Table 2. Summary of drug interactions between nirmatrelvir-ritonavir (NMV/r) and dermatologic medications[a]

Drugs	Common indications	Expected interaction with NMV/r/effect on plasma drug concentration	Potential adverse effects	Recommended action
Systemic corticosteroids				
Dexamethasone	Vitiligo	↑ Dexamethasone (Dependent on CYP3A4 metabolism)	Systemic glucocorticoid effects (hyperglycaemia, Cushing's syndrome, adrenal suppression)	Careful monitoring for adverse effects. (Lexicomp Risk Rating C, Micromedex Severity: Major)
Hydrocortisone	Angioedema Anaphylaxis	↑ Hydrocortisone (Dependent on CYP3A4 metabolism)		Careful monitoring for adverse effects. (Lexicomp Risk Rating C) Micromedex Drug Reference indicates no drug interactions.
Methylprednisolone	Pemphigus	↑ Methylprednisolone (Dependent on CYP3A4 metabolism)		Careful monitoring for adverse effects. (Lexicomp Risk Rating C, Micromedex Severity: Major)
Prednisolone	Allergic contact dermatitis Atopic dermatitis Bullous pemphigoid Pemphigus Urticaria Vitiligo	↑ Prednisolone (Dependent on CYP3A4 metabolism)		Careful monitoring for adverse effects. (Lexicomp Risk Rating C) Micromedex Drug Reference indicates no drug interactions.
Prednisone	Allergic contact dermatitis Angioedema Urticaria	↑ Prednisone (Dependent on CYP3A4 metabolism)		Careful monitoring for adverse effects. (Lexicomp Risk Rating C, Micromedex Severity: Major)
Immunomodulators				
Abrocitinib	Atopic dermatitis	↑ Abrocitinib (Dependent on CYP3A4 metabolism)		No dose adjustment or additional monitoring necessary.
Ciclosporin	Atopic dermatitis Psoriasis	↑ Ciclosporin (Dependent on CYP3A4 metabolism)	Renal impairment Hypertension	Stop use of ciclosporin during treatment and resume 3 days after last dose of NMV/r. If unable to stop ciclosporin, consider alternative COVID-19 treatment. (Liverpool Drug Interactions checker) (Lexicomp Risk Rating D, Micromedex Severity: Major)
Cyclophosphamide	Autoimmune diseases Dermatomyositis Mycosis fungoides	↑ Cyclophosphamide (Dependent on CYP3A4 and CYP2B6 metabolism)	Oral mucositis Neutropaenia Infection	Careful monitoring for adverse effects. (Lexicomp Risk Rating C, Micromedex Severity: Major)
Tofacitinib	Psoriatic arthritis	↑ Tofacitinib (Dependent on CYP3A4 metabolism)	Transaminitis Neutropaenia Infection	Dose reduction to 5mg once daily. Avoid tofacitinib XR and replace with immediate-release tofacitinib.[17] (Lexicomp Risk Rating D, Micromedex Severity: Moderate)

Table 2. Summary of drug interactions between nirmatrelvir-ritonavir (NMV/r) and dermatologic medications[a] (Cont'd)

