
Examining the prior authorization process, patient outcomes, and the impact of a pharmacy intervention: A single-center review



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Background: Dermatology experiences a disproportionately high burden of prior authorizations (PAs).

Objective: To examine the effect of a centralized pharmacy intervention on the PA process and the impact of PAs on patient outcomes.

Methods: A retrospective review of PAs submitted for medications before and after implementation of pharmacy intervention was conducted.

Results: PA was required for 8.1% of all prescriptions. PAs were most frequently submitted for topical steroids, topical antibiotics and antifungals, and topical retinoids. Most common indications included acne, psoriasis, and dermatitis. Biologic agents (55.2%) and brand-name only medications (42.8%) required PA at higher rates. Pharmacy intervention resulted in shorter time to PA submission (4 days vs 1 day, $P < .001$) and decision (6 days vs 1 day, $P < .001$) and higher approval rates (63.9% vs 80.6%, $P < .001$) but did not decrease the total number of PAs. Patients with approved PAs had higher likelihood of disease improvement vs those with denied PAs (71.1% vs 58.0%, $P = .013$).

Limitations: Data were collected from a single academic institution. Patient medication compliance was not assessed.

Conclusions: The current PA process may result in delays in care and a negative impact on patients. A centralized pharmacy intervention is an effective measure but does not eliminate the overall burden of PAs. (J Am Acad Dermatol 2019;81:1308-18.)

Key words: drugs; medications; patient outcomes; pharmacy intervention; pharmacy; prior authorization.

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Conflicts of interest: Dr Flood receives fellowship funding from AbbVie, Janssen, and the National Psoriasis Foundation. Dr Kimball is a consultant and investigator for AbbVie, Bristol-Myers Squibb, Eli Lilly, Janssen, Novartis, Pfizer, and

UCB, and receives fellowship funding from AbbVie and Janssen. Dr Porter is a consultant and investigator for AbbVie and Novartis, an investigator for Bristol-Myers Squibb, Eli Lilly, Janssen, and UCB, and has previously received fellowship funding from AbbVie, Janssen, and the National Psoriasis Foundation. Sabrina Papatia, Nicole M. Golbari, Parth V. Patel, and Dr Olbricht have no conflicts of interest to declare.

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Insurers use prior authorizations (PAs) to review medication prescriptions before coverage. Although the intent of PAs is to ensure appropriate oversight and use of medications, PAs create a significant administrative burden for providers and practices. Within dermatology, recent biotechnology and pharmaceutical advancements have driven increases in the costs of dermatologic therapies. As insurers and pharmacy benefit managers face difficulty managing dermatologic prescribing, the PA burden for dermatologists has disproportionately increased compared with other specialties.¹⁻³

Depending on the practice, PAs are processed by providers, support staff, or both. Administrative costs of PAs to medical practices and insurance companies are poorly documented.³ PAs are one mechanism that may result in cost savings from lower drug use and pharmacy cost savings, but this benefit may be counteracted by overall increased health care costs resulting from inadequate medication access and negative patient outcomes. These costs ultimately fall onto patients in the form of increased insurance plan costs and out-of-pocket copays and onto medical practices, which must employ personnel to process PAs.⁴⁻¹⁰

Current literature focuses on time and financial strains created by PAs. Providers rate PAs as one of their greatest administrative burdens. PAs affect their ability to deliver high-quality care while contributing to reduced career satisfaction and burnout.¹¹

Some academic medical centers and health systems have implemented pharmacy-based interventions in which a full-time pharmacist reviews all prescriptions and PAs. This centralized method has reduced insurance denials and Medicare write-offs, increased revenues by uncovering billing system deficiencies, and established closer working relationships across hospital departments. Further, by acting as a central information gatherer and providing letter templates for petitions and reconsideration requests with published studies for off-label use of medications, these interventions have expanded Medicare local coverage determinations.^{12,13}

Our study examined the effect of a centralized pharmacy intervention at the Beth Israel Deaconess Medical Center Dermatology Department on the PA process and patient outcomes.

MATERIALS AND METHODS

Study design

We performed a retrospective, single-center electronic health record (EHR) review of adult patients prescribed at least 1 medication requiring PA at a general dermatologic visit. The Beth Israel Deaconess Medical Center Committee on Clinical

Investigations/Institutional Review Board approved this study. No exclusion criteria were applied. Clinic visits and PAs were reviewed from May 1, 2017, to July 31, 2017 (prepharmacy intervention) and October 1, 2017, to December 31, 2017 (post-pharmacy intervention). The following data were collected: (1) medication name, dosage, indication, e-prescription date; (2) PA submission date, decision date, decision outcome, reason for

denial, course of action after denial; and (3) follow-up dermatology visit information, including date of the first subsequent visit, disease severity assessment, and total number of visits within 6 months of the original PA submission.

