# THE CLINICAL SPECTRUM AND OUTCOME OF DERMATOLOGICAL CONDITIONS IN PATIENTS ADMITTED TO DERMATOLOGY WARDS OF GROOTE SCHUUR HOSPITAL-CAPE TOWN SOUTH AFRICA


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**DECLARATION**

I, Emad Ashour, declare that this thesis is based on a research study conducted by me, except where I have quoted or referenced the sources. To the best of my knowledge, this work has not been previously submitted for a degree in my university or any other institution, neither has it previously been submitted for publication to another journal.

Signature: Signed by candidate

Date: 11 March 2021

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# CHAPTER 1

## LITERATURE REVIEW

## INTRODUCTION

After Johannesburg, Cape Town is South Africa's second-most populous city. The city's population was 3.8 million in 2018.[1] The socioeconomic status of inhabitants in the city is variable. Some people can afford private medical care because they have sufficient funds or medical insurance. According to the World Bank Group (Poverty & Equity Brief South Africa Sub-Saharan Africa) in 2020, around 55.5% (30.3 million) live below the national poverty line, with approximately 1 in 7 (13.9%) households in South Africa living in informal housing settlements, (Statistics South Africa, StatsSA).[2] Unemployment was estimated at 23.6% of the adult population in 2018.[3] While good quality water is available in all areas, families living in informal housing areas may have to share an outside water tap and water trough. There are three state tertiary dermatology units in Cape Town, located at Groote Schuur Hospital (GSH), Tygerberg Hospital, and Red Cross War Memorial Children's Hospital (RCWMH), serving the population of Western Cape Province. Local clinics and district hospitals provide primary health care.

According to a study in the United States in 2001,[4] appointments for skin disorders account for up to 6% of office visits in primary care settings, and up to 25% of patients visiting a primary care doctor have a skin disorder, even if this is not the reason for the appointment. In India, skin disorders were reported by 9% of people seeking primary care in 2015.[5] This compares with a study from South Africa in 2012, with 5.2% of patients attending primary care for a skin complaint.[6]

Most people in South Africa receive specialist care through a referral from primary health care or community health centres to tertiary hospitals. Patients may have to travel hundreds of kilometres to get to a tertiary hospital and there are long waiting lists.[7]

Admission to a state tertiary hospital is expensive for the state and may have occupational and psychosocial impacts on the individual. However, does such an admission ultimately help to reduce future costs, while reducing the long-term impact of skin disorders on the individual, their family, or their community?

## POSSIBLE BENEFITS OF HOSPITAL ADMISSION

People with skin disease may benefit from hospitalization in one of many ways, including (1) close monitoring of their condition, medical treatment, and skilled nursing care for a small percentage of seriously ill patients; (2) learning how to manage their condition themselves in the future and (3) the absence of domestic pressures; with a potential reduction in anxiety and depression. Overall improvement in the quality of life has been demonstrated in patients admitted to hospitals for skin disorders.[8-10] However, there are no defined admission criteria for dermatologic patients.[11]

## LITERATURE SEARCH

The literature search was conducted using PubMed, with the following search terms: Dermatology ward; hospitalization; in-patient; admissions; the impact of skin disease.

## SUMMARY AND INTERPRETATION OF LITERATURE

Dermatology is mostly an outpatient specialty, with inpatient services playing a minor but important part.[12] According to Jessop et al in 2002 the majority of admissions to GSH's dermatology unit in South Africa were for eczema, psoriasis, leg ulcers, skin infection, and bullous disease.[7] Adverse drug reactions have also been identified as a frequent cause of admission.[12]

The mean patient admission age is variable in different countries according to studies from South Africa in 2002[7] (34.l years) and Nepal in 2012[12] (34.l years), with older ages reported from Iran in 2008[13] (44 years) and from the United Kingdom (UK) in 2002[14] (53 years).

Adverse drug reactions were found to be a common reason for dermatology admission, with 12.7% noted in Nepal in 2013[12] and 5% and 8.3% in Spain and South Africa respectively.[7, 15] The most likely explanation for a higher percentage of adverse drug reactions is the high incidence of tuberculosis and human immunodeficiency virus/acquired immunodeficiency virus (HIV-AIDS) in some communities. According to the World |Health Organisation (WHO), the HIV prevalence in SA in 2019 was 20.4%, with one in five people living with HIV,[21] while the WHO estimates that 360,000 people fell ill with TB in 2019.[22] It has been shown that in people with HIV/AIDS there is an increased occurrence of severe drug

reactions.[18,19] Furthermore, a genetic predisposition may play a significant role in many types of drug reactions, based on two studies from South Africa 2015 and 2017.[19,20]

Mosam et al[21] conducted a study from 1995 to 2001 in KwaZulu-Natal, South Africa, to compare and evaluate HIV frequency, disease spectrum, and demography in inpatients with skin disease. The authors found that seborrhoeic dermatitis, adverse drug eruptions, psoriasis, and erythroderma are the commonest diagnoses in HIV-positive people admitted. However, the indications for admission are likely to vary in different countries. The majority of visits to emergency departments and inpatient admissions for skin disorders in the UK are due to cellulitis and other infections of the skin and its appendages.[22] Dermatology inpatient admissions continue to rise as a percentage of overall admissions in the United States.[23] The main reasons for admission are reported to be a severe or extensive skin disease, outpatient treatment failure, need for observation and/ or investigations to establish the diagnosis, need to assess the progress, or for certain psycho-socio-economic reasons.[24,25] A similar study carried out in Scotland and Northern England showed disease severity, concomitant social conditions, and medical issues to be the most common reasons behind hospitalization.[22]

## CONCLUSION

The literature reviewed suggests that the most common dermatological reasons for admission to a tertiary hospital include drug reactions, psoriasis, eczema, and bullous skin disorders, while connective tissue disorders, infections, and vasculitis were also observed.[7, 12, 21] The key indications for admission were the extent of the disorder and severity, the failure of outpatient care, and the psycho-socio-economic factors. The generally favourable outcomes might support the future use of inpatient care for people with severe skin disorders.

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# CHAPTER 2

**PUBLICATION READY MANUSCRIPT**

**TITLE PAGE**

## THE CLINICAL SPECTRUM AND OUTCOME OF DERMATOLOGICAL CONDITIONS IN PATIENTS ADMITTED TO DERMATOLOGY WARDS OF GROOTE SCHUUR HOSPITAL-CAPE TOWN SOUTH AFRICA


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## ABSTRACT

**Background**: Groote Schuur Hospital (GSH) Division of Dermatology receives many referrals from local clinics and hospitals. Some of these patients are admitted to the dermatology wards for diagnosis and/or management. It is important to look at the spectrum and outcome of these patients who are admitted to dermatology wards at the hospital, to inform policy.

