Quality and extent of adherence of Internal Medicine electronic discharge letters in a regional hospital in South Africa to standard guidelines. A retrospective audit.

by: Dr. Anthony Nya

Student No: NYXANT001

Supervisors:

Dr Tasleem Ras

Dr Clint Cupido

Dr Van de Schyff

Submitted in partial fulfilment of the requirements for the award of the MMED

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Declaration

I, Dr Anthony B.E. Nya, declare that this Research Report is my own, unaided work. It is being submitted for the degree of MMED Family Medicine at the University of Cape Town. It has not been submitted previously for any degree or examination at any other university or journal.

Signed by candidate

(Signature of candidate)

At Cape Town

26th day of August 2019

ABSTRACT

Background: Hospital discharge letters are an essential part of good patient record keeping that ensures transmission of the healthcare information of a patient from the hospital of admission to the primary care practitioner. These letters were traditionally handwritten, but the medical ward in Victoria hospital Wynberg in adapting to current progress in clinical record keeping has transited from paper to the use of electronic discharge letters.

Objectives: To audit the structure and contents of the electronic discharge summaries and find out to what extent they meet universally accepted criteria.

Methodology: A retrospective clinical record audit of 60 patient records was conducted, spanning a period of 12 months (January-December) of 2018. Sequential sampling was used to select five folders from each months' discharge records, making a total study sample of 60 patient records. A checklist of prescribed criteria was developed and used to collect data which was analysed descriptively. Ethical approval was obtained from University of Cape Towns'(UCT) Human Research Ethics Committee (HREC) and the Western Cape Government Provincial Research Committee.

Electronic discharge letters compiled in the period 1 January- 31 December 2018 with corresponding folders found properly indexed in the medical records department were included in the sample, while discharge letters where the folders could not be found were excluded, as were the folders of patients who died during the hospital admission.

Results: Nearly all clinical records contained biodata (100%), contact details (93%) and clinical details (93%). Only two-thirds of the folders contained information on other diagnoses(67%) and investigations matched clinical issues 63%.). The least compliant category was medication changes(53%), with just under half the folders containing this information.

Conclusion: This study found that clinical records met 67% of the standards that define clinical and medico-legal compliance in the internal medicine ward in Victoria Hospital Wynberg. Several areas for future intervention were identified. A useful audit tool was also developed for ongoing quality improvement cycle.

DEDICATION

In memory of my late father (Sir), Dr Emmanuel Essien Nya

17th Feb 1932 - 11th May 2016

Rest in Peace

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I would like to thank my supervisors Drs Ras, Cupido and Van de Schyff for guiding me throughout the years it took to start and complete this mini thesis. Dr Ras a shining example for a good guide. A big thanks to all the teachers in the Faculty of Health Sciences particularly in the department of family medicine. Thanks to Prof Hellenberg who guides like a loving father and Dr Elma de Vries who once helped guide me through the disaster of a flawed discharge process. To my family and friends in Cape Town and beyond especially Drs Sue Le Roux and Adele Anthony, thanks for all your help without which I would not have made it through the storms.

TABLES AND FIGURES

CHAPTER ONE: INTRODUCTION AND LITERATURE REVIEW

INTRODUCTION

Good clinical records are an essential component of good clinical care. It serves as a formal record of decision-making, as well as a means of communicating between members of the clinical team. As such, hospital discharge letters serve as a link between hospital-based and primary care doctors, providing for continuity of care. Discharge letters(DL) that are not comprehensive impact on this continuity of care principle and could increase clinical risk to the patient(1).

Internal audits on the quality of DL's from the adult medical ward of Victoria Hospital, Wynberg, Cape Town, revealed several deficiencies. In 2017, the department transitioned to electronic DL's (eDLs) using the Electronic Clinical Care Record(ECCR) software, with the expectation that the quality of DL's would improve.

This clinical audit studied the quality of these eDLs, and a comprehensive literature review was conducted prior to conducting the study.

AIMS AND OBJECTIVES OF THE LITERATURE REVIEW

The aim of this literature review was to study available knowledge on quality of discharge letters generate additional knowledge on the topic.

The study objectives included reviewing an appropriate sample of discharge letters written by doctors in the internal medicine ward of Victoria Hospital Wynberg(VHW) over the period of January 2018 to December 2018. The outcome to be studied was the quality of the eDLs compared against standards prescribed by the Health Professions Council of South Africa(HPCSA) as well as international best practise as defined in this literature review, acceptable quality defined as achieving 80 percent compliance with the HPCSA and international standard indicators of what constitutes a good eDL.

The literature review gave information that helped answer the study question: "What is the extent of adherence to accepted best practice in issuing discharge letters from an Internal Medicine department at a regional hospital in South Africa?

SEARCH STRATEGY

Search for relevant literature was done in English using search engines PubMed, Medline and Google Scholar with specific search words ‘Quality of’, ‘Content of’, ’Extent of adherence to’, ‘ Extent of compliance with’, ‘Discharge letter’, ‘electronic discharge letter’, ‘discharge summary’, ‘Referral letter’, ‘District hospital’.

A sizable number of studies were found with relevance to the quality of discharge letters in general, a few studies were found specific to electronic discharge letters (eDL) in the United Kingdom and South Africa, with others reviewing paper discharge letters.

QUALITY CRITERIA

Appraisal of articles for this study was done using the READER method(2) which answers the following questions 1. relevance to family medicine 2. Article provided education, 3. The study and setting were applicable to VHW, 4. It must have had good discrimination and methodology and was finally, 5. evaluated based on the total READER score obtained. The various articles found were scored 1 or 0 for each criterion in the READER evaluation and only those articles that had a score of more than four were included in this literature review.

READER method was chosen because a study by Domhuall MacAuley et al(2) found that reviewers generally gave more appropriate scores to research articles when using the structured READER method of critical appraisal than when using unstructured appraisal and the authors proved that this method of critical appraisal is valid and reliable.

To obtain data for this study, the researchers developed an audit tool using the 5 acceptable steps of developing one as validated by research on development of audit tools for family health records done by Bandana et al (3). They firstly drafted a preliminary tool, secondly validating its content by using available literature, then made necessary modifications, subsequently checking feasibility with a pilot study, and lastly making the final draft and using it in carrying out the study.

EVOLUTION OF THE ELECTRONIC DISCHARGE LETTER

According to Mc Graw-Hill Concise Dictionary of Modern Medicine 2002, a discharge summary or letter is a document prepared by the attending physician of a hospitalized patient that summarizes the admitting diagnosis, diagnostic procedures performed, therapy received, clinical course in hospital, prognosis and post discharge plan(4). Mosby’s Medical Dictionary 9th Edition 2009 defines it as a document prepared by a

physician or attending medical personnel of a hospitalized patient or an out-patient after a series of treatments stating admission diagnosis, treatment received and clinical course in hospital as well as a clear discharge plan(5).