Pharmacy intervention

The pharmacy liaison program was implemented August 2017. Before the intervention, 2 experienced full-time medical assistants (MAs) spent 50% of their time handling PAs in addition to providers occasionally managing PAs. With adoption of the program, 1 full-time pharmacy technician (PT) spent 100% of her time overseeing PAs. PAs were submitted within 1 day of receipt and were monitored to ensure a PA decision within 3 days of submission. The PT had access to the American Academy of Dermatology (AAD) PA appeal letter generator tool and a provider survey.¹⁴ The PT drafted a patient-specific letter or used the AAD tool in appealing denials. The provider survey indicated whether individual providers would allow automatic substitution of equivalent medication class and vehicle (eg, of alternative topical steroids on formulary) avoiding unnecessary PA submissions. The Beth Israel Deaconess Medical Center PA process with an arrow indicating the step affected by the intervention is outlined in Fig 1.

Statistical analyses

Fisher's exact tests were used to compare proportions of categorical variables. Two-sample

CAPSULE SUMMARY

- Prior authorizations pose an administrative burden on providers and may result in negative impacts on patients and delays in care.
- A centralized pharmacy intervention is an effective measure to decrease processing time and increase approval rates. Further evaluation of the prior authorization process is needed to reduce the overall burden.

Abbreviations used:

AAD:	American Academy of Dermatology
EHR:	electronic health record
FTE:	full-time equivalent
MA:	medical assistant
PA:	prior authorization
PT:	pharmacy technician
Rx:	prescription

t tests and Wilcoxon rank sum tests were used to compare means and medians of continuous variables. All statistical analyses were performed with Stata software (StataCorp LLC, College Station, TX). *P* values of $\leq .05$ were considered statistically significant.

RESULTS

Overview

An average of 0.61 medications were prescribed per visit, of which 8.1% required PA (Table D). Prescriptions requiring PA increased postintervention, 7.7% vs 8.5%, but this was not statistically significant ($P = .153$).

There was no difference in medication type or indication between the 2 time periods, so data were combined to reflect total numbers of each category (Tables II and III). Medications that did not require at least 1 PA were not included in Table II. Of medications requiring PA, the greatest number of prescriptions was for topical steroids ($n = 3732$), topical antibiotics and antifungals ($n = 2031$), and topical acne and rosacea medications, including topical retinoids ($n = 1570$). The medications for which the greatest absolute number of PAs was submitted were tretinoin ($n = 252$), topical tacrolimus ($n = 144$), clobetasol ($n = 67$), and adalimumab ($n = 37$). Of medications that represented $>1\%$ of all PAs submitted, those with the highest PA requirement included dupilumab (100.0% of prescriptions required PA), botulinum toxin (87.1%), topical tacrolimus (63.4%), etanercept (63.0%), pimecrolimus (58.7%), apremilast (55.0%), adalimumab (48.1%), and tretinoin (35.1%). Biologic medications represented 1.5% of all prescriptions written for medications requiring at least 1 PA ($n = 172$) and 10.1% of all PAs submitted ($n = 95$); 55.2% of biologic prescriptions required PA. Brand-name only medications represented 4.1% of prescriptions ($n = 456$) and 20.7% of all PAs ($n = 195$); 42.8% of brand-name prescriptions required PA. Medications with only a brand-name option available are indicated by asterisks in Table II.

The most frequent conditions cited with PA submission were acne ($n = 285$), psoriasis ($n = 130$), unspecified dermatitis ($n = 95$), and atopic dermatitis

or eczema ($n = 80$). Of indications that represented $>1\%$ of all PAs submitted, the highest PA approval rates were for pruritus (72.7% of PAs were approved), acne (70.9%), photoaging or lentigines (68.4%), psoriasis (66.2%), actinic keratosis (65.4%), and hyperhidrosis (60.0%). Those with the highest PA denial rates included vitiligo (66.7%), alopecia (50.0%), hidradenitis suppurativa (46.7%), verruca vulgaris (36.4%), tinea or onychomycosis (35.9%), and seborrheic dermatitis (35.7%).

The most common reasons for PA denial included that the requested medication was nonformulary or step therapy was required ($n = 70$ [36.1%]), the requested medication was prescribed for an indication not approved by the United States Food and Drug Administration ($n = 46$ [23.7%]), insufficient information was provided in the PA ($n = 19$ [9.8%]), and other reasons, including benefit exclusion, age restrictions, or an over-the-counter version was available ($n = 14$ [7.2%]). For the rest of the denials, the reason for denial was not recorded ($n = 45$ [23.2%]). Indications with any Food and Drug Administration-approved medications (13 of 49) are indicated by asterisks in Table III.¹⁵⁻¹⁷

Impact of pharmacy intervention on PA process

The pharmacy intervention resulted in a shorter time to PA submission (4 days vs 1 day, $P < .001$), shorter time to receive and record PA outcome (6 days vs 1 day, $P < .001$), and increased PA approval rate (63.9% vs 80.6%, $P < .001$) (Table I).