**Objectives**: To characterise the spectrum of dermatological conditions requiring admission, to determine the outcome and to describe the factors that may influence the outcome of dermatological conditions in patients admitted to the dermatology wards at Groote Schuur Hospital in South Africa.

**Methods**: This research employed descriptive retrospective analysis to describe the dermatology inpatients who were admitted to dermatology wards at Groote Schuur Hospital over the period January 2017 to December 2017.

**Results**: There were a total of 120 admissions to Groote Schuur Hospital Dermatology wards in 2017. Of these, 89 (74.1%) were new admissions and 31 (25.8%) re-admissions. The most frequent diagnosis was drug reaction (27.5%), followed by psoriasis (23.3%), eczema (17.5%), and bullous disease (10%). Less common indications for admission were infections, lupus erythematosus, scabies, ulcers, pyoderma gangrenosum and cutaneous small-vessel vasculitis. The outcome of the admission was usually favourable.

**Conclusions**: The most common diagnoses on admission were drug reactions, psoriasis, eczema, and bullous diseases. The generally favourable outcomes would support the future use of inpatient care for people with severe skin disorders.

**Keywords:** dermatology ward, inpatients, admission, hospitalization, and impact of skin disease.

**ABBREVIATIONS**

Groote Schuur Hospital…….....(GSH)
Red Cross War Memorial Children's Hospital…….....(RCWMH)
Human Immunodeficiency Virus……. (HIV)
Acquired Immunodeficiency Virus……..(AIDS)
Adverse Drug Reactions……...(ADR)
United Kingdom……...(UK)
United States of America……..(USA)
Human Research Ethics Committee……. (HREC)
Body surface area……. (BSA)
Stevens-Johnson Syndrome……...(SJS)
Toxic Epidermal Necrolysis……. (TEN)
Drug reaction with eosinophilia and systemic symptoms……(DRESS)

## INTRODUCTION AND BACKGROUND

Cape Town is the second-most populous city in South Africa after Johannesburg. In 2018 the population of the city was 3.8 million.[1] The socioeconomic status of the people in the city is variable. Some people have sufficient funds or medical insurance to have the benefit of private medical facilities. According to the World Bank Group (Poverty & Equity Brief South Africa Sub-Saharan Africa) in 2020, around 55.5% (30.3 million) of the population in South Africa live below the national poverty line, in low-cost or informal housing settlements. Unemployment was estimated at 23.6% of the adult population in 2018.[2] While good quality water is available in almost all areas, families living in informal housing areas may have to share an outside water tap and water trough. In Cape Town there are three state tertiary dermatology units, situated at GSH, Red Cross War Memorial Children's Hospital (RCWMH), and Tygerberg Hospital, serving the population of Cape Town and the province of the Western Cape. Local clinics and district hospitals provide primary health care. Dermatology at GSH is an outpatient-oriented specialty, as 8617 adult patients were seen in the dermatology outpatient clinics in 2017.

A study done in the United States in 2001[3] showed that in the primary care setting, the consultations for skin conditions account for up to 6% of office visits, and as many as 25% of patients visiting a primary care doctor have a skin condition, although it may not be the reason for the visit. In India, 9% of people presented to primary care with skin disorders in 2015.[4] This compares with a study from South Africa in 2012, with 5.2% of patients attending primary care for a skin complaint.[5]

In South Africa, specialist care for most people is available on a referral basis, from primary health care or community health centres to tertiary hospitals. Patients may sometimes need to travel several hundred kilometres to reach a tertiary hospital and the waiting lists are generally long.[6]

Admission to a state tertiary hospital is expensive for the state and may have an occupational and psychosocial impact on the individual. However, does such an admission ultimately help to reduce future costs, while reducing the long-term impact of skin disorders on the individual, their family, or their community?

The Division of Dermatology at GSH has 18 beds dedicated to dermatology inpatient care. According to hospital outpatient records, 8617 adult patients were seen in the dermatology outpatient clinics and there were 120 admissions to dermatology wards in 2017. Admission to a tertiary institution in South Africa costing between R2,637 and R4,257 daily in November 2020.[1] Patients are usually admitted either for disease control or diagnostic workup or both. According to the researcher's knowledge, the spectrum and outcome of these admitted patients were last documented in 2002.[6] Limited reviews of inpatient dermatology exist in the current medical literature. This study could contribute to the improved selection of patients considered for admission to dermatology wards in South Africa.

Dermatology is mainly an outpatient specialty in which inpatient service has traditionally played a small but significant part.[7] Jessop et al[6] documented that most of the admissions to the dermatology unit at GSH were for eczema, psoriasis, leg ulcers, skin infection, adverse drug reactions and bullous disease.

Mosam et al [8] conducted a study aimed to compare and assess the HIV frequency, disease spectrum, and demography in inpatients with skin disease in KwaZulu-Natal, South Africa, over the period from 1995 to 2001. The authors found that the majority of admissions in the HIV-positive group were for seborrhoeic dermatitis, adverse drug eruptions, psoriasis, and erythroderma. However, the indications for admission are likely to vary in different countries. Cellulitis and other infections of the skin in the United Kingdom (UK) are the reasons for the majority of visits to emergency departments and inpatient admissions for skin conditions.[9] In the United States, the numbers of dermatology inpatient admission continue to increase as a percentage of total admissions.[10] The main reasons for admission are reported to be a severe or extensive skin disease, outpatient treatment failure, need for observation and/ or investigations to establish the diagnosis, need to assess the progress, or for certain psycho-socio-economic reasons.[11, 12] A similar study carried out in Scotland and Northern England showed disease severity, concomitant social factors, and medical problems to be the most common reasons for hospitalization.[9]

[1] Direct communication with the general medicine department in GSH.

### Possible Benefits of Hospital Admission

People with skin disease may benefit from hospitalization in one of many ways such as (1) the small percentage of seriously ill patients who benefit from careful monitoring of their condition, medical treatment, and skilled nursing care; (2) the opportunity to gain the skills to manage their condition themselves in the future and the absence of domestic pressures; (3) potential improvement in measures of anxiety, depression and overall quality of life, which have been shown to improve notably in patients admitted to hospital for skin conditions.[13-15] However, no admission criteria for dermatologic patients have been defined.[16]

## RATIONALE AND RELEVANCE

This study could make a contribution towards establishing the reasons for and benefits of admission. This could lead to improved selection of patients for admission and possibly cost saving in the health sector.

## OBJECTIVES OF THE RESEARCH

The main objectives of this research are:

1. To determine the disease profile of patients admitted to a tertiary dermatology ward, including the possible change in comparison with the previous study at GSH. [6]
2. To determine the outcome of dermatological conditions in patients admitted to the dermatology ward, as shown by:
    a. Change in body surface area (BSA).
    b. Description of the condition in ward discharge notes, e.g., completely clear/ partially clear/ not clear on discharge.
    c. Degree of healing of erosions and ulcers (unchanged or partially or completely healed).
    d. Telephonic communication with patients, to gain their perspective on possible benefits or problems encountered.
3. To investigate the relationship between diagnosis, age and duration of admission, and the degree of skin clearance.