These DL which are only one aspect of good clinical record keeping, were traditionally hand-written documents handed to the patient on discharge with copies posted or faxed to the GP. In 2003 the United Kingdom(UK) department of health instituted guidelines to standardize the writing of DL (6) with the aim of improving quality and reducing medico-legal risks to patient and healthcare funders. On 1 October 2015 National Health Service(NHS) in the UK mandated that all DL must be sent electronically to the primary care clinician and so over the past 4years in the UK, all hospitals have implemented the use of electronic discharge letters (7). These are computer generated documents that contain required fields and drop-down items that prompt the clinician to populate them. These documents are then emailed to the GP and may also be printed and handed to the patient to form part of the overall clinical records of the patient. Hospitals in South Africa and many African countries are still in the process of standardizing DL and studies are ongoing in this regard.

THE POTENTIAL IMPACT OF DISCHARGE LETTERS

The deficiency of different parameters of the discharge letter will have different medico-legal and clinical implications and affect the ability of the Primary care practitioner to care for the patient adequately(1). For example, an error made in documenting a patients' details or diagnosis will have more severe adverse outcomes than an error in informing the primary care doctor of a normal test result.

According to Moore et al about 49 percent of patients discharged from hospital experienced an adverse event post-discharge due to errors in completing the DL(8). This further highlight the need for these DL to be properly written and structured. Adverse drug reactions were found to occur frequently in the post discharge period prior to GP review of the patient making timeliness of arrival of the letter important (8). When these adverse reactions occur, they greatly impact on the morbidity and even mortality of patients and can lead to medico-legal action against the clinician and healthcare provider. Such adverse reactions could have been avoided if simple strategies such as good quality discharge notes including parameters like history of allergies, detailed follow up plans, details of drug

changes, the reasons thereof and outstanding lab tests had been sent to the general practitioner(GP) or family physician(8).

A good discharge letter impacts on healthcare costs by decreasing the likelihood of re-admission, as shown by Kripilani et al (9). Because the primary care physician has a better understanding of the expected prognosis, outcome, treatment options, changes in long-term status of patients, the risk of re-admission to hospital in the post discharge period may decrease when patients are assessed by a GP or family physician who has received a good discharge letter during planned follow up care(10). This type of clinical information is particularly important in the practice of palliative care where there is often a divergence between patient and clinician expectations of treatment outcomes (10) and the GP may keep referring a patient back to a hospital for care while clinicians in the ward have already determined that patient is for palliation. Other advantages of a good DL include increased patient understanding of their illness, increased patient involvement with their care and increased patient satisfaction (6). Weetman et al (6) found that 94 percent of patients wanted to have a DL, despite some concerns of patients being distressed by the contents of the DL, incomprehensibility of the DL, loss of confidentiality and not acknowledging the wishes of patients who do not want a DL.

An opportunity to educate GPs is missed when discharge letters are not informative as suggested by Gagliardi et al indicating that GPs prefer teaching that is directly related to their practice and not necessarily by attending lectures and teaching on abstract subjects(11). A well written discharge letter may help achieve this because the GP would gain insight into how the patient was managed in the hospital, what treatment outcomes and goals are to be expected at primary care level and what clear pathways are to be used if the patient needs readmission. This would thus increase patient safety and save time and costs in the referral process.

The WHO reports that breakdown in communication was the leading root cause of adverse events as reported to the Joint Commission in the United States of America between 1995 and 2006 and of the 25-30 000 preventable adverse events that led to permanent disability in Australia, 11 percent were due to communication issues, in contrast to 6 percent due to inadequate skill levels of practitioners (12). In South Africa litigation for medical malpractice has been on the rise with the HPCSA receiving 2 403 complaints between April 2011 and March 2012 (13) many of which related to claims of misdiagnosis, practising

outside the scope of practice, and refusal to treat patients. These two studies result(12) (13) further emphasise the need for good quality record keeping.

THE QUALITY OF DISCHARGE LETTERS

Establishing the quality of discharge summaries is difficult but there are core parameters which are generally accepted and thus, must be included to make the discharge document valid. These have been listed in the National Healthcare Act No. 61, 2003, Section 10(14) on discharge reports. Also, the Health Information Quality Authority (15) has established parameters which must be met to make a discharge letter standard. The Health Professions Council of South Africa (HPCSA) in its booklet 14 (16) and the Medical Protection Society of South Africa (17) have clearly stated parameters to enable doctors to write good discharge letters. Some of these parameters include key competency 2.3.1 c and d which state that in order to qualify, the student in training must accurately elicit and synthesise relevant information and perspectives of patients/clients and families, communities, colleagues and other professionals and document these in the clinical records. The writing of proper discharge letters by extension is thus a statutory and ethical requirement of doctors(18). According to I Couper in a 1996 paper, medical schools do not generally teach discharge letter writing in the curriculum and this made junior doctors inadequately trained to perform this function when they graduated (19). In a hospital-based study where eDLs had been used for 6years,Yemm showed that most junior doctors still felt inadequately prepared to write the eDL (20) because they did not receive formal training in medical school. In South Africa a study will need to be done to see if similar results will be obtained. This is because the HPCSA in its Booklet 14 has set minimum exit outcomes in clinical record keeping being met by medical students before they graduate, with the aim of solving the same problem.

Table 1.1 :Key Quality Criteria for Discharge Letters Prescribed by Different Health Authorities

National Health Act Criteria(14)	**HPCSA Criteria(16)**	**MPS Criteria Generally in keeping with HPCSA Criteria(17)**	**HIQA Criteria(20)**
Patients Biodata and contact information Detailed clinical records of treatment Diagnosis in ICD code Details of investigations Clinicians details Correct labelling of pages of records	Patients complete biodata Medical history including allergies Time, date and place of consultation Assessment of patients condition Proposed clinical management Medication and dosages prescribed Test results Record of any dates patient booked off from work Proof of informed consent where applicable Clinicians details in block letters including name and surname	All-important positive and negative findings Differential diagnosis Details of discussion with patient about risks and benefits of treatment and costs Any advice given to the patient Arrangements for follow up	Patients details Primary care health professionals details Admission and discharge details Clinical narrative Medication details Future management Details of person completing the discharge summary

Some UK studies(21, 22) show that the quality of discharge letters in the United Kingdom and in other countries which have similarities in healthcare service to RSA is generally poor. Certain indicators in the letters generally scored high while others received very low scores consistently.

An audit to evaluate the quality of eDL in the United Kingdom National Health Service by Hammad et al was conducted three years after the issuance of National Standards for eDL. Mean total adherence to the National Prescribing Centre guidelines minimum dataset was 71.7% (21), adherence to patient details, admission and discharge information was 77.3%, adherence to medicine information was 67.2% and 48.9%, for therapy change information (21).

Allergy status, co-morbidities, medication history and rationale for therapy change which have the most potential to cause harm when omitted, were the most frequent clinical data left out of these DL(21). O'Connor in Ireland found 100 percent adherence to patients details, 100 percent adherence to primary diagnosis and 61 percent adherence to medication changes (22).