Courses pursued after PA denial included appeal submission (33.5%), prescription for alternative medication (23.2%), or no specific action taken (43.3%). There was no difference before or after the intervention in these measures ($P = .204$) or in appeal outcome ($P > .99$). Overall, 64.6% of appeals were approved, and 35.4% were denied or no decision was recorded. After the intervention, however, use of the AAD appeal letter generator tool ($n = 6$) led to a higher appeal approval rate compared with traditional letters ($n = 25$), although not significantly (83.3% vs 60.0%, $P = .383$).

As part of the intervention, the PT frequently replaced topical steroids requiring PA with a preferred formulary alternative of the same class and vehicle and subsequently did not submit the original PA. Substitutions were most common for clobetasol and halobetasol. The total number of PAs submitted per prescription for topical steroids was the same before and after the intervention (3.9% [73 of 1852] vs 4.3% [80 of 1880], $P = .680$). However, PA approval rate increased from 43.1% before to 74.4% after the intervention ($P = .003$).

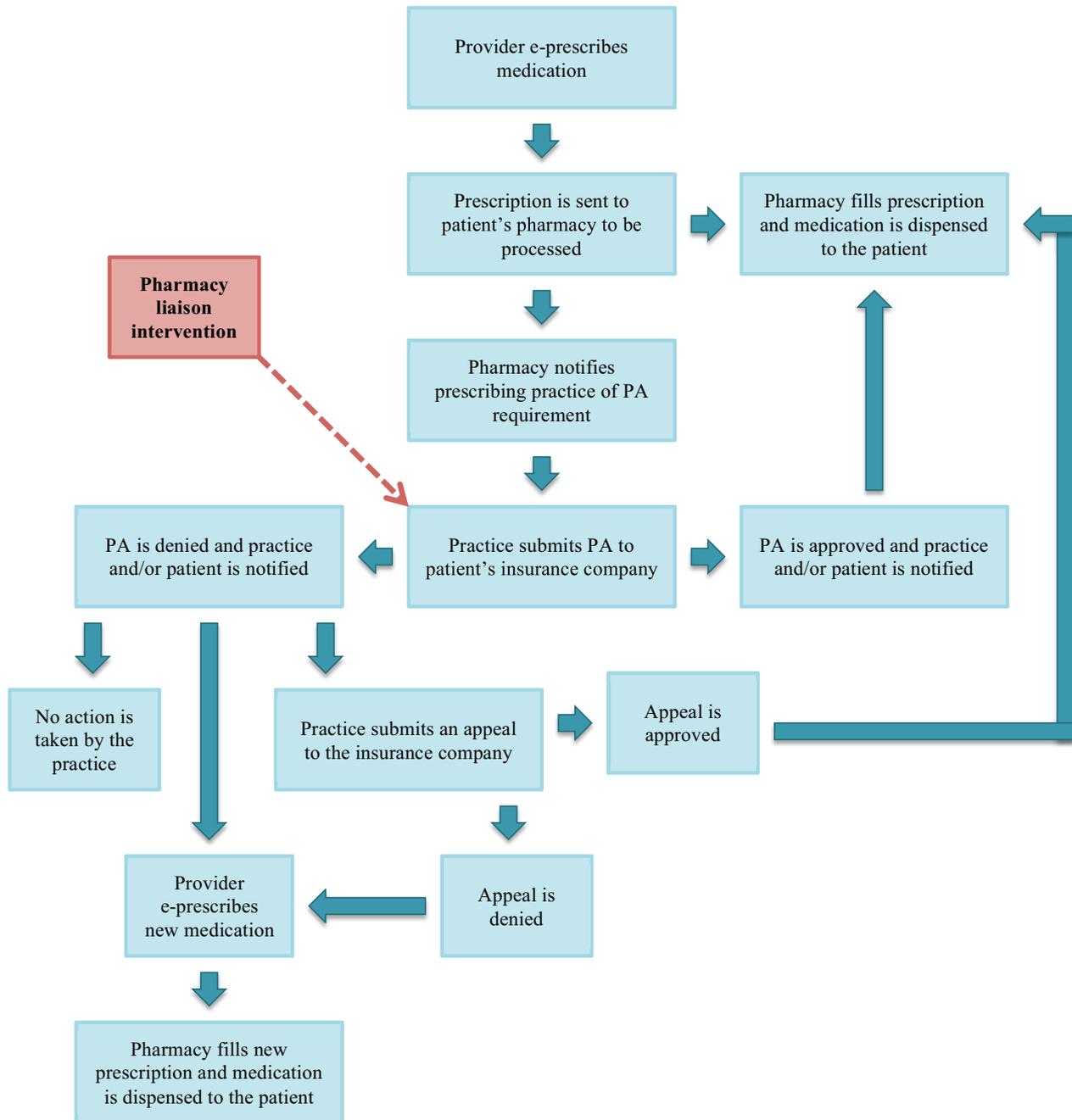


Fig 1. Prior authorization (PA) process. The *arrow* indicates the step affected by the intervention.

Impact of pharmacy intervention on patient outcomes

Of patients with at least 1 PA submitted, no difference in the rate of dermatologic follow-up within 6 months of PA submission ($P = .325$), time to first dermatologic follow-up appointment ($P = .144$), and disease severity at first dermatologic follow-up visit ($P = .751$) was observed preintervention and post-intervention. We documented that 57.5% of patients with at least 1 PA submitted returned for at least 1 dermatologic follow-up appointment within 6 months

(median, 77.5 days from original PA submission). Of patients with follow-up, 67.6% demonstrated improvement of the condition for which the original PA was submitted, and 32.5% demonstrated worsening or no change.

Patient impact by PA decision and postdenial course of action

Improvement in disease by initial PA outcome, course of action after PA denial, and receipt of original medication are shown in Fig 2. There was

Table I. Prior authorization data before and after pharmacy intervention

Variable	Before intervention	After intervention	Totals	P value
	05/01/17-07/31/17	10/01/17-12/31/17		
Practice prescription trends				
Total visits, No.	10,092	9039	19,131	...
Total prescriptions, No.	5776	5844	11,620	...
Total PAs, No.	446	494	940	...