Drugs	Common indications	Expected interaction with NMV/r/effect on plasma drug concentration	Potential adverse effects	Recommended action
Upadacitinib	Atopic dermatitis Psoriatic arthritis	↑ Upadacitinib (Dependent on CYP3A4 metabolism)	Infection Thrombosis	Careful monitoring for adverse effects at upadacitinib 15mg/day dosing.[18] Avoid higher doses of upadacitinib during NMV/r treatment and 3 days after completion of NMV/r treatment. (Lexicomp Risk Rating D)
Antibiotics				
Clarithromycin	Acne Rosacea Staphylococcal skin infections Nontuberculous mycobacterium infections	↑ Clarithromycin but ↓ clarithromycin active metabolites (Dependent on CYP3A4 metabolism)	Hepatotoxicity QT-interval prolongation	Consider alternative antibiotics for mycobacterial infections as efficacy may be compromised. (Micromedex, Lexicomp) Careful monitoring for adverse effects especially in patients with renal impairment. No dose adjustment necessary in patients with normal renal function. Avoid clarithromycin doses greater than 1,000mg/day. Dosage should be reduced by 50% and 75% in patients with CrCl 30–60mL/min and <30mL/min, respectively.[22] (Lexicomp Risk Rating D, Micromedex Severity: Major)
Clindamycin	Hidradenitis suppurativa Staphylococcal skin infections	↑ Clindamycin (Dependent on CYP3A4 metabolism)	Gastrointestinal symptoms Nephrotoxicity	Careful monitoring for adverse effects. (Lexicomp Risk Rating C; however, Micromedex states no drug interactions)
Clofazimine	Leprosy	↑ Clofazimine (Dependent on CYP3A4 metabolism)	QT-interval prolongation	Careful monitoring for adverse effects, including ECG monitoring. (Lexicomp Risk Rating C, Micromedex Severity: Major)
Erythromycin	Acne Rosacea Staphylococcal skin infections	↑ Erythromycin (Dependent on CYP3A4 metabolism)	Gastrointestinal symptoms Hepatotoxicity QT-interval prolongation	Stop and replace with another antibiotic that has less interaction with NMV/r. Alternatively, carefully monitor for adverse effects and consider dose reduction. (Lexicomp Risk Rating C, Micromedex Severity: Major)
Rifampicin	Hidradenitis suppurativa Staphylococcal skin infections Nontuberculous mycobacterium infections	↓ NMV/r (rifampicin is a CYP3A4 inducer)	Reduced therapeutic effects of NMV/r Risk of loss of virological response	Concomitant use of rifampicin is contraindicated. Consider alternative COVID-19 treatment or antimycobacterial therapy (e.g. rifabutin) or alternative treatment for hidradenitis suppurativa. (Lexicomp Risk Rating X, Micromedex Severity: Contraindicated)
Antifungals				
Fluconazole	Dermatophyte infections Pityriasis versicolor Candidiasis	↑ NMV/r (fluconazole is a CYP3A4 inhibitor)	Gastrointestinal symptoms Transaminitis QT-interval prolongation	Careful monitoring for adverse effects, including ECG monitoring. (Lexicomp Risk Rating C, Micromedex Severity: Contraindicated)

Table 2. Summary of drug interactions between nirmatrelvir-ritonavir (NMV/r) and dermatologic medications[a] (Cont'd)

Drugs	Common indications	Expected interaction with NMV/r/effect on plasma drug concentration	Potential adverse effects	Recommended action
Itraconazole	Dermatophyte infections Onychomycosis Pityriasis versicolor	↑ Itraconazole (Dependent on CYP3A4 metabolism) ↑ NMV/r (itraconazole is an CYP3A4 inhibitor)	Gastrointestinal symptoms Transaminitis QT-interval prolongation	Avoid high doses (>200mg/day) of itraconazole and carefully monitor for adverse effects.[26] (Lexicomp Risk Rating D, Micromedex Severity: Moderate)
Ketoconazole	Dermatophyte infections Pityriasis versicolor	↑ Ketoconazole (Dependent on CYP3A4 metabolism) ↑ NMV/r (ketoconazole is an CYP3A4 inhibitor)	Gastrointestinal symptoms Transaminitis QT-interval prolongation	Avoid high doses (>200mg/day) of ketoconazole and carefully monitor for adverse effects.[27] (Lexicomp Risk Rating D, Micromedex Severity: Major)
Antiparasitics				
Albendazole	Parasitic worm infections	↓ Albendazole (ritonavir is an inducer of hepatic metabolism of albendazole)		Monitor for reduced clinical response to albendazole therapy. (Lexicomp Risk Rating C)
Antihistamines				
Bilastine	Angioedema and other allergic dermatological reactions Atopic dermatitis Urticaria Pruritus	↑ Bilastine (Dependent on P-glycoprotein efflux)	QT-interval prolongation	Stop use of bilastine during NMV/r treatment, especially in patients with moderate-severe renal impairment, and resume 3 days after last dose of NMV/r. (Lexicomp Risk Rating X)
Hydroxyzine		↑ Hydroxyzine (Dependent on CYP3A4 metabolism)	QT-interval prolongation Torsades de pointes	Consider close ECG monitoring for QT-interval prolongation. (Micromedex Severity: Major)
Rupatadine fumarate		↑ Rupatadine fumarate (Dependent on CYP3A4 metabolism)	QT-interval prolongation Torsades de pointes	Concomitant use of rupatadine with NMV/r is contraindicated.[31] Stop use during treatment and resume 3 days after last dose of NMV/r. (Lexicomp Risk Rating X)
Cetirizine Fexofenadine Levocetirizine		↑ Cetirizine ↑ Fexofenadine ↑ Levocetirizine (Dependent on P-glycoprotein efflux and CYP3A4 metabolism)	Greater central antihistamine effects (reduced alertness, longer reaction times) (Lexicomp)	No dose adjustment or additional monitoring necessary. (Lexicomp Risk Rating B)

Table 2. Summary of drug interactions between nirmatrelvir-ritonavir (NMV/r) and dermatologic medications[a] (Cont'd)