The above study by E. Hammad (21) also compared the quality of eDL and paper DL and results showed no significant difference in the UK between paper and electronic DL and any benefits from deploying a fully electronic system of DL was mainly derived from time saved in retrieving and filing information by GPs, elimination of the problem of legibility of hand written letters, and ensuring safety in having a full trail of patients information between the hospital and the GP (21).

In a retrospective audit done in the psychiatry ward of Muhimbili National Hospital Dar Es Salam Tanzania, Mfangavo found that clinicians' information, patients' diagnoses and demographic data were generally well documented (23). This study which was based on paper DL found 85 percent nonconformity to other very important information such as good follow up and discharge plan as well as poorly documented in-hospital treatment, it also uncovered delays in writing the discharge letter. Most discharge letters according to the study were written two weeks after hospital admission instead of being a live document that captured records of the clinical course of patients' hospital stay. This study was done in an African setting that has similar structured healthcare system to the regional hospital involved in our study in South Africa, the difference being a more resourced system in the latter. The

results of this study contrasted with those from the UK and Europe which generally have about 71.7 percent compliance to quality standards as found by Hammad et al in their study on quality of discharge letters in the UK (21).

Another study in the general paediatric ward in Chris Hani Baragwanath hospital in Johannesburg showed similar percentage of DL meeting acceptable criteria as obtained in UK(24) which is about 71.7 percent as well as showing that about one in five patients had no DL at.

Local data on the quality of DL in the Western Cape is scarce. One study was found that researched the quality of discharge letters in hospitals in the Western Cape province, but this was mainly focused on the quality of disease classification documentation (ICD coding) which is only one indicator of a good DL (25). The aim of this study was to obtain data on morbidity and mortality, as well as cost saving in medical billing, correctness and completeness of ICD coding to determine if the Electronic Continuation of Care Record(ECCR) had improved clinical record keeping after its introduction (25). Incidental findings in the above study showed statistically significant odds that patient characteristics such as female gender, age group and presence of co-morbidity, as well as clinician characteristics of higher rank and home language, were significantly associated with ICD encoding completeness and primary ICD code coverage (25). These findings cannot be readily explained without further study but if confirmed may have a key role to play in designing interventions to improve quality of eDL. In South Africa ECCR including electronic discharge letters was introduced in January 2014 in Groote Schuur Hospital (26) in Cape Town and its' deployment in the rest of the Western Cape has been expanding over time. The system was deployed to the internal medicine ward of Victoria Hospital Wynberg(VHW) in June 2017 to replace hand-written DL and this was done to standardize the DL and to adhere to record keeping guidelines regulated by the Department of Health in the Western Cape and the South African National Health Act.

The eDL are generated on a computer software program called ECCR after the clinician inputs their password and patients folder number. The program has certain mandatory and non-mandatory fields that must be completed by the user before the letter can be printed and signed by hand, a copy is then retained in the patients folder and one copy handed over to the patient for review in the CHC or GP as the case may be.

VHW having deployed the eDL has no baseline information to evaluate the quality of these eDL which is an obvious gap in knowledge as regards this healthcare facility. Also, completion of eDL in VHW is usually done by the interns and community service officer after which senior doctors are supposed to review them but this is not usually the case, thereby impacting on the quality of the letters.

In deciding what measurable indicators constitute a good DL, the researchers reviewed relevant articles such as one by Yemm et al (27), who found in their study that quality indicators in the DL were ranked by doctors in order of importance as follows accuracy, completeness, timeliness, content and medication changes and continuation plans. Mahfouz et al(28) listed reasons for presentation to hospital, physical examination findings, test results, hospital treatment ,list of admission and discharge medication, discharge plan, information given to patient and family and patients preference regarding management as important indicators that must be included in a good DL.

Some factors which appeared to aid adherence to quality in a study by Hammad included quality of the discharge template, use of electronic discharge summaries (the study also compared electronic to paper DL) and smaller numbers of prescribed medicines in the letters (21). It seems reasonable that a comprehensive electronic discharge template should serve as a prompt for information to be included in the eDL, but this alone did not appear to improve content of the discharge letter in this study (21). This suggests that being prompted by a computer program to complete a mandatory section of an eDL does not necessarily translate to improved quality of the letter and this was confirmed by Jansen et al who showed that 29 percent of eDL contained incomplete or misleading information due to improper coding (29).

A mixed method study done to assess the usefulness of eDL in the Western Cape province showed that data on its usefulness in capturing proper ICD-10 coding was not statistically significant and that further research needed to be done to evaluate the findings (25) and this could agree with the Hammad study quoted above.

In contrast to results obtained by Hammad research carried out in Ireland by O'Connor found 100% compliance to patients details, 100% compliance to presence of admission diagnosis, 61% compliance to medication changes and 25% compliance to clinicians details(22). In their study O'Connor audited different parameters that constitute well documented clinicians details such as inclusion of qualifications and designation and this may have led to the

contrast with results obtained by Hammad. The above studies were conducted in populations which have similar demographics and relatively well-resourced hospitals as in RSA.

Knowledge about other factors that may affect the quality of eDL were also researched in conducting the current study and are discussed below.

Poor quality of referral letters sent by the GP or Family Physician impacts on the quality of discharge letters sent back to them (19), as demonstrated I. Couper. He theorized that hospital specialists having received poorly written referral letters simply attach insignificance to writing a proper response. This researcher finds this a suitable theory which would warrant further probing in due course, as it highly improbable that a specialist in a medical ward would spend time and effort corresponding in-depth to a GP who did not indicate any interest in receiving such correspondence in the first place.

Some factors which impact on the quality and completeness of eDL in VHW according to an unpublished study by Van der Schyff et al (personal communication) which was done to access inefficiencies in the deployment of eDL include, difficulty accessing computers in the ward, staff unhappiness with the system because they were not consulted before its deployment, login problems, difficulty in interacting with some sections of the program, absence of e-signature and length of time needed to complete an eDL. All of which have negatively impacted on the quality of the eDL in this department.

The criteria to be audited in this study will include but not be limited to those identified by Wimsett J et al (30). In their research validating cohort studies, they found only four items consistently ranked as important by at least 80 percent of respondents or scored more than 80 percent on a scale of importance. These were: discharge diagnosis, treatment in hospital, results of investigations and follow-up plan.

RATIONALE

Hospitals in RSA are slowly moving to use of standardized DL and eDLs. Findings from the literature review shown above indicates ongoing deficiencies in quality of DL. There have been few local studies looking at quality of DL and fewer still on eDL.

This study addressed this gap by evaluating the level of compliance to prescribed minimum standards of completing an ECCR discharge letter in an academic district hospital(VHW). The knowledge generated will help to ascertain if standards are being met and will serve as a step to improving the quality of clinical record keeping and patient care.