Prescriptions per visit, No.	0.57	0.65	0.61	
Prescriptions requiring PA, %	7.7	8.5	8.1	.153
Days from prescription to PA submission, median (25th-75th percentile)	4 (1-12)	1 (0-4)		<.001
Days from PA submission to PA decision, median (25th-75th percentile)	6 (1-11)	1 (0-2)	...	<.001
PA decision outcome				
Approval rate, %	63.9	80.6	...	<.001
Denial rate, %	36.1	19.4	...	
Course of action after PA denial				
Appeal submission, %	29.3	39.7	33.5	.204
Alternative medication prescribed, %	22.4	24.4	23.2	
No specific action, %	48.3	35.9	43.3	
Appeal decision outcome				
Appeal approved, %	64.7	64.5	64.6	>.99
Appeal denied/no record, %	35.3	35.5	35.4	
Dermatologic follow-up				
Follow up rate ≤6 months of PA submission, %	55.5	59.2	57.5	.325
Days from PA submission to first dermatologic follow-up visit, median (25th-75th percentile)	77.5 (42-125)	77 (35-111)	77.5 (39.5-119.5)	.144
Severity of condition at dermatologic follow-up visit				
Improved	68.5	66.8	67.6	.751
Worsened/no change	31.5	33.2	32.5	

PA, Prior authorization.

no significant difference in the rate of dermatology follow-up ($P > .99$) and time to first follow-up visit ($P = .494$) between patients whose PA was approved vs patients whose PA was denied. However, the difference in disease severity at the first dermatologic follow-up visit was significant. Both groups showed higher likelihood of improvement compared with worsening, but patients with approved PAs had greater improvement than those with denied PAs (71.1% vs 58.0%, $P = .013$).

For patients with denied PAs, the course of action (appeal submission, prescription for alternative medication, or no specific action taken) after PA denial did not affect the rate of follow-up ($P = .140$) or disease severity at follow-up ($P = .187$). However, patients with appeals submitted had higher likelihood of disease improvement compared with those prescribed an alternative medication or if no action was taken (67.4% vs 59.3% vs 47.6%). If the appeal was approved, the improvement in disease of these patients was similar to the improvement seen in patients with original PA approved (76.7% vs 71.1%, $P = .672$).

There was a significant difference in disease severity at dermatologic follow-up between those who did or did not receive the original medication for which PA was submitted: 48.8% of patients who did not receive their original medication showed worsening or no change compared with 28.4% of patients who did receive their original medication either via initial PA approval or approved appeal after initial PA denial ($P < .001$).

