

Three common medicines classified as carcinogenic by WHO cancer agency

Doctors say patients should not stop medical treatment that used the medicines to treat high blood pressure, fungal infections, and organ transplant rejection; WHO's International Agency for Research on Cancer has placed hydrochlorothiazide, voriconazole and tacrolimus in Group 1 of the IARC Monographs

Three widely-prescribed medicines used to treat high blood pressure, fungal infections, and organ transplant rejection have been classified as “carcinogenic to humans” (Group 1) by the International Agency for Research on Cancer (IARC), [the World Health Organisation's \(WHO\) cancer](#) research agency. Experts stressed that the classification is a hazard identification and should not prompt patients to discontinue treatment without consulting their doctors.

The three medicines — hydrochlorothiazide (hypertension), voriconazole (fungal infections), and tacrolimus (an immunosuppressant preventing transplant rejection) — are on the WHO Model List of Essential Medicines, prescribed to millions worldwide.

The assessment, published as Volume 137 of the IARC Monographs, expands on conclusions first released in *The Lancet Oncology* in November 2024. The 22-member panel included Indian scientist G.B. Jena.

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Possible DNA damage

There is sufficient evidence that hydrochlorothiazide causes squamous cell skin carcinoma and lip cancer, IARC said. Studies from Denmark and the United States found higher rates of non-melanoma skin cancers among long-term users, attributed to phototoxicity — the drug heightens skin sensitivity to UV radiation, raising the risk of DNA damage after sun exposure.

Voriconazole was similarly linked to squamous cell skin carcinoma in transplant recipients on prolonged therapy, through the same phototoxic mechanism. Tacrolimus was linked to non-Hodgkin lymphoma and post-transplant lymphoproliferative disorder, with limited evidence for leukaemia and skin carcinoma. Unlike the others, its risk stems from immunosuppression, weakening the body's ability to clear abnormal cells.

IARC Monographs identify whether an agent can cause cancer under certain circumstances, but do not assess real-world risk at prescribed doses.

Indian situation

In India, hydrochlorothiazide is a common first-line hypertension therapy, voriconazole is routinely used in immunocompromised patients, and tacrolimus underpins post-transplant care.

Kabir Sardana is the Director, Professor and Head of the Department (HOD), Department of Dermatology, at Atal Bihari Vajpayee Institute of Medical Sciences and Dr. Ram Manohar Lohia Hospital said: “The IARC classification is highly relevant, particularly in India.”

“Hydrochlorothiazide has long been recognised as carrying a risk, especially in rural areas, the Northeast, hilly and coastal regions, and among outdoor workers such as farmers who are exposed to high levels of ultraviolet (UV) radiation. Voriconazole is another concern, not only because of its known association with skin cancer risk, but also because it is frequently prescribed without labelled indications, including for fungal skin infections caused by *Trichophyton indotineae*. Doctors welcome measures to curb such inappropriate use. We cannot ignore these warnings in a country where irrational prescribing, over-the-counter availability, and poor adherence to ethical prescribing and dispensing practices remain significant challenges,” he noted.

Doctors recommend that patients on hydrochlorothiazide or voriconazole should continue sun-protection measures — sunscreen, limiting UV exposure, periodic skin checks. Transplant patients on tacrolimus are already routinely monitored for skin cancers and lymphoproliferative disorders.

Experts add that patients should not stop or alter medication without medical advice, since these drugs treat serious, often life-threatening, conditions. The priority is informed prescribing and monitoring, not a shift away from treatments whose benefits remain established, they said.

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