Some of the keys findings in the literature review include poor quality include:

1. According to Moore et al about 49 percent of patients discharged from hospital experienced an adverse event post-discharge due to errors in completing the DL(8).
2. A good discharge letter impacts on healthcare costs by decreasing the likelihood of re-admission, as shown by Kripilani et al (9).
3. A good DL includes increased patient understanding of their illness, increased patient involvement with their care and increased patient satisfaction (6).
4. The WHO reports that breakdown in communication was the leading root cause of adverse events post discharge and it can be inferred that proper discharge letters aid in resolution of medico-legal problems(12)

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CHAPTER TWO: PUBLICATION-READY MANUSCRIPT

ABSTRACT

Background: Hospital discharge letters are an essential part of good patient record keeping that ensures transmission of the healthcare information of a patient from the hospital of admission to the primary care provider. These letters were traditionally handwritten, but the medical ward in Victoria Hospital Wynberg in adapting to current progress in clinical record keeping has transited from paper to the use of electronic discharge letters.

Objectives: To audit the structure and contents of the electronic discharge letters and find out to what extent they meet universally accepted criteria.

Methodology: A retrospective clinical record audit of 60 patient records was conducted, spanning a period of 12 months (January-December) of 2018. Sequential sampling was used to select five folders from each months' discharge records, making a total study sample of 60 patient records. A checklist of prescribed criteria was developed and used to collect data which was analyzed descriptively. Ethical approval was obtained from UCTs' Human Research Ethics Committee (HREC) and the Western Cape Government Provincial Research Committee.

Electronic discharge letters compiled in the period 1 January- 31 December 2018 with corresponding folders found properly indexed in the medical records department were included in the sample, while discharge letters where the folders could not be found were excluded, as were the folders of patients who died during the hospital admission.

Results: Nearly all audited clinical records contained biodata (100%), contact details (93%) and clinical details (93%). Only two-thirds of the clinical records contained information on other diagnoses (67%) and investigations matched clinical issues (63%.). The least compliant category was medication changes (53%), with just under half the records containing this information.

Conclusion: This study found that clinical records met 67% of the standards required in the internal medicine ward in Victoria hospital Wynberg. Several areas for future intervention were identified. An audit tool with limited validity was also developed for ongoing quality improvement cycles.

INTRODUCTION

While previous internal audits on the quality of paper discharge letters from the adult medical ward of Victoria Hospital Wynberg (VHW) revealed several deficiencies, the department has since transitioned to electronic discharge letters (eDLs) with expectations that the quality of DL's would improve as a result, however no audit has yet been done to access that assumption. There is also general knowledge that different criteria or components of a good discharge letter are completed less frequently. The question then arose as to what extent the newly deployed eDLs meet acceptable criteria of quality and comprehensiveness in writing discharge letters?

The deficiency of different parameters of the discharge letter will have different medico-legal and clinical implications and affect the ability of the primary care practitioner to care for the patient adequately(1). Some factors which impact on the quality and completeness of eDL in VHW according to an unpublished internal audit (*personal communication*) include difficulty accessing computers in the ward; staff unhappiness with the system because they were not consulted before its deployment; login problems; difficulty in interacting with some sections of the program; absence of e-signature; and length of time needed to complete an eDL.

Some findings from international audits on DLs like that done by Moore et al showed that 49% of patients discharged from hospital experienced an adverse event post-discharge due to errors in completing the DL(2), good discharge letter impacts on healthcare costs by decreasing the likelihood of re-admission, as shown by Kripilani et al(3) also, the risk of re-admission to hospital in the post discharge period may decrease when patients are assessed by a primary care practitioner who has received a good DL during planned follow up care(4). Other advantages of a good DL include increased patient understanding of their illness, increased patient involvement with their care and increased patient satisfaction(5). An audit on eDLs in the United Kingdom (UK) National Health Service by Hammad et al found mean total adherence to the National Prescribing Centre guidelines minimum dataset was 71.7%(6), adherence to patient details, admission and discharge information was 77.3%, adherence to medicine information was 67.2% and 48.9%, for therapy change information(6). Allergy status, co-morbidities, medication history and rationale for therapy change which have the most potential to cause harm when omitted, were the most frequent clinical data left out of these DL(6). This study also compared the quality of eDLs and paper DL's and showed no

significant difference between the two. Benefits from deploying a fully electronic system of DL were mainly derived from time saved in retrieving and filing information by GPs, elimination of the problem of legibility of handwritten letters, and ensuring safety in having a full trail of patients information between the hospital and the GP(6). In a retrospective audit done in the psychiatry ward of Muhimbili National Hospital Dar Es Salam Tanzania, Mfangavo et al found that clinicians' information, patients' diagnoses and demographic data were generally well documented(7) this was in keeping with other studies reviewed.

The National Healthcare Act No. 61, 2003, Section 10(8) on discharge reports, Health Information Quality Authority(9) DL standards, The Health Professions Council of South Africa (HPCSA) in its booklet 14(10) and the Medical Protection Society of South Africa(11) are all health authorities that have clearly stated criteria to enable doctors write good discharge letters.

The purpose of this study was thus to find out to what extent the electronic discharge letters written in the medical ward in VHW met the criteria prescribed by the above health care regulatory authorities.

METHODOLOGY

The study was a retrospective clinical record audit carried out in Victoria hospital Wynberg (VHW) Internal Medicine ward for the period January to December 2018. This hospital is a district level public hospital in the Wynberg suburb of Cape Town offering healthcare to patients in specialist-led clinical departments. The medical ward in VHW, led by two Internal Medicine specialists, has 70 beds with a daily turnover of about 10 patients, approximating 3,500 patients a year.

The outcome to be studied was the quality of the eDLs compared against standards prescribed by the Health Professions Council of South Africa(HPCSA) as well as international best practise as defined in this literature review, acceptable quality defined as achieving 80 percent compliance with the HPCSA and international standard indicators of what constitutes a good eDL.

An audit team comprising the Family Medicine registrar, two Internal Medicine consultants and the university-based Family Medicine supervisor was constituted.
Prior to the main study a pilot study using 5 folders each from the male and female wards was

done and these 10 folders were reviewed and found to have the same trend of completeness and comprehensiveness using the criteria stated in the audit tool already developed. There was no difficulty encountered in accessing the eDLs on the ECCR website once the preselected folders had been identified and obtained from the records department.

For the main study, a sample size of 60 sequentially selected patient folders was decided upon, as per generally acceptable 'snapshot' sample for an audit of this nature(12). Also, in the pilot study of ten folders the same general pattern of criteria comprehensiveness was seen in all the folders. The team agreed on an 80 percent performance target for all the indicators. An audit tool was developed using criteria sourced from local policies and published literature as previously discussed(see table 1.1). The indicators were further subdivided into those that were purely clinical indicators, those that had more medicolegal implications and those that had elements of both. The audit tool was developed using the 5 steps of developing as described by Bandana et al(13) : a preliminary tool was drafted; content validation was performed using the available literature; necessary modifications were made; the tool was tested with a pilot study, and the finalized tool used in the study.