DISCUSSION

The pharmacy liaison program at Beth Israel Deaconess Medical Center was an effective intervention for PA processing; however, multiple inadequacies intrinsic to the PA process exist that are insurmountable by this intervention alone. Similar to previous studies, we found that PA submissions and decisions were faster and the overall PA approval rate was higher with pharmacy intervention.¹² Financially, the intervention proved to be advantageous, with the annual salary range of 1 PT, representing 1.0 full-time equivalent (FTE), being

Table II. Prior authorizations by medication

Medication by class	Rx	PA	PA/Rx	PA/all PAs	Approved		Denied		Other	
	No.	No.	%	%	No.	%	No.	%	No.	%
Topical steroid										
Alclometasone	21	1	4.8	0.1	0	0.0	0	0.0	1	100.0
Betamethasone	880	14	1.6	1.5	2	14.3	3	21.4	9	64.3
Clobetasol	537	67	12.5	7.1	26	38.8	18	26.9	23	34.3
Desonide	183	24	13.1	2.6	6	25.0	10	41.7	8	33.3
Desoximetasone	24	6	25.0	0.6	2	33.3	3	50.0	1	16.7
Fluocinolone	179	11	6.1	1.2	8	72.7	1	9.1	2	18.2
Fluocinonide	476	17	3.6	1.8	7	41.2	2	11.8	8	47.1
Fluticasone	4	1	25.0	0.1	1	100.0	0	0.0	0	0.0
Halobetasol	71	5	7.0	0.5	2	40.0	2	40.0	1	20.0
Hydrocortisone-iodoquinol	386	5	1.3	0.5	0	0.0	1	20.0	4	80.0
Triamcinolone	971	2	0.2	0.2	0	0.0	0	0.0	2	100.0
Total	3732	153	4.1	16.3	54	35.3	40	26.1	59	38.6
Topical antibiotics/antifungals										
Ciclopirox	74	7	9.5	0.7	3	42.9	1	14.3	3	42.9
Clindamycin	615	22	3.6	2.3	17	77.3	3	13.6	2	9.1
Econazole	193	14	7.3	1.5	4	28.6	5	35.7	5	35.7
Efinaconazole*	6	4	66.7	0.4	1	25.0	3	75.0	0	0.0
Erythromycin	26	3	11.5	0.3	1	33.3	1	33.3	1	33.3
Ketoconazole	748	1	0.1	0.1	0	0.0	0	0.0	1	100.0
Mupirocin	366	1	0.3	0.1	0	0.0	0	0.0	1	100.0
Naftifine *	3	3	100.0	0.3	0	0.0	3	100.0	0	0.0
Total	2031	55	2.7	5.9	26	47.3	16	29.1	13	23.6
Oral antibiotics/antifungals										
Itraconazole	5	3	60.0	0.3	1	33.3	1	33.3	1	33.3
Minocycline	140	2	1.4	0.2	0	0.0	1	50.0	1	50.0
Terbinafine	109	10	9.2	1.1	6	60.0	2	20.0	2	20.0
Total	254	15	5.9	1.6	7	46.7	4	26.7	4	26.7
Topical retinoid/acne/rosacea										
Adapalene	59	17	28.8	1.8	11	64.7	2	11.8	4	23.5
Azelaic acid*	81	13	16.0	1.4	8	61.5	2	15.4	3	23.1
Benzoyl peroxide	41	6	14.6	0.6	4	66.7	2	33.3	0	0.0
Benzoyl peroxide/clindamycin	80	5	6.3	0.5	0	0.0	1	20.0	4	80.0
Brimonidine*	11	4	36.4	0.4	1	25.0	1	25.0	2	50.0
Dapsone	15	5	33.3	0.5	2	40.0	0	0.0	3	60.0
Ivermectin	43	14	32.6	1.5	8	57.1	2	14.3	4	28.6
Metronidazole	366	6	1.6	0.6	3	50.0	1	16.7	2	33.3
Oxymetazoline*	2	1	50.0	0.1	1	100.0	0	0.0	0	0.0
Sulfacetamide	127	7	5.5	0.7	1	14.3	3	42.9	3	42.9
Tazarotene	27	8	29.6	0.9	4	50.0	4	50.0	0	0.0
Tretinoin	718	252	35.1	26.8	186	73.8	13	5.2	53	21.0
Total	1570	338	21.5	36.0	229	67.8	31	9.2	78	23.1
Oral retinoid/acne/rosacea										
Acitretin	29	4	13.8	0.4	3	75.0	1	25.0	0	0.0
Isotretinoin*	76	12	15.8	1.3	8	66.7	2	16.7	2	16.7
Spirolactone	382	3	0.8	0.3	2	66.7	0	0.0	1	33.3
Total	487	19	3.9	2.0	13	68.4	3	15.8	3	15.8
Topical immunomodulators/other creams										
Calcipotriene	97	3	3.1	0.3	1	33.3	1	33.3	1	33.3
Crisaborole*	6	3	50.0	0.3	3	100.0	0	0.0	0	0.0
Diclofenac sodium	9	6	66.7	0.6	4	66.7	1	16.7	1	16.7
Diphenylcyclopropenone	1	1	100.0	0.1	0	0.0	0	0.0	1	100.0
Fluorouracil	369	8	2.2	0.9	4	50.0	2	25.0	2	25.0
Imiquimod	119	8	6.7	0.9	2	25.0	4	50.0	2	25.0