## METHODS

This was a descriptive retrospective study, conducted in the dermatology ward at GSH. It included all patients who were admitted under the care of dermatology staff, over the period from January 2017 to December 2017.

The inclusion criteria for the sample were:

- All patients admitted to the dermatology ward
- All patients admitted to other wards at GSH, such as the paediatric department, for skin problems
- Children and adults of all ages

The exclusion criteria for the sample were:

- Ward consultations from other units
- Patients who were admitted to the dermatology ward by another unit
- Outpatients attending the ward for treatment, e.g., dressings or phototherapy

Approval to conduct the research was granted by the Human Research Ethics Committee (HREC REF: 550/2019) of the University of Cape Town.

The data, originally recorded in patients' notes by registrars, was collected from patients' folders in the Medical Records office at GSH. Patient privacy and confidentiality were carefully maintained in the management of the data. At enrolment, names and file numbers of patients were entered into a study register. The study register was kept at the division of dermatology, and only study staff could access this information. The following data was captured (see Appendix 1):

- Age
- Diagnosis for the current and previous admission
- Admission state
- Outcome (body surface area for psoriasis and ADR; degree of clearance for other diagnoses)

To determine how the patients had experienced their admissions, patients were asked to engage in a telephone interview, after discharge. Twenty patients were available to answer questions. The questions asked during the telephone call are shown in Appendix 2.

### Statistical analysis

Data analysis was performed by a clinical epidemiologist/biostatistician. Data capture was in Microsoft Excel and exported to Stata 13.0. For descriptive statistics, the categorical variables were summarized using frequencies and percentages. To examine the associations between demographic and clinical factors with the duration of admission, the non-parametric Kruskal-Wallis test was used for continuous variables and univariate logistic regression analysis for categorical variables.[17] Duration of hospitalisation, a continuous skewed variable, was stratified into a binary categorical outcome (below and above the mean duration of the cohort). A similar analysis approach was used to examine the associations between demographic and clinical factors. Looking at a complete clearance of skin lesions the outcome was categorized as a binary variable: complete clearance vs. little plus almost clearance. P-values were 2-sided and considered statistically significant if <0.05.

## ETHICAL CONSIDERATIONS

This research was approved by the Departmental Research Committee of the medical specialties of the University of Cape Town UCT, and the ethical approval was granted by the Research Ethics Committee, Faculty of Health Sciences, UCT (HREC REF: 550/2019). Telephonic consent was obtained using the UCT standard format as in the appendix, for those patients who were interviewed by telephone. Privacy and confidentiality were maintained throughout the study.

## BUDGET

None required. No remuneration for either patients or staff.

## RESULTS

Of the 120 admissions, 75 (62.5%) were female and 45 (37.5%) male. The age range was from 11 to 94 years (mean 41.5 years). Six (5%) of the patients were less than 18 years old, 87 (72.5%) were between 18 and 60 years old, and 27 (22.5%) were more than 60 years old. The new admissions were 89 (74.2%), while the re-admissions number in and before the study year were 31 (25.8%). No deaths were recorded during admission. Appendix 1 shows the diseases in each group. The numbers of each group (new admission and re-admissions) are presented in Table 1.

**Table 1 Diagnosis at Admission**

| Final Diagnosis | Type of Admission | | Total (n)% |
|---|---|---|---|
| | New Admission (n) | Re-admissions (n) | |
| **Adverse Drug Reaction (ADR)** | 27 (30.3%) | 6 (19.3%) | **33 (27.5%)** |
| **Psoriasis** | 19 (21.3%) | 9 (29%) | **28 (23.3%)** |
| **Eczema** | 18 (20.2%) | 3 (9.6%) | **21 (17.5%)** |
| **Bullous disorder** | 6 (6.7%) | 6 (19.3%) | **12 (10%)** |
| **Infection** | 8 (8.9%) | 1 (3.2%) | **9 (7.5%)** |
| **Others** | 7 (7.8%) | 1 (3.2%) | **8 (6.6%)** |
| **Ulcer** | 1 (1.1%) | 3 (9.6%) | **4 (3.3%)** |
| **Lupus erythematosus** | 2 (2.2%) | 1 (3.2%) | **3 (2.5%)** |
| **Scabies** | 1 (1.1%) | 1 (3.2%) | **2 (1.6%)** |
| **Total** | **89 (100%)** | **31 (100%)** | **120 (100%)** |

Based on table 1 the most common indication for admission is ADR in which the SJS/TEN spectrum was the most common (11 of 33), followed by the drug reaction with eosinophilia and systemic symptoms (DRESS) (9 of 33). Among the ADR admissions the incidence of tuberculosis was 13/3) and HIV-AIDS (9/3).

Admission notes indicated that the main reasons for admission were severity, the extent of the disease, and outpatient treatment failure. Psych-socio-economic problems were a further reason for the admission.

**Table 2 Admission Status based on the BSA for psoriasis and drug reaction (SJS/TEN* spectrum)**

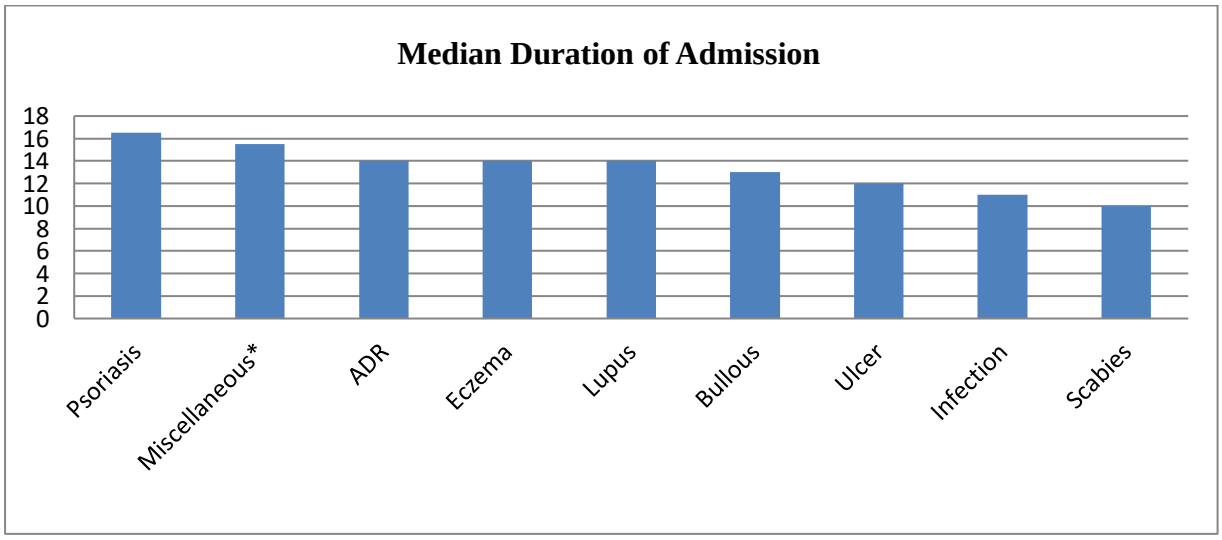
| BSA | Psoriasis | | | Drug Reaction (SJS/TEN* spectrum) | | |
|---|---|---|---|---|---|---|
| | Number | Mean | Range | Number | Mean | Range |
| < 10% | 2 | 22.8 | 48[2] | 7 | 11.2 | 54 |
| 10 – 30 % | 7 | | | 6 | | |
| 30 – 50 % | 13 | | | 9 | | |
| >50 % | 5 | | | 8 | | |
| Erythroderma 11.66% (12/120) of all admissions (6, 4 secondary to ADR, psoriasis, respectively). | | | | | | |