Table 2.1 :Key Quality Criteria for Discharge Letters Prescribed by Different Health Authorities

National Health Act Criteria(14)	**HPCSA Criteria(16)**	**MPS Criteria Generally in keeping with HPCSA Criteria(17)**	**HIQA Criteria(20)**
Patients Biodata and contact information Detailed clinical records of treatment Diagnosis in ICD code Details of laboratory investigations Clinicians details Correct labelling of pages of records	Patients complete biodata Medical history including allergies Time, date and place of consultation Assessment of patients condition Proposed clinical management Medication and dosages prescribed Test results Record of any dates patient booked off from work Proof of informed consent where applicable Clinicians details in block letters including name and surname	All-important positive and negative findings Differential diagnosis Details of discussion with patient about risks and benefits of treatment and costs Any advice given to the patient Arrangements for follow up	Patients details Primary care health professionals details Admission and discharge details Clinical narrative Medication details Future management Details of person completing the discharge summary

Eleven criteria were included in the final tool, as listed in Table 2.1.

Table 3.1: Quality criteria audited in the study

1. Complete Patient Biodata: name, date of birth and sex of the patient.
2. Correct Contact Details which included correct address and phone number was confirmed by comparing information in the eDL to that in the patients folder.
3. Clinicians details: To fulfil this criterion, clinician must document their name, qualifications, designation, professional number and signature.
4. Reason for admission: The reason for the current admission must be clearly stated as reason for admission may not be the same as the primary diagnosis.
5. Relevant clinical findings: The eDL had to include any important clinical findings that supported the diagnosis, investigations and follow up plan.
6. Significant events during admission must have been written in the eDL to meet this criterion.
7. Primary discharge Diagnosis with ICD10 needed to be documented in the eDL.
8. All other diagnosis with ICD 10 had to be included for this criterion to be met.
9. Discharge medication clearly prescribed in appropriate strength, dosage and duration as per standard prescription guidelines.
10. Medication Changes and the indication for these needed to be documented.
11. Follow up plan must have been clearly documented for the primary care giver and patient to adhere to.

A sequential, non-random sampling method was used, with every third entry in the ward-based discharge records being potentially included in the sample. After identifying a patient record to be audited, the eDLs were accessed from the ECCR system, and the corresponding patient folder requested from the records department. Only once the physical folder was accessed, was the patient record included in the study. This process was followed until enough records were obtained (n=60). The eDLs were then audited using the audit tool and clinical information obtained from the folder. Exclusion criterion were any untraceable folders or folders of deceased patients who were not expected to have a discharge letter.

All collected data was stored in a password protected personal computer accessible only to the data collector.

Simple descriptive statistics was used by the researchers in analysing the data after being input into Microsoft excel for Microsoft Office 360(14)**.**

Appraisal of articles for this study was done using the READER method(15) which answers the following questions 1. relevance to family medicine 2. Article provided education, 3. The study and setting were applicable to VHW, 4. It must have had good discrimination and methodology and was finally, 5. evaluated based on the total READER score obtained. The various articles found were scored 1 or 0 for each criterion in the READER evaluation and only those articles that had a score of more than four were included in this literature review.

READER method was chosen because a study by MacAuley D et al(15) found that reviewers generally gave more appropriate scores to research articles when using the structured READER method of critical appraisal than when using unstructured appraisal and the authors proved that this method of critical appraisal is valid and reliable.

ETHICS

The study partly involved ensuring that clinicians and patients details were properly documented. These names were however not captured in the data collection check list as only the folder numbers were used, and these were stored in a password protected laptop and so all data obtained will not contain any information to reveal either the patient or the clinicians identity. Results of the study will be presented to the clinical team in the medical ward VHW, results will also be shared with the hospital and then published an acceptable medical journal.

Approval for the study was obtained from UCT Human Research Ethics Committee (HREC no. 747/2017) and the facility management via the Western Cape Health Research Committee before it was commenced. The audit adhered to ethical guidelines adopted by the 64th World Medical Assembly, Fortaleza, Brazil October 2013(16).

RESULTS

A total of sixty-six folders were sampled, six of which were excluded because the patients were either deceased(four) or the eDL could not be found(two), this represented 9% of the total sample. Patients were adult males and females admitted to and discharged from the medical ward in VHW, a total of 30 males and 30 females who were all admitted from the emergency room with undifferentiated medical and mental health conditions.

The findings indicate variable performance across the range of indicators. Figure 2.1 below shows the proportion of folders that were compliant for various categories. As can be seen, nearly all folders contained biodata (100%), contact details (93%) and clinicians details (93%). Almost two-thirds of the folders contained information on other diagnoses (60%) and investigations matching clinical issues (65%). The least compliant category was medication changes (53%), with just over half the folders containing this information. The indicators were further subdivided into those with mainly clinical significance and those with mainly medicolegal significance. Biodata (100%), primary diagnosis (88%), reasons for admission (85%), secondary diagnosis (60%), discharge medication (88%) and medication changes (53%) were designated by the researchers as having mainly clinical significance while contact details (93%), clinicians details (93%), follow up plan (78%), significant events on admission (73%) and investigations matching clinical diagnosis (65%) were deemed mainly of medicolegal significance. Events during admission (73%) have significant clinical and medicolegal implications if not properly documented and were not designated in either category. Clinically important indicators were those that have mainly scientific value for instance in data capture for research, disease epidemiology and improvement of quality of patient care while those determined to have medicolegal significance had more relevance in preventing harm to patient, helping defend against medical litigation and justifying medical funding/insurance claims.

Just over half the patients (53%) were female, and 86% had a general medical condition. The mean age was 51.5 ±17.4 years (range: 17 – 84). The average length of

hospital stay was 13 ±18.2 days (range: 1 – 76), and the mean overall compliance was 80±18.7% (range: 26 – 100%).

Completeness of discharge letter was not significantly correlated with length of hospital stay (r = .168, p = .204). However, completeness of the discharge letter was significantly higher in mental health users (MHU) compared to those patients with a general medical condition (GMC) (92% vs 79%; U = 110, p = .035).

