pregnancy to family members and partners. After a destabilizing period immediately following pregnancy disclosure, families became and remained the primary source of material and emotional support for the young women. Women discussed heightened closeness with their partners during pregnancy, but few women had close relationships with their partners postpartum. Support experiences did not differ by HIV status.

Programs should be aware of the relative importance of pregnancy-related concerns over HIV-related concerns in this population of young women. Engaging family members is critical in ensuring social support for this population of young pregnant women, and in encouraging timely initiation of antenatal care.