*Stevens-Johnson syndrome /toxic epidermal necrolysis.

As noted in table 2 most of the patients presented with body surface area involvement (BSA) of 10 - 50%, 20/27(74.07%) for psoriasis and 15/30(50%) for SJS/TEN spectrum respectively. Erythroderma was seen in 11.66% (12/120) of all admissions (6, 4 and 4 secondary to ADR, psoriasis, and eczema, respectively).

The duration of admission was between 2 and 84 days, with a median of 14 days (mean 9.82 days). The median duration of admission for each group of diseases is illustrated in Figure 1 below.

**Figure 1 Duration of Admission (days)**



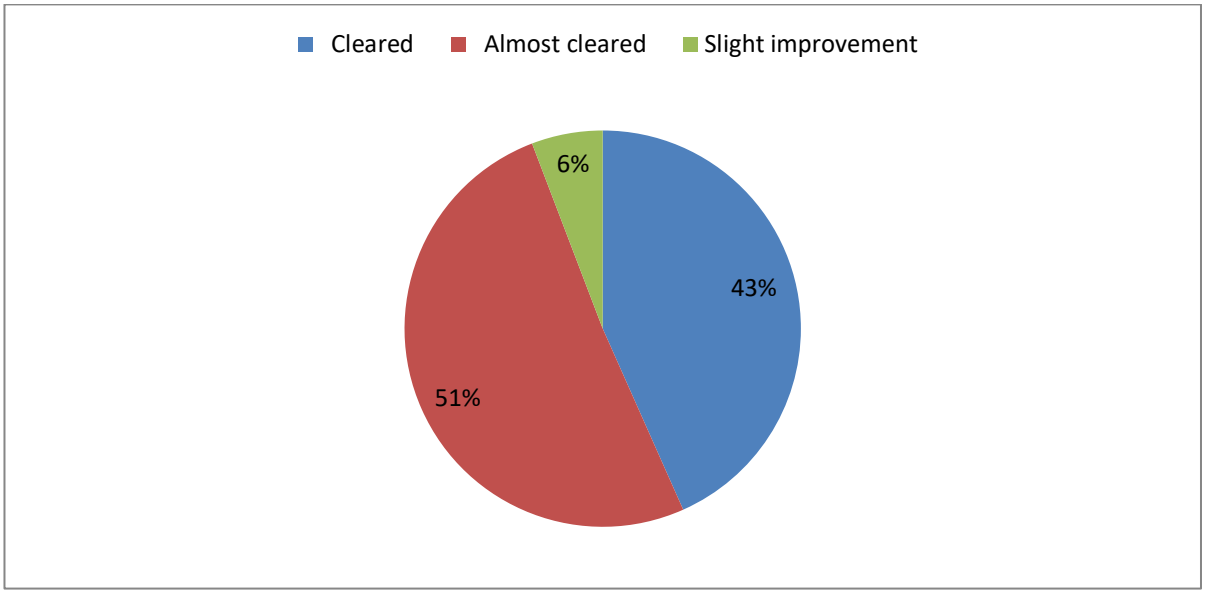

*Miscellaneous: cutaneous small-vessel vasculitis, hidradenitis suppurativa, generalized morphoea, metastatic Crohn's disease, nodular prurigo, palmoplantar keratoderma, pyoderma gangrenosum.

The high value of the range resulted from the fact that one of the psoriasis patients stayed in the hospital for 53 days, while the lowest admission period was 5 days.

The duration of hospitalisation (Figure 1) for all diagnoses did not differ significantly (all p values>0.05), and there was no association between median duration of admission and age. The patients in the BSA > 50% group had a significantly higher median duration of admission than that of the whole cohort (p=0.046). A difference was not observed for the other BSA groups.

The skin improvement for patients on discharge is presented in Figure 2.

**Figure 2 Skin Lesion Outcomes**




On discharge, 94% of the patients had cleared or almost cleared skin lesions, while only 6% showed a slight improvement in their condition.

Healing of the four patients with cutaneous ulcers was partial in 3 (2 with venous stasis, and 1 with Kaposi's sarcoma). The ulcers secondary to pemphigus vulgaris healed completely.

The median age was similar among those with complete clearance compared to those with incomplete clearance, 41 years (11-94) vs. 42 years (14-75) respectively (p<0.596). Similarly, the median number of admissions was similar among those with complete clearance compared to those with incomplete clearance,1 (1-8) vs. 1 (1-6) respectively (p < 0.205).

There were statistically significant associations observed between complete clearance of lesions and diagnosis at admission (all p-values < 0 .05), more obviously with infection, lupus, scabies, bullous disorders, ADR and eczema, in comparison with psoriasis and ulcers.

Admission status was not related to complete clearance of lesions except for patients with psoriasis with BSA 30-50% (32.0% vs. 20.6% for complete clearance vs /almost cleared, $p < 0.037$).

The results of telephone interviews with 20 of the 120 patients are summarised in Table 3.

**Table 3 Telephonic interview outcomes**

| Positive Feedback | Negative Feedback |
|---|---|
| ● Helpful as my skin much better (13/20)<br>● Nice doctors and nurses (13/20)<br>● Helpful staff (13/20)<br>● New friends (5/20)<br>● Yes, treatment on time (1/20)<br>● Yes as treatment worked well (6/20)<br>● Saved my leg, helpful staff (1/20)<br>● Comfortable place (1/20)<br>● Good experience (2/20) | ● Food not nice as it's public hospital (1/20)<br>● Away from family (10/20)<br>● Crowded and busy (3/20)<br>● Wake me up early (1/20)<br>● Night nurses sometimes not helpful (2/20)<br>● Worry about my work (1/20) |

The results of the telephonic interviews indicated that the 20 people who were able to respond all knew their diagnosis and most (17/20) indicated that while in the ward they had gained a better understanding of the causes and triggers of their diseases. Only one did not know his treatment. Most patients gave positive feedback about the experience of being in the hospital. However, 17 patients did give some negative feedback namely, that they missed their family, found the staff very busy, worried about their work and did not enjoy the food. One patient complained that the night nursing staffs were sometimes unhelpful.