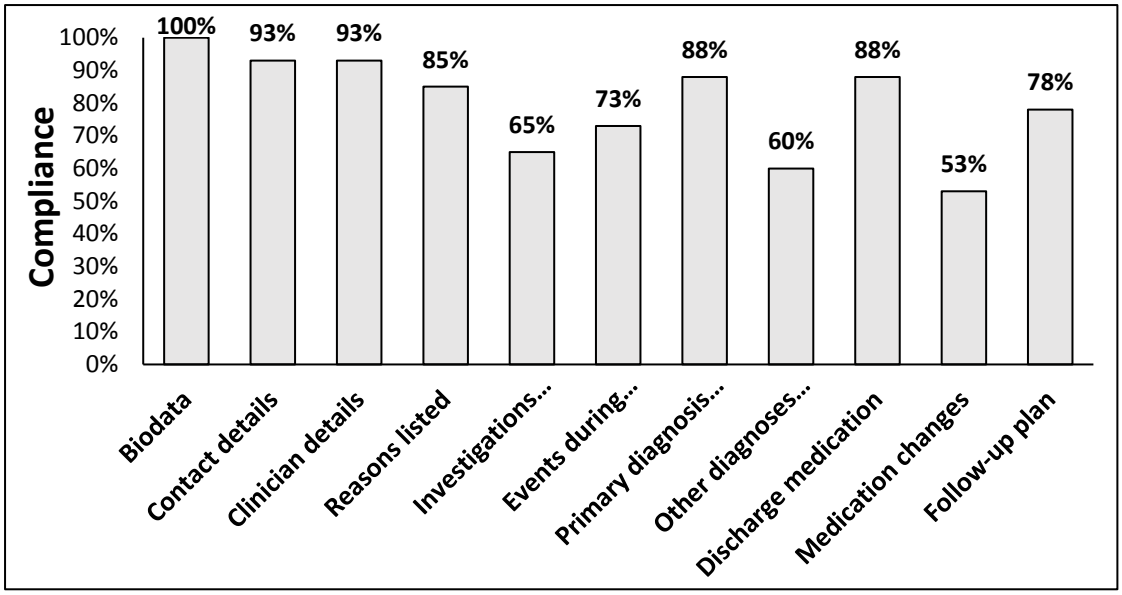
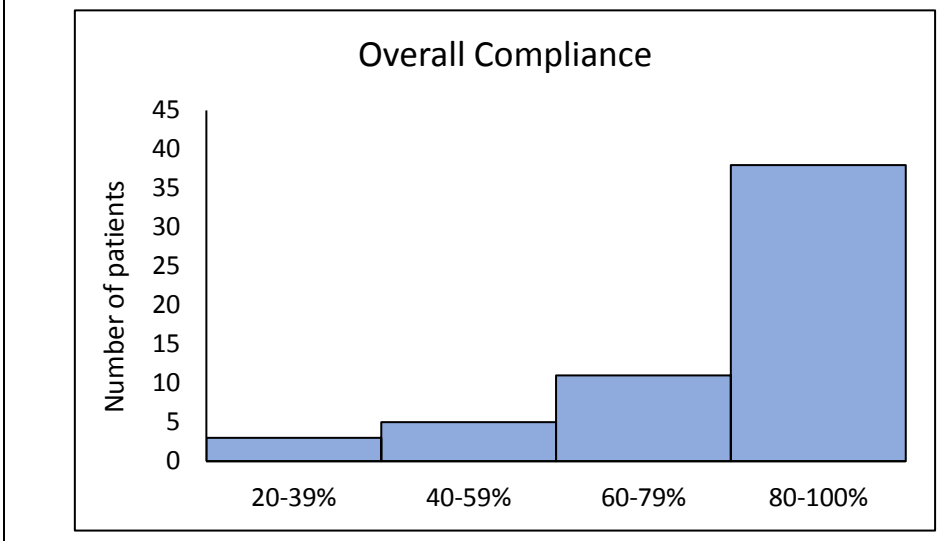
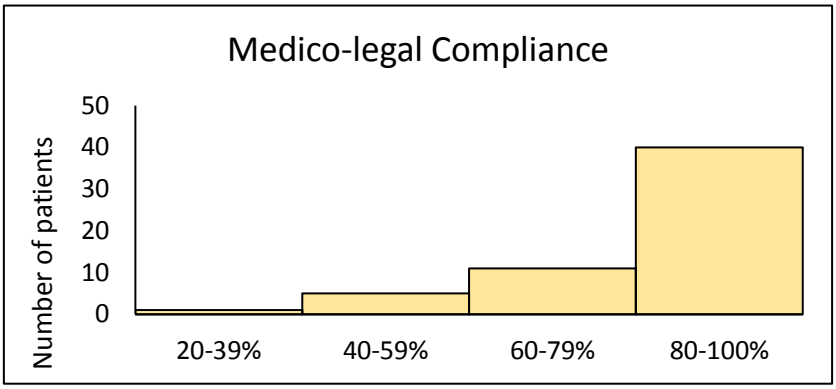


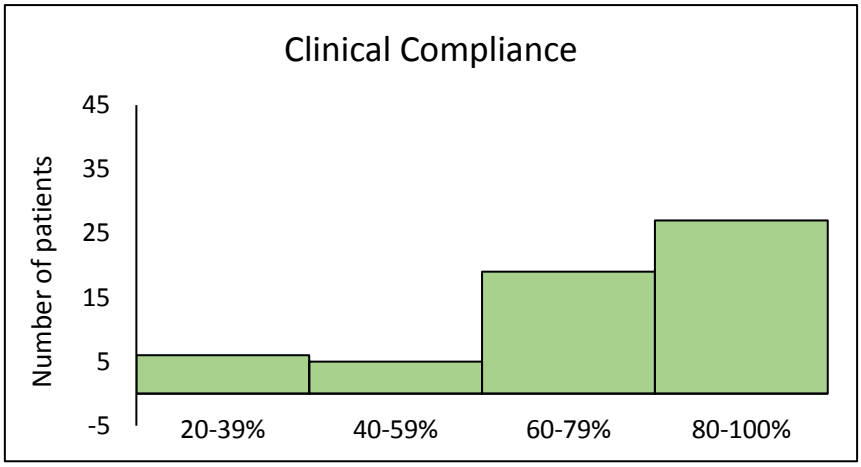
Figure 2.1 :Indicators and their percentage compliance.



a



b



c

Figure 2.2 : Number of patients and overall compliance (*a*), medico-legal compliance (*b*) and clinical compliance(*c*).

DISCUSSION

The study result has shown that two thirds of electronic discharge letters written in the medical ward in VHW met the 80 percent performance standard set by the team. The data further indicates that 25 folders (41%) complied to clinical indicators and 40 folders (67%) complied to the medico-legal indicators which did not met the target set by the investigators.

The results from the study presented in figures 2.1 and 2.2 show that certain criteria such as clinician and patient details, primary diagnosis, details of prescribed medication which define a good discharge letter were almost always completed in all the discharge letters studied and this is in keeping with similar findings from a study done by Hammad E. in the UK(6). The reason for this is most likely that those criteria that score highly are those that must be mandatorily completed on the ECCR proforma before the eDL can be printed. It could also be as a result of the degree of importance the clinicians attached to completion of the individual criteria as well as the time frame allotted to writing the letters. The discharge letters in VHW were usually written after the decision had been made to discharge the patient leaving the untrained junior doctor with the task of deciding on completeness and comprehensiveness of the letter. Yem R.(17) found that when the time allowed for hospitals to transmit DLs to GPs in the UK was reduced to 24hrs the GPs reported reduced comprehensiveness and details of the components of the letter. This problem could be resolved by regular audits and training of the physicians on writing eDLs as well as regular review of the actual letters by the senior clinician before they are sent off. Another suggestion to improve on the letters would be to have them updated as a live document through-out the hospital stay of the patient, regular changes and updates can always be made and tracked on an eDL unlike a paper discharge letter. This was studied by Heriel M.(7) where the researcher found most discharge letters were written in the second instead of the first week of hospital admission. This shows the general trend of delayed DL writing and not necessarily that the delay led even to lack of comprehensiveness of the letter itself, thus providing another area for further research.