Continued

Table II. Cont'd

Medication by class	Rx	PA	PA/Rx	PA/all PAs	Approved		Denied		Other	
	No.	No.	%	%	No.	%	No.	%	No.	%
Ingenol mebutate*	3	2	66.7	0.2	1	50.0	0	0.0	1	50.0
Pimecrolimus*	46	27	58.7	2.9	20	74.1	4	14.8	3	11.1
Squaric acid	1	1	100.0	0.1	0	0.0	0	0.0	1	100.0
Tacrolimus	227	144	63.4	15.3	77	53.5	43	29.9	24	16.7
Total	878	203	23.1	21.6	112	55.2	55	27.1	36	17.7
Systemic immunomodulators/other										
Anakinra*	1	1	100.0	0.1	1	100.0	0	0.0	0	0.0
Azathioprine	9	2	22.2	0.2	2	100.0	0	0.0	0	0.0
Cyclosporine	16	1	6.3	0.1	1	100.0	0	0.0	0	0.0
Methotrexate	81	3	3.7	0.3	2	66.7	0	0.0	1	33.3
Mycophenolate	16	1	6.3	0.1	0	0.0	1	100.0	0	0.0
Prednisone	116	1	0.9	0.1	0	0.0	0	0.0	1	100.0
Sirolimus	1	1	100.0	0.1	1	100.0	0	0.0	0	0.0
Total	240	10	4.2	1.1	7	70.0	1	10.0	2	20.0
Biologics										
Adalimumab*	77	37	48.1	3.9	25	67.6	9	24.3	3	8.1
Apremilast*	20	11	55.0	1.2	5	45.5	5	45.5	1	9.1
Dupilumab*	11	11	100.0	1.2	4	36.4	5	45.5	2	18.2
Etanercept*	27	17	63.0	1.8	10	58.8	5	29.4	2	11.8
Guselkumab*	4	3	75.0	0.3	3	100.0	0	0.0	0	0.0
Infliximab*	2	2	100.0	0.2	2	100.0	0	0.0	0	0.0
Ixekizumab*	12	4	33.3	0.4	4	100.0	0	0.0	0	0.0
Secukinumab*	7	3	42.9	0.3	3	100.0	0	0.0	0	0.0
Tofacitinib*	1	1	100.0	0.1	0	0.0	1	100.0	0	0.0
Ustekinumab*	11	6	54.5	0.6	2	33.3	3	50.0	1	16.7
Total	172	95	55.2	10.1	58	61.1	28	29.5	9	9.5
Other										
Botulinum toxin*	31	27	87.1	2.9	18	66.7	2	7.4	7	25.9
Compression hose	12	1	8.3	0.1	0	0.0	0	0.0	1	100.0
Eflornithine*	13	2	15.4	0.2	0	0.0	1	50.0	1	50.0
Ezetimibe-simvastatin	2	1	50.0	0.1	0	0.0	1	100.0	0	0.0
Fexofenadine	11	1	9.1	0.1	0	0.0	1	100.0	0	0.0
Glycopyrrolate	18	3	16.7	0.3	0	0.0	2	66.7	1	33.3
Hydroquinone	65	4	6.2	0.4	0	0.0	4	100.0	0	0.0
Hydroxyzine	74	3	4.1	0.3	3	100.0	0	0.0	0	0.0
Lidocaine	21	3	14.3	0.3	1	33.3	1	33.3	1	33.3
Methoxasalen*	5	1	20.0	0.1	1	100.0	0	0.0	0	0.0
Niacinamide	5	1	20.0	0.1	0	0.0	1	100.0	0	0.0
Salicylic acid	19	2	10.5	0.2	0	0.0	1	50.0	1	50.0
Urea	100	3	3.0	0.3	0	0.0	2	66.7	1	33.3
Total	376	52	13.8	5.5	23	44.2	16	30.8	13	25.0
Overall totals	9740	940	9.7	1	529	56.3	194	20.6	217	23.1

Other, Unnecessary or no record; PA, prior authorization; Rx, prescription.