Based on the average standard cost of R3447 (R2637 to R4257) daily for each patient, the total cost of admission for 537 days for 33 psoriasis patients was approximately R1 851 039.

## DISCUSSION

Dermatology at GSH is an outpatient-oriented specialty, as 8617 adult patients were seen in the dermatology outpatient clinics, whereas 120 patients (1.39%) were admitted to the dermatology wards in 2017.

The severity, the extent of the disease, and possible outpatient treatment failure were the main indications for admission. Some of the patients appeared to have been admitted for psycho-socio-economic reasons. This is in line with what was found in other studies.[9,11,12] The majority of patients admitted were females, 75 (62.5%). The mean patient age was 41.5 years (11 to 94 years), older than that reported at the same institution in 2002[6] and from Nepal in 2012[7] (34.l years), but younger than that reported from Iran in 2008[18] (44 years) and from the UK in 2002[19] (53 years).

Adverse drug reaction (ADR) was the most common indication for dermatology admission, (27.5%). This is high when compared with the 12.7% noted in Nepal in 2013 and the 5% in Spain in 2002.[7, 20] The most likely explanation for a higher percentage in our study is the high incidence of tuberculosis (13/34) and HIV-AIDS (9/34), which reflects the prevalence in our community. According to the World |Health Organisation (WHO), the HIV prevalence in SA in 2019 was 20.4%, with one in five people living with HIV,[21] while the WHO estimates that 360,000 people fell ill with TB in 2019.[22] It has been shown that in people with HIV/AIDS there is an increased occurrence of severe drug reactions.[23, 24] Furthermore, a genetic predisposition may play a significant role in many types of drug reactions, based on two studies from South Africa in 2015 and 2017.[24-25] Among the ADRs, the SJS/TEN spectrum was the most common (11 of 33), followed by the drug reaction with eosinophilia and systemic symptoms (DRESS) (9 of 33).

Psoriasis was the second commonest reason for admission (23.3%) and eczema was third (17.5%), while in the previous study at GSH in 2002, psoriasis (21.8%) was the third reason and eczema (33.1%) was the second.[6] However, psoriasis is the main reason for re-admission. Reasons for this may be the frequent difficulty in obtaining medications from primary care, treatment relapse or failure, and the difficulty for some patients in attending phototherapy or outpatient visits at the tertiary level.

There was only one oncology patient admitted, with Kaposi's sarcoma, which could be explained by the fact that other disciplines are admitting such patients.

The mean duration of stay of 18.29 (2-84) days was longer than reported in studies in Pakistan (9.82 days) in 2009[11] or Nepal in 2013 (6.83 days).[7] The explanation for the longer stay at GSH could be the higher prevalence of severe ADRs, such as SJS/TEN and DRESS, as department staff tried to attain maximum benefit and clearing before the patient was discharged, to reduce the need for domiciliary treatment and to decrease the chance of flare-ups. Also, there is a shortage of home nursing services in South Africa and some patients have limited resources at home.

Most of the feedback from patients on their experience of treatment during admission was positive, although 75% had non-medical issues, such as missing family and feeling concerned about work. Most stated that they had gained further understanding of their diagnosis and their treatment (85% and 95% respectively).

There was a degree of satisfaction expressed by the small group of interviewed patients with the medical services of the division. This satisfaction is supported by the results showed in Table 3, with 94% of patients on discharge having either complete or nearly complete clearance of skin disease. However, some people expressed dissatisfaction with the general services such as food and overcrowding.

## LIMITATIONS OF THE RESEARCH

As this was a retrospective study, we depended on the discharge letter and notes, so much detailed information was not available, as was noted in a study in Australia in 2016.[26] A prospective study would provide much more accurate figures for the outcome of hospital stay. As the telephonic interviews included only 20 of the 120 patients, the information obtained might not be truly representative. Also, the researcher was unable to interview the children admitted to the children's wards.

## CONCLUSIONS

The most common dermatological reasons for admission to a tertiary hospital in Cape Town included drug reactions, psoriasis, eczema, and bullous illnesses, while other important but less common conditions included connective tissue diseases, infections, and vasculitis. The

extent of the disease and severity, outpatient treatment failure, and psycho-socio-economic reasons were the main indications for the admissions. The generally favourable outcomes might support the future use of inpatient care for people with severe skin disorders.

**Author Recommendation:** A prospective study is needed as this study did not record the effect of skin disease on the patient's quality of life and could not accurately identify the degree of improvement after admission.

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I am grateful to my family and my wife for their prayers and support during my post-graduate training and this research project. My special thanks to my supervisor Dr. Sue Jessop and co-supervisor Dr. Thuraya Isaacs for their invaluable guidance and supervision from the beginning to the completion of this master's research study. I am also grateful to Dr. Hani Nuri Rohuma for his advice and recommendations.

# APPENDICES

## APPENDIX

### Appendix 1 Diseases' Names in Each Group

| Groups | Diseases |
|---|---|
| **Adverse Drug Reaction (ADR)** | • Bullous fixed drug eruption<br>• DRESS<br>• Erythroderma<br>• Lichenoid drug reaction<br>• Stevens-Johnson syndrome (SJS)<br>• Toxic Epidermal Necrosis (TEN)<br>• SJS/TEN overlap |
| **Eczema** | • Atopic eczema<br>• Chronic venous stasis dermatitis<br>• Adult onset eczema<br>• Contact dermatitis<br>• Photo aggravated eczema<br>• Seborrheic dermatitis<br>• Dermatophyte complex |
| **Bullous** | • Bullous impetigo<br>• Bullous pemphigoid<br>• Lichen planus pemphigoides<br>• Linear IgA disease<br>• Paraneoplastic pemphigus<br>• Pemphigus foliaceus<br>• Pemphigus vulgaris<br>• Photodistributed bullous lichenoid dermatitis<br>• Porphyria cutanea tarda |
| **Lupus** | • Discoid lupus erythematosus<br>• Lupus erythematosus and lichen planus overlap syndrome<br>• Lupus panniculitis |
| **Psoriasis** | • Psoriasis vulgaris<br>• Pustular psoriasis<br>• Small plaques psoriasis<br>• Erythrodermic psoriasis |
| **Infection** | • Cutaneous herpes simplex<br>• Dermatophytosis complex Id reaction<br>• Cellulitis<br>• Lupus vulgaris<br>• Varicella zoster (chicken pox) |
| **Ulcer** | • Chronic venous stasis ulcers<br>• Ulcerative Kaposi Sarcoma |
| **Scabies** | • Crusted scabies |
| **Others** | • Cutaneous small vessel vasculitis<br>• Generalized morphea<br>• Hidradenitis suppurativa<br>• Metastatic crohn's disease<br>• Nodular prurigo<br>• Palmar plantar keratoderma<br>• Atypical pityriasis rosea<br>• Pyoderma gangrenosum |