There was comparable adherence of 67% (this study) and 71.7% (UK) to inclusion of patient's details, admission and discharge information and therapy change information; all the criteria applicable in judging a discharge letter.

The hospital has no dedicated mental health department, the mental health users in the ward were admitted as internal medical patients but with a dedicated team of physicians treating

them thus, the higher quality of eDLs in the MHU is most likely because the same team of senior clinicians wrote most of the letters and so they would have more insight and training to write comprehensive letters. This improved comprehensiveness of MHU eDLs could be in support of a questionnaire survey done by Ladd E. which found that at baseline**,** 18% of discharge summaries contained sufficient patient advice, this reduced to 10% after templates were made available on the wards, increasing to 45% following an education session and 84% once the electronic discharge summary proforma was edited and clinicians proficient in its use(18). The study by Ladd E. showed that provision of an electronic proforma template alone without enough training was not enough to improve quality of DLs.

From the results of this study more eDLs meet medicolegal criteria than clinical criteria this could be because the clinical indicators appear to need more time and effort to compose and complete as most of them are filled in by free text typing unlike medicolegal indicators that have mainly drop-down prompts on the eDL proforma.

The deficiencies in the eDLs also confer some medico-legal risk as clinicians can only rely on their documentation to give evidence when the need arises. The WHO report has shown that communication problems was the leading root cause of adverse healthcare events reported to the Joint Commission in the United States of America between 1995 and 2006 and that of the 25-30 000 preventable adverse events that led to permanent disability in Australia, 11% were due to communication issues, in contrast to 6% due to inadequate skill levels of practitioners(19). In South Africa litigation for medical malpractice has been on the rise with the Health Professions Council of South Africa (HPCSA) receiving 2403 complaints between April 2011 and March 2012(20), much of which is related to poor communication. The only legally defensible proof of communication between clinicians and their patients is medical records and thus, there can never be too much emphasis on keeping them standardized and comprehensive.

To improve the quality of electronic discharge letters in this ward it is recommend that all fields in the ECCR discharge letter be made mandatory and that software to capture and store e-signatures of clinicians be developed and deployed to enable automatic populating of the signature box when the clinician signs into the system with their password. Clinicians also need regular training in the use of the eDLs and generally on the importance of good clinical record keeping.

Repeating this audit using the standardised tool at regular intervals after interventions made at improving the eDL as part of a quality improvement cycle would also be important.

Future research should explore the experiences of clinicians in using the ECCR system, the actual clinical risks conferred to patients due to incomplete data on the eDL, and the impact on medico-legal risk of enhanced communication strategies within referral pathways.

STUDY LIMITATIONS

This audit was done in the internal medicine ward of VHW. The results are only valid for interpretation in this hospital and cannot be extrapolated directly to represent the results in any other hospital. A much larger study across a range of facilities, with a larger study sample, would be needed to make statements which are generalizable to the broader population. The small size of samples used for the study also limits is validity in application elsewhere.

The study was conducted in the transition period 6 months after VHW medical ward had introduced ECCR discharge letters and there were still operational and staff training challenges. This may have influenced the quality of the eDLs.

A non-random sampling technique was used to select cases. While the sequential sampling attempted to minimize bias, the risk of introducing bias still exists. However, the variable results obtained indicates that this was most likely not the case.

This study was limited to the discharging hospital and can only hypothesize increased medico-legal and clinical risk theoretically. A larger study that follows patients post-discharge into the primary care facilities would provide evidence for this hypothesis.

CONCLUSION

In this study 9% of folders had no discharge letters and this very significant in impacting on the ability of the hospital to give post discharge care to patients as it may imply that nearly 10% of patients leaving the hospital may have no formalized post discharge care plan.

This retrospective audit of eDLs at a regional hospital found significant non-compliance with acceptable standard criteria, and identified clear areas for system improvement, with potential risk mitigating impact.

Recommendations for future research include studies on hospital-based clinicians views on the role of eDLs and their perceived usefulness, primary care providers experience with the role of the eDLs and even patients' perspectives and knowledge on the impact of the letters in post discharge management of their health condition.

Conflict of Interest

The authors declare no conflict of interest in the conduct of this study.

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APPENDIX 1: DATA COLLECTION TOOL WITH DEFINITIONS

Definition of the Indicators	
Complete biodata of the patient	Must include name, age, sex, as documented in the folder
Contact details	Residential address and telephone Nos as documented in the folder
Clinicians Details	Must include name of clinician completing the discharge letter, qualifications, designation, MP No and signature
Are reason for admission and key clinical issues listed	The main reason or symptoms of patient at presentation leading to admission
Do investigations listed match clinical issues listed	Must include all relevant lab or radiological findings leading to diagnosis or treatment(Relevance determined by EDL and UpToDate investigation protocols)
Significant events during admission	Must have a brief summary or list of all events that could influence clinical outcome e.g. drug reactions or development of iatrogenic disease
Primary discharge diagnosis with 1CD 10	Must include the main disease or syndrome treated on current admission
All other diagnosis with ICD 10	Must include any other disease the patient has whether this was treated on current admission or not
Discharge medication clearly prescribed	Must have all medication prescribed in the legally approved format with correct dosage
Where any medication changes documented	Must be indicated if any modifications made to medication was documented
Follow up plan	Must be included e.g. six-month repeats and/or need to be seen in VHW or CHC.

APPENDIX 2: UCT HREC APPROVAL LETTER

UNIVERSITY OF CAPE TOWN
Faculty of Health Sciences
Human Research Ethics Committee

Room E53-46 Old Main Building
Groote Schuur Hospital
Observatory 7925
Telephone [021] 406 6492
Email: sumayah.ariefdien@uct.ac.za
Website: www.health.uct.ac.za/fhs/research/humanethics/forms

02 November 2017

HREC REF: 747/2017

Dr T Ras
School of Public Health & Family Medicine
Entrance 5
Falmouth Building-FHS

Dear Dr Ras

PROJECT TITLE: QUALITY AND EXTENT OF ADHERENCE OF INTERNAL MEDICINE DISCHARGE LETTERS IN A REGIONAL HOSPITAL IN SOUTH AFRICA TO PRESCRIBED GUIDELINES. A RETROSPECTIVE AUDIT. (MMED CANDIDATE - DR A NYA)

Thank you for submitting your study to the Faculty of Health Sciences Human Research Ethics Committee (HREC) for review.

It is a pleasure to inform you that the HREC has **formally approved** the above-mentioned study.

Approval is granted for one year until the 30 November 2018.

Please submit a progress form, using the standardised Annual Report Form if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period.
(Forms can be found on our website: www.health.uct.ac.za/fhs/research/humanethics/forms)

We acknowledge that the student: Dr A Nya will also be involved in this study.

Please quote the HREC REF in all your correspondence.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Please note that for all studies approved by the HREC, the principal investigator **must** obtain appropriate institutional approval, where necessary, before the research may occur.