Drugs	Common indications	Expected interaction with NMV/r/effect on plasma drug concentration	Potential adverse effects	Recommended action
Acne agents				
Oral contraceptives Oestradiol Ethinyloestradiol	Acne Prevention of pregnancy	↓ Ethinyloestradiol (Probable CYP2C9 and CYP1A2 metabolism)	Irregular bleeding Venous thrombosis Dyslipidaemia Hyperkalaemia (drospirenone) Hepatotoxicity (cyproterone) Hot flashes (cyproterone)	Careful monitoring for adverse effects. Reduction in contraceptive efficacy is unlikely to be clinically significant given the short course of NMV/r. However, patients on oestrogen-containing hormonal contraception are advised to consider additional non-hormonal method of contraception during and up to 1 menstrual cycle after completing the course of NMV/r.[7]
Progestogen (progestin) Chlormadinone acetate Dienogest Levonorgestrel Norethindrone Norgestimate Norgestrel Drospirenone Cyproterone acetate		↑ Chlormadinone acetate ↑ Dienogest ↑ Levonorgestrel ↑ Norethindrone ↑ Norgestimate ↑ Norgestrel ↑ Drospirenone ↑ Cyproterone acetate (Dependent on CYP3A4 metabolism)		
Hair agents				
Dutasteride	Androgenetic alopecia	↑ Dutasteride (Dependent on CYP3A4 metabolism)	Erectile dysfunction Decreased libido	Careful monitoring for adverse effects. (Lexicomp Risk Rating C)
Other commonly encountered drugs in dermatology patients				
Colchicine	Leukocytoclastic vasculitis Neutrophilic dermatoses Sweet's syndrome Urticarial vasculitis	↑ Colchicine (Dependent on CYP3A4 metabolism) Risk of serious toxicity	Acute colchicine toxicity (gastrointestinal symptoms, seizures, bone marrow suppression, multiorgan failure)	Concomitant use of colchicine with NMV/r is contraindicated.[7] Stop use during NMV/r treatment if possible. A colchicine dose adjustment is required in patients who are taking or have taken NMV/r within the past 14 days. Recommendations on dose adjustment for dermatologic indications are not available but can be inferred from dose adjustment for other indications. For the treatment of a gout flare-up with concomitant use of NMV/r, the adjusted dose of colchicine is 0.6mg once, then 0.3mg 1 hour later (repeated no earlier than every 3 days). For the prophylaxis of gout flare, if the original dose is 0.6mg 2 times daily, the adjusted dose is 0.3mg once daily. If the original dose is 0.6mg once daily, the adjusted dose is 0.3mg every other day. In patients with familial Mediterranean fever with concomitant use of NMV/r, the maximum daily dose of colchicine is 0.6mg (may be given as 0.3mg twice daily).[34]

Table 2. Summary of drug interactions between nirmatrelvir-ritonavir (NMV/r) and dermatologic medications[a] (Cont'd)

Drugs	Common indications	Expected interaction with NMV/r/effect on plasma drug concentration	Potential adverse effects	Recommended action
HMG-CoA reductase inhibitors Atorvastatin Rosuvastatin	Dyslipidaemia E.g. in acne patients taking isotretinoin or psoriasis patients taking acitretin	↑ Atorvastatin ↑ Rosuvastatin (Less dependent on CYP3A4 metabolism than simvastatin or lovastatin)	Myopathy Rhabdomyolysis	Consider stopping use during treatment and resuming 3 days after last dose of NMV/r. If concomitant intake of atorvastatin and NMV/r is required, atorvastatin dose should be reduced to 10mg daily and resume the usual dose 3 days after completion of NMV/r. (Liverpool Drug Interactions checker) If concomitant intake of rosuvastatin and NMV/r is required, maximum rosuvastatin dose should be 10mg daily and resume the usual dose 3 days after completion of NMV/r. (Liverpool Drug Interactions checker) Monitor carefully for adverse effects. (Micromedex Severity: Major; Lexicomp Risk Rating D and C for atorvastatin and rosuvastatin, respectively)
Simvastatin Lovastatin		↑ Simvastatin ↑ Lovastatin (Dependent on CYP3A4 metabolism)		Concomitant use of simvastatin or lovastatin with NMV/r is contraindicated.[7] Stop use at least 12 hours before first dose of NMV/r and resume 3 days after last NMV/r dose. (Lexicomp Risk Rating X, Micromedex Severity: Contraindicated)

CYP: cytochrome; ECG: electrocardiogram; HMG-CoA: 3-hydroxy-3-methylglutaryl coenzyme A; ↑: increased plasma drug concentration; ↓: decreased plasma drug concentration
[a] Consult the Liverpool COVID-19 Drug Interactions[5] checker for updated drugs. If a drug is not listed here, co-administration cannot be automatically assumed to be safe.
Superscript numbers: refer to REFERENCES