## Appendix 2. Telephone interviews

1. What is your diagnosis? 2. What caused your skin problem?
3. What are you using to treat your skin now, if anything?
4. Do you feel it was helpful to be in ward dermatology department? In what ways?
5. What was bad about being in the ward? 6. Would you like to say anything else?

| Pt no | Do you know your diagnosis? Yes or No If Yes What is it? | What caused your skin problem? | What are you using to treat your skin now, if anything? | Do you feel it was helpful to be in ward G23? In what ways? | What was bad about being in the ward? | Would you like to say anything else? |
|---|---|---|---|---|---|---|
| 1 | Psoriasis | Not known yet May be immune system? | different types of topical Tx as dovobet , acid sal | Helpful as my skin much better | Away from family | Friendly staff |
| 2 | Nummular eczema | Unknown disease | Topical steroid and emulsifier | Nice Doctors and nurses | Food not nice may as it public | Crowded and busy |
| 3 | Psoriasis | Immune problem | Diff types of oint as tar and steroid | Yes, good | Away from family | No |
| 4 | Eczema | Genetic in my family | Topical steroid and emulsifier | Helpful staff, new friends | Wake me up early | No |
| 5 | Eczema | Immune problem | Diff oint as dovate and emulsifier | helpful | no | No |
| 6 | Psoriasis | Stress, smoking, infection | diff types of topical Tx as tar, dovobet, acid sal | Yes, tx on time, friendly, new family | Missing family | Conforta ble place |
| 7 | pemphigus vulgaris | Immune problem | Prednisolone, dovate | Yes, helpful, good care | Night nurses sometime not helpful | No |
| 8 | lupus profundus | No | CQ, steroid | Yes as tx work well | Missing family | No |
| 9 | pyoderma gangrenosum | Immune problem | Prednisolone and dovate dressing | Save my leg, helpful staff | Missing family | Good experienc e |
| 10 | Chemical burn 2° tattoo removal | Chemical burn | Dressing | Good care, friendly people | Worry about my work | No |
| 11 | Reaction to the medication | No | Oint? | Helpful people | Busy department | No |
| 12 | Eczema | Allergic to rubber | Dovate, emulsifier, aqueous cream | Friendly and good service | Busy department | No |
| 13 | Crohn's disease | Immune system fight the body | Dovate, normal Crohn's tx | Friendly and good service | Missing family | No |
| 14 | Psoriasis | Immune system, genetic, stress | MTX, LPC, dovobet | Helpful people and treatment | Night nurses sometime not helpful | No |
| 15 | Lichen planus | \ | Dovate and cortoderm | New family | No | No |
| 16 | lipodermatoscler osis | Vascular problem | Dovate and elastic bandages | Good Tx and experience | Missing family | No |
| 17 | Leg ulcers | Vascular problem | dressing and elastic bandages | Good care, Tx | Missing family | No |

| | | | | | | |
|---|---|---|---|---|---|---|
| **18** | Eczema | Immune problem | Dovate, cortoderm and emalsifier | Good care and helpful people | No | No |
| **19** | bullous pemphigoid | Immune problem, age | Dovate, prednisolone, Doxy | Good care and helpful Tx | Missing family | No |
| **20** | Eczema | Immune problem, genetic | Dovate wrap, aqueous cream and emulsifier | helpful people, Tx | Missing family | No |

Table 4 Association between demographic and clinical factors with complete clearance of skin lesions among patients admitted to the dermatology wards at Groote Schuur hospital, Cape Town, South Africa (2017)

| **Baseline characteristics** | **Median or Proportion with Complete vs Incomplete (mild/almost) clearance** | **p-value** |
|---|---|---|
| Age (years) | 41 (11-94) vs. 42 (14-75) | 0.596 |
| Age group (years) | | |
| <18 | 3.9% vs. 5.9% | Ref |
| 18 - 60 | 73.1% vs. 72.1% | 0.623 |
| >60 | 23.1% vs. 72.1% | 0.620 |
| Number of admissions | 1 (1-8) vs. 1 (1-6) | 0.205 |
| Diagnosis at admission, n (%) | | |
| ADR (1) | 28.9% vs. 26.5% | Ref |
| Bullous (2) | 9.6% vs. 10.3% | 0.821 |
| Eczema (3) | 17.3% vs. 17.7% | 0.851 |
| Infection (4) | 9.6% vs. 5.9% | 0.592 |
| Lupus (5) | 3.9% vs. 1.5% | 0.492 |
| Others (6) | 1.9% vs. 10.3% | 0.117 |
| Psoriasis (7) | 26.9% vs. 20.6% | 0.723 |
| Scabies (8) | 1.9% vs. 1.5% | 0.900 |
| Ulcer (9) | 0.0% vs. 5.9%. | - |
| Admission status, n (%) | | |
| BSA <10% | 18.0% vs. 35.2% | ref |
| BSA 10 – 30% | 20.0% vs. 22.1% | 0.309 |
| BSA 30 – 50% | 32.0% vs. 20.6% | **0.037** |
| BSA 50 – 90% | 20.0% vs. 11.8% | 0.050 |
| BSA >90% | 10.0% vs. 10.3% | 0.360 |
| BSA missing | | |

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

**Room E53-46 Old Main Building**
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20 August 2019

**HREC REF:550/2019**

**Dr S Jessop**
Division of Dermatology
G-23
NGSH

Dear Dr Jessop

**PROJECT TITLE: THE CLINICAL SPECTRUM AND OUTCOME OF DERMATOLOGICAL CONDITIONS IN PATIENTS ADMITTED TO DERMATOLOGY, GROOTE SCHUUR HOSPITAL CAPE TOWN, SOUTH AFRICA (MASTER - EMAD MABROUK ASHOUR)**

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 August 2020.**

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)