Yours sincerely

Signature removed to avoid exposure online

PROFESSOR M BLOCKMAN
CHAIRPERSON, FHS HUMAN RESEARCH ETHICS COMMITTEE

Federal Wide Assurance Number: FWA00001637.
Institutional Review Board (IRB) number: IRB00001938

HREC 747/2017

This serves to confirm that the University of Cape Town Human Research Ethics Committee complies to the Ethics Standards for Clinical Research with a new drug in patients, based on the Medical Research Council (MRC-SA), Food and Drug Administration (FDA-USA), International Convention on Harmonisation Good Clinical Practice (ICH GCP), South African Good Clinical Practice Guidelines (DoH 2006), based on the Association of the British Pharmaceutical Industry Guidelines (ABPI),and Declaration of Helsinki (2013) guidelines.
The Human Research Ethics Committee granting this approval is in compliance with the ICH Harmonised Tripartite Guidelines E6: Note for Guidance on Good Clinical Practice (CPMP/ICH/135/95) and FDA Code Federal Regulation Part 50, 56 and 312.

APPENDIX 3: AUTHOR GUIDELINES

Submissions can only be made online at www.editorialmanager.com/safpj. Authors need to register online with the journal prior to submitting a manuscript. Once registered, simply log in and begin an easy 5 step process to upload your manuscript. All manuscripts must be submitted in MS Word®, Open Office, or RTF format using Times New Roman font size 10 and single-spacing. Headings must be in Bold. The author must always retain a copy. All the named authors must have approved the final manuscript. Pages should be numbered consecutively in the lower right corner. Please note that the Original Research section will follow a ";print-short, web-long"; policy, which means that only the abstracts will be published in print, with the full article published on the web. Some review articles may also be published under these provisions. The following contributions are accepted (word counts exclude abstracts, tables and references): 1. *Original research* (Between 1000 and 3500 words): 2. *Letters to the Editor* (Up to 400 words): 3. *Scientific Letters* (Less than 600 words): A short abstract is required (125-150 words) and should be structured under the following headings: background, methods, results and conclusion. One table or graph and not more than 5 references. 4. *Review/CPD articles* (Up to 1800 words): Most review articles are published as part of the continuous professional development (CPD) programme of SAFP. A scientific editor is appointed to approve topics, invite authors and to review the articles before they are independently peer-reviewed. All articles are reviewed by a family physician as well a topic specialist. Review articles outside the CPD programme are welcomed. Once accepted they may be published in full in the printed journal OR a 250-word abstract will be published in print with the full article available online. 5. *Opinions (Open Forum)* (Between 1000 and 3500 words). 6. *Editorials* (Between 600 - 800 words): Scientific editorials can be used to highlight progress in any scientific field related to family medicine. Please consult the Section Policies for more details regarding CPD articles.

Format Title page: All articles must have a title page with the following information and in this particular order: Title of the article; surname, initials, qualifications and affiliation of each author; The name, postal address, e-mail address and telephonic contact details of the corresponding author; at least 5 keywords. Please do not use capital letters only for headings and names but stick to the normal use of capital letters.

Abstract. All articles should include an abstract. The structured abstract for an Original Research article should be between 200 and 250 words and should consist of four

paragraphs labelled "Background, Methods, Results, and Conclusions". Only the abstract of Original Research articles will be published in print, and the abstract with the full article will be published online. It should briefly describe the problem or issue being addressed in the study, how the study was performed, the major results, and what the authors conclude from these results. The abstracts for other types of articles should also be no longer than 250 words and need not follow the structured abstract format.

Keywords. All articles should include keywords. Up to five words or short phrases should be used. Use terms from the Medical Subject Headings (MeSH) of Index Medicus when available and appropriate. Key words are used to index the article and may be published with the abstract.

Acknowledgements. In a separate section, acknowledge any financial support received or possible conflict of interest. This section may also be used to acknowledge substantial contributions to the research or preparation of the manuscript made by persons other than the authors.

References. Cite references in numerical order in the text, in **superscript** format. Do not use brackets. In the References section, references must be numbered consecutively in the order in which they are cited, not alphabetically. The style for references should follow the format set forth in the ";Uniform Requirements for Manuscripts Submitted to Biomedical Journals"; prepared by the International Committee of Medical Journal Editors. Abbreviations for **journal titles** should follow *Index Medicus* format. Authors are responsible for the accuracy of all references. Personal communications and unpublished data should not be referenced. If essential, such material should be incorporated in the appropriate place in the text. List all authors when there are six or fewer; when there are seven or more, list the first three, then "et al."; When citing URLs to web documents, place in the reference list, and use following format: Authors of document (if available). Title of document (if available). URL. (Accessed [date]). The following are sample references: 1. London L, Baillie R. Notification of Pesticide Poisoning: Knowledge, Attitudes and Practices of Doctors in the Rural Western Cape. S A Fam Pract 1999;20(1):117-20. 2. FDA Talk Paper: http://www.fda.gov/bbs/topics/ANSWERS/2002/ANS01151.html (Accessed 04/10/2002). Click here for more sample references.

Tables. Tables should be self-explanatory, clearly organised, and supplemental to the text of the manuscript. Each table should include a clear descriptive title on top and numbered in Roman numerals (I, II, etc) in order of its appearance as called out in text. Tables must me inserted in the correct position in the text. Authors should place explanatory matter in footnotes, not in the heading. Explain in footnotes all nonstandard abbreviations. For footnotes use the following symbols, in sequence: *,†,‡,§,‖,,**,††,‡‡

Figures. All figures must be inserted in the appropriate position of the electronic document. Symbols, lettering, and numbering (in Arabic numerals e.g. 1, 2, etc. in order of appearance in the text) should be placed below the figure, clear and large enough to remain legible after the figure has been reduced. Figures must have clear descriptive titles.

Photographs and images: If photographs of patients are used, either the subject should not be identifiable or use of the picture should be authorised by an enclosed written permission from the subject. The position of photographs and images should be clearly indicated in the text. Electronic images should be saved as either jpeg or gif files. All photographs should be scanned at a high resolution (300dpi, print optimised). Provision is made to upload individual images on the website as *supplementary files*. Please number the images appropriately.

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Ethical considerations. Papers based on original research must adhere to the Declaration of Helsinki on ";Ethical Principles for Medical Research Involving Human Subjects"; and must specify from which recognised ethics committee approval for the research was obtained.

Conflict of interest. Authors must declare all financial contributions to their work or other forms of conflict of interest, which may prevent them from executing and publishing unbiased research. [Conflict of interest exists when an author (or the author's institution), has financial or personal relationships with other persons or organizations that inappropriately influence (bias) his or her opinions or actions.]* **Modified from: Davidoff F, et al. Sponsorship, Authorship, and Accountability. (Editorial) JAMA 2001: 286(10)* The following declaration may be used if appropriate: ";I declare that I have no financial or personal relationship(s) which may have inappropriately influenced me in writing this paper.";

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