Clinical Study of Toxic Epidermal Necrolysis (TEN) at a Tertiary Care Center of Western Nepal: A Descriptive Study

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ABSTRACT:

Introduction: Toxic epidermal necrolysis, or TEN, is a rare but very dangerous skin condition that is usually caused by medicines. In South Asia, including Nepal, we do not have much information about it. So we did this study to understand how TEN shows up in patients who come to our big hospital in Western Nepal. **Methods:** We looked back at the records of all TEN patients who came to our skin department from June 2010 to October 2025. We collected their age, sex, what medicines they took, what treatment they got, and how they did. **Results:** We found 70 patients with full records. Their average age was about 40 years, and more of them were women than men. Most were in their thirties. The medicines that caused the problem most often were anticonvulsants and antibiotics. All 70 patients got steroid injections and good wound care, and every one of them got better and went home. But we also found that 12 other TEN patients were sent to other hospitals because they were getting worse. We could not follow them, so we did not include them in our study. **Conclusions:** While all 70 patients in our cohort showed clinical improvement with corticosteroids and supportive care, the referral of 12 deteriorating patients to other centers suggests that the "0% mortality" figure reflects referral bias rather than true treatment success. we need better systems to track patients who get referred.

Keywords: Adverse drug reactions; Corticosteroids; Referral bias; Stevens-Johnson syndrome; Toxic epidermal necrolysis (TEN).

INTRODUCTION:

Toxic Epidermal Necrolysis (TEN) is a rare but very serious illness of the skin and mouth, eyes, and other moist areas. It makes large pieces of skin peel off. Together with a milder form called Stevens-Johnson syndrome (SJS), it is part of a group of severe drug reactions. The difference is how much skin is lost. In TEN, more than 30% of the body surface peels off.[1,2]

Around the world, only one to five people in a million get this every year, but the number changes from place to place because of genes, what drugs doctors prescribe, and other illnesses.[3] Medicines are the cause in about 85 to 90% of cases. The risky ones include some epilepsy drugs, allopurinol for gout, some antibiotics, and nevirapine for HIV.[4,5] Some people have genes that make them more likely to get TEN from certain drugs, especially in Asian populations.[6] The disease happens because the body's immune cells attack the skin cells and kill them.[7]

Many people still die from TEN. In hospitals, death rates are anywhere from 12% to 49%, depending on the group and the care they get.[8] Doctors use a scoring tool called SCORTEN to guess who is more likely to die, but some experts say it is not as accurate as it used to be.[9,10] Newer studies have found other warning signs, like kidney or breathing problems, infections, and other illnesses.[11]

There is a big debate about using steroids for TEN. Many Western guidelines say not to use them because they might cause infections or slow down wound healing.[12] But in many Asian hospitals, doctors still use steroids as the first treatment and they say it works well.[13,14] The most important part of care is still good supportive care, like covering wounds, giving fluids and food, and stopping infections.[15]

One big problem with studies from a single

Submitted: *11 March 2026*
Accepted: *12 June 2026*
Published: *10 July 2026*

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How to cite this article:
Mikrani JA, Pradhan O. Clinical Study of Toxic Epidermal Necrolysis (TEN) in a Tertiary Care Center of Western Nepal: A Descriptive Study. J Lumbini Med Coll. 2026;14(1):24-27. DOI: 10.22502/jlmc.v14i1.568. Epub: 10 July 2026

hospital is something called referral bias. That is when very sick patients get sent to other centers, so the hospital that sent them only has the less sick ones, and their success rates look too good.[16] This is a big issue in places like ours where resources are limited and we do not always know what happens to patients after they leave.[17]

We do not have much data on TEN from Nepal. One older study from Kathmandu found that SJS was about 36% of severe drug reactions, TEN was about 12%, and the death rate was about 12%.[18] Because we have so little local information, we need to keep checking the patterns and outcomes of TEN in different parts of Nepal. So, we did this study to describe who gets TEN in our region, what drugs cause it, and how they do, with special attention to the problem of referral bias.

METHODS:

We did this study by looking back at old medical records from the skin department of our Lumbini Medical College - Teaching Hospital (LMCTH) in Palpa, which is a big referral center for Western Nepal. We got approval from Institutional Review Committee of LMC (IRC-LMC, reference-1/26/V1.R0) before starting our study. All data obtained from patients were kept confidential.

We included everyone who was diagnosed with TEN between June 2010 and October 2025. The diagnosis was made by the doctors based on skin peeling over more than 30% of the body, a positive Nikolsky sign where skin rubs off easily, and sores in the mouth or eyes. Some cases were also confirmed by skin biopsy. We did not include patients with SJS or overlap cases. We also did not include 12 patients who were referred to other hospitals because we did not have their follow-up data.

We collected information from the files using a standard form. We wrote down their age, sex, how much skin was involved, what medicines they had taken before, how long it took them to come to us, what treatment they got, and what happened to them. For the referred patients, we only noted that they were sent away, but we did not know their final results.

We put all the data into Excel and analyzed it with a free program called PSPP 2.1.1. We used averages and percentages to describe our findings.

RESULTS:

Over the 15 years of our study, we found 70 TEN patients with complete records who were managed in our hospital. All of them had clear treatment outcomes. During the same time, 12 more TEN patients were sent to other centers because they were not getting better or were getting worse. We could not include those 12 because we lost track of them after they left.

Among the 70 patients we included, their ages ranged from three to 72 years, and the average was about 40 years. The most common age group was people in their thirties, making up 34% of the cases. There were more women than men, with a ratio of 1.2 women for every one man. Age and sex distribution of the patients is presented in **Table 1**.