***The HREC acknowledge that the student: Dr Emad Ashour 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

**PROFESSOR M BLOCKMAN**
**CHAIRPERSON, FHS HUMAN RESEARCH ETHICS COMMITTEE**

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

UNIVERSITY OF CAPE TOWN

HUMAN RESEARCH ETHICS COMMITTEE
11 AUG 2020
HEALTH SCIENCES FACULTY

FACULTY OF HEALTH SCIENCES
Human Research Ethics Committee

# FHS016: Annual Progress Report / Renewal

| HREC office use only (FWA00001637; IRB00001938) This serves as notification of annual approval, including any documentation described below. | | | |
|---|---|---|---|
| ☐ Approved | Annual progress report | Approved until/next renewal date | 30/08/2021 |
| ☐ Not approved | See attached comments | | |
| Signature Chairperson of the HREC | Signature Removed | Date Signed | 12/8/2020 |

| Comments to PI from the HREC |
|---|
| |

**Principal Investigator to complete the following:**

## 1. Protocol Information

| | | | |
|---|---|---|---|
| Date (when submitting this form) | 07/08/2020 | | |
| HREC REF Number | 550/2019 | Current Ethics Approval was granted until | August 2020 |
| Protocol title | Clinical spectrum and outcome of Dermatology patient admitted to dermatology department, GSH | | |
| Protocol number (If applicable) | N/A | | |
| Are there any sub-studies linked to this study? | No | | |
| If yes, could you please provide the HREC Ref's for all sub-studies? **Note:** A separate FHS016 must be submitted for each sub-study. | | | |
| Principal Investigator | Dr Sue Jessop | | |
| Department / Office Internal Mail Address | cecily.heunis@uct.ac.za<br>susan.jessop@uct.ac.za Drfarhatemad@gmail.com | | |

| 1.1 Does this protocol receive US Federal funding? | | No |
|---|---|---|



(Note: Please complete the Closure form (FHS010) if the study is completed within the approval period)

Western Cape Government
Health

**GROOTE SCHUUR HOSPITAL**
**Enquiries**: Dr Bernadette Eick
**e-mail**: Bernadette.Eick@westerncape.gov.za

Dr Sue Jessop
**MEDICINE - DERMATOLOGY**

E-mail: susan.jessop@uct.ac.za / Drfarhatemad@gmail.com / cecily.heunis@uct.a.za

Dear Dr Jessop,

**RESEARCH PROJECT: Clinical Spectrum And Outcome Of Dermatology Patients Admitted To Dermatology Department, Groote Schuur Hospital**

Your recent letter to the hospital refers.

You are granted permission to proceed with your research, which is valid until **30 August 2021.**

Please note the following:

a) Your research may not interfere with normal patient care.
b) Hospital staff may not be asked to assist with the research.
**c) Confidentiality must always be maintained.**
**d)** No additional costs to the hospital should be incurred i.e. Lab, consumables or stationary. **If access to TRACK Care/NHLS is required, kindly attach our letter of approval to the application form.**
e) **No patient folders may be removed from the premises or be inaccessible.**
f) Please provide the research assistant/field worker with a copy of this letter as verification of approval.
**g) Should you at any time require photographs of your subjects, please obtain the necessary indemnity forms from our Public Relations Office (E45 OMB or ext. 2187/2188).**
h) Should you require additional research time beyond the stipulated expiry date, please apply for an extension.
i) Please discuss the study with the HOD before commencing.
j) Please introduce yourself to the person in charge of an area before commencing.
k) On completion of your research, please forward any recommendations/findings that can be beneficial to use to take further action that may inform redevelopment of future policy / review guidelines.
l) Please contact Michelle Riley (Patient Fees) at ext. 2276 to ascertain if there will be charges for conducting the Research and to obtain a quote or to discuss charges
**m) Kindly submit a copy of the publication or report to this office on completion of the research.**
**n) At no time should any posters encouraging patients to partake in research, be displayed within a clinical area.**

I would like to wish you every success with the project.

Yours sincerely

Signature Removed

**DR BERNADETTE EICK**
**CHIEF OPERATIONAL OFFICER**
**Date:** 20 August 2020

C.C. Mr. L. Naidoo
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## TELEPHONICALLY CONSENT FORM

My name is Emad Ashour. I am from the department of the dermatology division at the University of Cape Town. we are conducting a studying on the clinical spectrum and outcome of dermatological conditions in patients admitted to the dermatology department at the division, Groote Schuur Hospital GSH, Cape Town, South Africa. to order the views of the patients who get admitted to the dermatology department at GSH to learn more about the criteria and benefit of admission in 2017.

I am calling to ask you if you are interested in participating in this research study. Your participation is completely voluntary. This means that you do not have to participate in this study unless you want to. If you change your mind later and do not want us to use your information, and responses in this study please feel free to contact me again. At that time, we will remove any information we have collected about you regarding this study.

Your decision whether agreeing or not to participate in this study will not affect your relationship with your (medical providers, university, community leaders, etc.). If you do not agree to verbally consent to participating in this study, you will continue to receive appropriate medical care.

The study will be conducted as a telephonic interview in a private setting. A total number of 20 participants will be interviewed and each participant will take about 15 minutes or more on each participant which will be equivalent to R1000, 00 worth of airtime.

You may find some questions difficult or sensitive in nature and do not wish to answer, just tell me and we will go on to the next question.

In the telephonic interview you will be asked to:

1. What is your diagnosis?
2. What caused your skin problem?
3. What are you using to treat your skin now, if anything?
4. Do you feel it was helpful to be in ward dermatology department? In what ways?
5. What was bad about being in the ward?
6. Would you like to say anything else?

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**How will we obtain confidentiality and privacy?**

We are committed to protecting your privacy and maintaining confidentiality. All information that I receive from you by phone will be strictly confidential and will be kept under lock and key so we will not identify you by name or any other information that would make it possible for anyone to identify you in any presentation or written reports about this study.

Would you be willing to hear more information about this study?

Do you have any questions at this time?

Would you like to participate in this research?

If 'no', I appreciate your time

If 'yes', May I please continue this interview?

Name of Subject:

_____

Person Obtaining Consent

I have read this form to the subject. An explanation of the research was given and questions from the subject were solicited and answered to the subject's satisfaction. In my judgment, the subject has demonstrated comprehension of the information. The subject has provided oral consent to participate in this study.

Name and Title (Print)

Signature of Person Obtaining Consent Date

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Use of racial or ethnicity classifications in research is fraught with problems. If you choose to use a research design that involves classification of participants based on race or ethnicity, or discuss issues with reference to such classifications, please ensure that you include a detailed rationale for doing so, ensure that the categories you describe are carefully defined, and that socioeconomic, cultural and lifestyle variables that may underlie perceived racial disparities are appropriately controlled for. Please also clearly specify whether race or ethnicity is classified as reported by the patient (self-identifying) or as perceived by the investigators. Please note that is not appropriate to use self-reported or investigator-assigned racial or ethnic categories for genetic studies.

General article format/layout

Accepted manuscripts that are not in the correct format specified in these guidelines will be returned to the author(s) for correction, which will delay publication.