*Brand-name only available.

comparable to that of 2 MAs, representing 0.5 FTEs each, \$49,000 to 75,000 vs \$31,000 to \$60,000, respectively. These improvements can likely be attributed to the PT's sole responsibility to process and appeal PAs, familiarity with insurance companies' internal handling of PAs and formularies, and knowledge of prescription indications, dosages, and alternatives that allowed for expedited

completion of PA forms. In addition, topical steroid substitutions significantly increased PA approval rates. Despite implementing this intervention to decrease PAs, the overall PA requirement increased from 7.7% to 8.5%. Although not statistically significant, this increase is concerning and echoes the results of a recent American Medical Association survey of more than 1000 physicians that noted an

Table III. Prior authorizations by indication

Indication by class	PA		Approved		Denied		Other	
	No.	%	No.	%	No.	%	No.	%
Acne/rosacea/hidradenitis								
Acne*	285	30.3	202	70.9	19	6.7	64	22.5
Hidradenitis suppurativa*	15	1.6	8	53.3	7	46.7	0	0.0
Rosacea*	41	4.4	18	43.9	10	24.4	13	31.7
Total	341	36.3	228	66.9	36	10.6	77	22.6
Cancerous/precancerous								
Actinic keratosis*	26	2.8	17	65.4	4	15.4	5	19.2
Mycosis fungoides*	1	0.1	1	100.0	0	0.0	0	0.0
Nonmelanoma skin cancer	1	0.1	1	100.0	0	0.0	0	0.0
Total	28	3.0	19	67.9	4	14.3	5	17.9
Dermatitis								
Atopic dermatitis/eczema*	80	8.5	45	56.3	23	28.8	12	15.0
Contact dermatitis	22	2.3	11	50.0	7	31.8	4	18.2
Dermatitis unspecified	95	10.1	28	29.5	14	14.7	53	55.8
Eyelid dermatitis	4	0.4	3	75.0	1	25.0	0	0.0
Grover disease	1	0.1	0	0.0	1	100.0	0	0.0
Intertrigo	7	0.7	1	14.3	2	28.6	4	57.1
Lichen simplex chronicus	3	0.3	2	66.7	1	33.3	0	0.0
Perioral dermatitis	9	1.0	7	77.8	2	22.2	0	0.0
Seborrheic dermatitis*	14	1.5	7	50.0	5	35.7	2	14.3
Total	235	25.0	104	44.3	56	23.8	75	31.9
Granulomatous								
Granuloma annulare	4	0.4	2	50.0	2	50.0	0	0.0
Sarcoidosis	1	0.1	0	0.0	1	100.0	0	0.0
Total	5	0.5	2	40.0	3	60.0	0	0.0
Immunologic								
Bullous pemphigoid	4	0.4	3	75.0	1	25.0	0	0.0
Discoid lupus erythematosus	2	0.2	0	0.0	2	100.0	0	0.0
Dermatomyositis	2	0.2	1	50.0	0	0.0	1	50.0
Pemphigus foliaceus	3	0.3	2	66.7	1	33.3	0	0.0
Psoriasis*	130	13.8	86	66.2	29	22.3	15	11.5
Subacute cutaneous lupus erythematosus	2	0.2	0	0.0	1	50.0	1	50.0
Vitiligo	15	1.6	4	26.7	10	66.7	1	6.7
Total	158	16.8	96	60.8	44	27.8	18	11.4
Infectious								
Cellulitis*	1	0.1	1	100.0	0	0.0	0	0.0
Folliculitis	1	0.1	1	100.0	0	0.0	0	0.0
Tinea/onychomycosis*	39	4.1	12	30.8	14	35.9	13	33.3
Verruca vulgaris	11	1.2	4	36.4	4	36.4	3	27.3
Total	52	5.5	18	34.6	18	34.6	16	30.8
Other inflammatory								
Cheilitis	1	0.1	1	100.0	0	0.0	0	0.0
Lichen planus/lichen planus pigmentosa	7	0.7	4	57.1	1	14.3	2	28.6
Lichen sclerosus	8	0.9	1	12.5	3	37.5	4	50.0
Pyoderma gangrenosum	2	0.2	2	100.0	0	0.0	0	0.0
Urticaria*	1	0.1	1	100.0	0	0.0	0	0.0
Total	19	2.0	9	47.4	4	21.1	6	31.6
Other								
Alopecia	14	1.5	4	28.6	7	50.0	3	21.4
Atrophic disorder	1	0.1	0	0.0	1	100.0	0	0.0
Hyperhidrosis	30	3.2	18	60.0	4	13.3	8	26.7
Hypertrichosis	2	0.2	0	0.0	1	50.0	1	50.0
Keloid scar	1	0.1	0	0.0	1	100.0	0	0.0
Keratoderma	2	0.2	0	0.0	1	50.0	1	50.0