All 70 patients had large areas of skin peeling, positive Nikolsky sign, and at least two mucosal areas like mouth, eyes, or genitals involved. At the time they came to us, most of them also had fever and felt very sick.

We could find a likely drug cause in 65 out of 70 patients. The most common drug group was anticonvulsants, which were responsible for about 43% of cases. Antibiotics came next at about 24%, and painkillers at about 17%. Among the anticonvulsants, carbamazepine and phenytoin were the most common. In five patients, we could not find any drug trigger, so maybe an infection or something else caused their TEN. Suspected causative medication of the patients is presented in **Table 2**. All 70 patients received steroid injections and good supportive care like wound dressings, fluids, nutrition, and isolation to prevent infections. The average length of steroid treatment was about six days. All 70 patients got better and were discharged from the hospital. None of them died while they were with us.

Table 1. *Age and Sex Distribution of Patients with TEN (N=70)*

Age Group (Years)	Female (n)	Male (n)	Total (n, %)
0–9	2	1	3 (4.3)
10–19	3	3	6 (8.6)
20–29	6	5	11 (15.7)
30–39	14	10	24 (34.3)
40–49	7	7	14 (20)
50–59	5	4	9 (12.9)
≥60	1	2	3 (4.3)
Total	38	32	70 (100)

Table 2. *Suspected Causative Medications in TEN Patients (N=70)*

Drug Class	Individual Agents	n (%)
Anticonvulsants	Carbamazepine, Phenytoin, Lamotrigine	30 (42.9)
Antibiotics	Sulfonamides, Cephalosporins, Fluoroquinolones	17 (24.3)
Analgesics/NSAIDs	Paracetamol, Ibuprofen, Diclofenac	12 (17.1)
Allopurinol	-	4 (5.7)
Antitubercular drugs	Rifampicin, Isoniazid	2 (2.9)
Unknown/ Idiopathic	-	5 (7.1)
Total		**70 (100)**

However, we must remember the 12 referred patients. They make up about 15% of all TEN patients we saw. If we assume those 12 did poorly or even died, then the real rate of treatment failure in our region would be about 15%, which is very close to the 12% to 18% death rates reported in other South Asian studies.[18,19]

DISCUSSION:

This study tells us about TEN in Western Nepal. We found that most patients were women in their thirties, and anticonvulsants were the top cause. All 70 patients who stayed with us got better with steroids and supportive care. But the most important thing we discovered is the 12 patients who were sent away because they were not improving. This changes everything about how we read our numbers.

Referral bias means that the sickest patients are taken out of our count, making our results look much better than they really are.[16,20] If we add those 12 back, the true failure rate is about 15%, which matches what other researchers have found in Nepal and India.[18,19] So our "zero deaths" number is not real success—it is just a trick of the numbers. This is a big lesson for all single-center studies. We have to track patients even after they are sent elsewhere.[21]

Our 100% improvement rate for the patients who stayed is still good, but we cannot say TEN is not deadly in our area, because we do not know what happened to the 12 we sent away. When we include them, our numbers look like the rest of South Asia. This means the real death rate in our region is probably around 12% to 18%, which is consistent with global estimates.[8,21] Our findings show that we need to do several things. First, we must set up a system to track referred patients and find out their final outcomes.[22] Second, we need studies that include many hospitals together, so we can see the full picture.[23] Third, we need standard treatment rules for TEN in Nepal, including when to send a patient to a bigger center.[24] Fourth, we should start using SCORTEN scores in our daily practice to help us know which patients are at higher risk.[25]

All our 70 patients got steroids, and all of them improved. But steroids are still controversial. Some experts say they can cause infections and slow healing.[12,26] In Asia, many doctors still use them and report good results.[13,14] In our hospital, early steroids plus very careful wound care and isolation seemed to work for the patients who stayed. But we cannot ignore the 15% who got worse and had to be sent away. We do not know if steroids made them worse, or if they were simply more sick from the start, or if other treatments like cyclosporine or IVIG would have helped them more.[27,28]

Our study has good points and weak points. The good points are that it is one of the few studies on TEN from Nepal, it covers 15 years, and we have complete data on our included patients. We also documented the referred patients, so we could talk about referral bias honestly. The weak points are that it is retrospective, so records were not always complete. We did not calculate SCORTEN, so we could not compare the severity of patients. Most diagnoses were clinical without biopsy. It is only from one center, so we cannot generalize to all of Nepal. We did not follow patients after discharge, so we do not know about long-term problems. We did not have a control group, so we cannot be sure steroids were the reason for improvement. And most importantly, we do not know what happened to the 12 referred patients.

Based on our findings, we suggest that hospitals in Nepal should create referral tracking systems, do multicenter studies, start using SCORTEN, make standard treatment protocols, try other drugs like cyclosporine or IVIG for severe cases, test for HLA-B15:02 before giving carbamazepine, and keep detailed referral logs.[6,29]

CONCLUSIONS:

In Western Nepal, TEN mostly affects women in their thirties, and anticonvulsants are the main cause. All 70 patients who stayed at our center got better with steroids and good care. But the 12 patients who were referred away because they got worse change the meaning of our results. The "zero deaths" number is not true success—it is because of referral bias. The real rate of bad outcomes in our region is probably around 15%, which matches other South Asian studies.[18,19] So we urgently need referral tracking systems, multicenter studies, and standard treatment protocols for TEN in Nepal. TEN is still a serious emergency that needs quick diagnosis and good health systems. Our zero death rate should not be seen as a cure rate, but as a warning about the limits of single-center studies and the challenges we face in resource-poor settings. Only by working together across hospitals and tracking all patients can we truly understand and improve care for this terrible disease.

Conflict of Interest: None declared.

Source of Funding: None.

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