General:

- Manuscripts must be written in UK English.
- The manuscript must be in Microsoft Word format. Text must be single-spaced, in 12-point Times New Roman font, and contain no unnecessary formatting (such as text in boxes).
- Please make your article concise, even if it is below the word limit.
- Qualifications, full affiliation (department, school/faculty, institution, city, country) and contact details of ALL authors must be provided in the manuscript and in the online submission process.
- Abbreviations should be spelt out when first used and thereafter used consistently, e.g. 'intravenous (IV)' or 'Department of Health (DoH)'.
- Include sections on Acknowledgements, Conflict of Interest, Author Contributions and Funding sources. If none is applicable, please state 'none'.
- Scientific measurements must be expressed in SI units except: blood pressure (mmHg) and haemoglobin (g/dL).
- Litres is denoted with an uppercase L e.g. 'mL' for millilitres).
- Units should be preceded by a space (except for % and °C), e.g. '40 kg' and '20 cm' but '50%' and '19°C'.
- Please be sure to insert proper symbols e.g. µ not u for micro, a not a for alpha, b not B for beta, etc.
- Numbers should be written as grouped per thousand-units, i.e. 4 000, 22 160.
- Quotes should be placed in single quotation marks: i.e. The respondent stated: '...'
- Round brackets (parentheses) should be used, as opposed to square brackets, which are reserved for denoting concentrations or insertions in direct quotes.
- If you wish material to be in a box, simply indicate this in the text. You may use the table format –this is the only exception. Please DO NOT use fill, format lines and so on.

SAMJ is a generalist medical journal, therefore for articles covering genetics, it is the responsibility of authors to apply the following:

- Please ensure that all genes are in italics, and proteins/enzymes/hormones are not.

- Ensure that all genes are presented in the correct case e.g. TP53 not Tp53.

Main article

All articles are to include the following main sections: Introduction/Background, Methods, Results, Discussion, Conclusions.

The following are additional heading or section options that may appear within these:

- Objectives (within Introduction/Background): a clear statement of the main aim of the study and the major hypothesis tested or research question posed
- Design (within Methods): including factors such as prospective, randomisation, blinding, placebo control, case control, crossover, criterion standards for diagnostic tests, etc.
- Setting (within Methods): level of care, e.g. primary, secondary, number of participating centres.
- Participants (instead of patients or subjects; within Methods): numbers entering and completing the study, sex, age and any other biological, behavioural, social or cultural factors (e.g. smoking status, socioeconomic group, educational attainment, co-existing disease indicators, etc)that may have an impact on the study results. Clearly define how participants were enrolled, and describe selection and exclusion criteria.
- Interventions (within Methods): what, how, when and for how long. Typically for randomised controlled trials, crossover trials, and before and after studies.
- Main outcome measures (within Methods): those as planned in the protocol, and those ultimately measured. Explain differences, if any.

Results

- Start with description of the population and sample. Include key characteristics of comparison groups.
- Main results with (for quantitative studies) 95% confidence intervals and, where appropriate, the exact level of statistical significance and the number need to treat/harm. Whenever possible, state absolute rather than relative risks.
- Do not replicate data in tables and in text.
- If presenting mean and standard deviations, specify this clearly. Our house style is to present this as follows:
- E.g.: The mean (SD) birth weight was 2 500 (1 210) g. Do not use the ± symbol for mean (SD).
- Leave interpretation to the Discussion section. The Results section should just report the findings as per the Methods section.

Discussion

Please ensure that the discussion is concise and follows this overall structure – sub-headings are not needed:

- Statement of principal findings
- Strengths and weaknesses of the study
- Contribution to the body of knowledge
- Strengths and weaknesses in relation to other studies
- The meaning of the study – e.g. what this study means to clinicians and policymakers
- Unanswered questions and recommendations for future research

**NB: Copyeditors cannot be expected to pick up and correct errors wrt the above, although they will raise queries where concerned.

- Define all genes, proteins and related shorthand terms at first mention, e.g. '188del11' can be glossed as 'an 11 bp deletion at nucleotide 188.'

- Use the latest approved gene or protein symbol as appropriate:

Preparation notes by article type

Research

Guideline word limit: 4 000 words

Research articles describe the background, methods, results and conclusions of an original research study. The article should contain the following sections: introduction, methods, results, discussion and conclusion, and should include a structured abstract (see below). The introduction should be concise – no more than three paragraphs – on the background to the research question, and must include references to other relevant published studies that clearly lay out the rationale for conducting the study. Some common reasons for conducting a study are: to fill a gap in the literature, a logical extension of previous work, or to answer an important clinical question. If other papers related to the same study have been published previously, please make sure to refer to them specifically. Describe the study methods in as much detail as possible so that others would be able to replicate the study should they need to. Results should describe the study sample as well as the findings from the study itself, but all interpretation of findings must be kept in the discussion section, which should consider primary outcomes first before any secondary or tertiary findings or post-hoc analyses. The conclusion should briefly summarise the main message of the paper and provide recommendations for further study.

Select figures and tables for your paper carefully and sparingly. Use only those figures that provided added value to the paper, over and above what is written in the text.

Do not replicate data in tables and in text .

Structured abstract

- This should be 250-400 words, with the following recommended headings:
  - Background: why the study is being done and how it relates to other published work.
  - Objectives: what the study intends to find out
  - Methods: must include study design, number of participants, description of the intervention, primary and secondary outcomes, any specific analyses that were done on the data.
  - Results: first sentence must be brief population and sample description; outline the results according to the methods described. Primary outcomes must be described first, even if they are not the most significant findings of the study.
  - Conclusion: must be supported by the data, include recommendations for further study/actions.
- Please ensure that the structured abstract is complete, accurate and clear and has been approved by all authors.
- Do not include any references in the abstracts.

Conclusions

This may be the only section readers look at, therefore write it carefully. Include primary conclusions and their implications, suggesting areas for further research if appropriate. Do not go beyond the data in the article.

References

NB: Only complete, correctly formatted reference lists in Vancouver style will be accepted. Reference lists must be generated manually and not with the use of reference manager software. Endnotes must not be used.

- Authors must verify references from original sources.
- Citations should be inserted in the text as superscript numbers between square brackets, e.g. These regulations are endorsed by the World Health Organization,[2] and others.[3,4-6]
- All references should be listed at the end of the article in numerical order of appearance in the Vancouver style (not alphabetical order).
- Approved abbreviations of journal titles must be used; see the List of Journals in Index Medicus.
- Names and initials of all authors should be given; if there are more than six authors, the first three names should be given followed by et al.
- Volume and issue numbers should be given.
- First and last page, in full, should be given e.g.: 1215-1217 not 1215-17.
- Wherever possible, references must be accompanied by a digital object identifier (DOI) link). Authors are encouraged to use the DOI lookup service offered by CrossRef:
  - On the Crossref homepage, paste the article title into the 'Metadata search' box.
  - Look for the correct, matching article in the list of results.
  - Click Actions > Cite
  - Alongside 'url =' copy the URL between { }.
  - Provide as follows, e.g.: https://doi.org/10.7196/07294.937.98x