Continued

Table III. Cont'd

Indication by class	PA		Approved		Denied		Other	
	No.	%	No.	%	No.	%	No.	%
Keratosis pilaris	2	0.2	2	100.0	0	0.0	0	0.0
Melasma	4	0.4	1	25.0	2	50.0	1	25.0
Milia/sebaceous hyperplasia	6	0.6	4	66.7	2	33.3	0	0.0
Morphea	1	0.1	0	0.0	1	100.0	0	0.0
Photoaging/lentigines	19	2.0	13	68.4	3	15.8	3	15.8
Postinflammatory hyperpigmentation	6	0.6	2	33.3	4	66.7	0	0.0
Prurigo nodularis	1	0.1	0	0.0	1	100.0	0	0.0
Pruritus*	11	1.2	8	72.7	1	9.1	2	18.2
Tuberous sclerosis*	1	0.1	1	100.0	0	0.0	0	0.0
Varicose veins	1	0.1	0	0.0	0	0.0	1	100.0
Total	102	10.9	53	52.0	29	28.4	20	19.6
Overall totals	940		529	56.3	194	20.6	217	23.1

Other, Unnecessary or no record; PA, prior authorization.

*United States Food and Drug Administration-approved medication available.

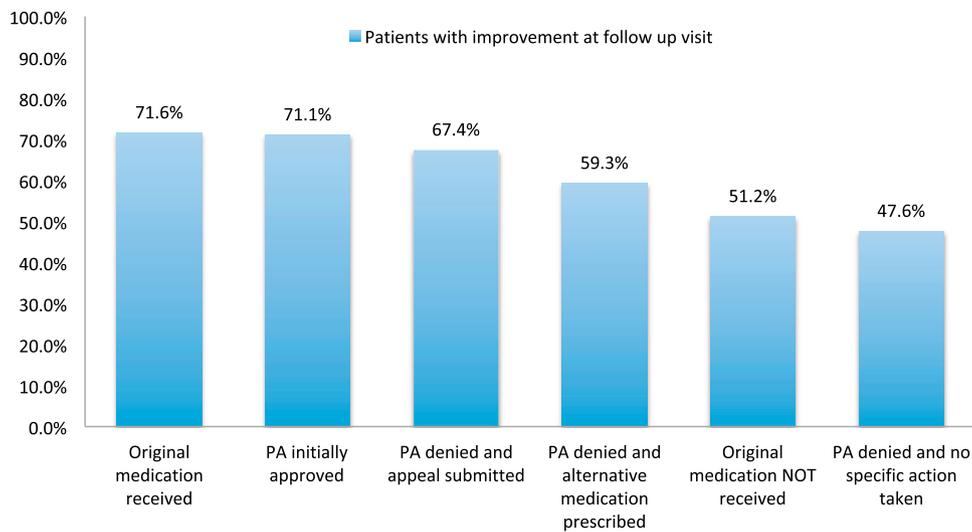


Fig 2. Improvement in dermatologic condition by ultimate prior authorization (PA) outcome.

increased PA burden over the past 5 years and in which more than 90% of providers reported the PA process delayed patient care.¹⁸

In our department, approximately 1 in 12 prescriptions required PA, and at least 1 in 5 PAs were denied. This equates to approximately 1 PA per 20 patient visits. For a high-volume specialty like dermatology, in which a dermatologist sees an average of 129 patients weekly over 47.1 weeks per year, the total number of PAs generated per dermatologist would be approximately 300 PAs per year with approximately 60 PA denials.¹⁹ This represents an extremely high administrative burden considering the estimated processing time for a single PA is between 15 and 64 minutes.¹² Further,

delayed and denied treatment negatively impacts disease severity, as our study found a significant difference in disease improvement between patients who received their original prescription and those who did not.

The PA burden for brand-name only medications (42.8%) and biologic agents (55.2%) was higher compared with the average PA requirement of all prescriptions (8.1%). Despite increased PAs for biologic agents and brand-name medications, the rate of PA denials was similar to that for all prescriptions. Although the PA process for biologic agents would hopefully facilitate access for patients to these medications, it seems to actually be prohibitive.

Conditions with the highest PA denial rates were vitiligo, alopecia, and hidradenitis suppurativa. Insurance companies designated vitiligo and alopecia as cosmetic and stated treatment was experimental, not medically necessary, or for off-label use.^{20,21} New biologic and small molecule therapies in alopecia areata, atopic dermatitis, hidradenitis suppurativa, and vitiligo are currently being investigated in phase 2 and 3 clinical trials, and future availability will affect the PA load. In psoriasis, evaluation of PAs for Food and Drug Administration-approved biologic medications demonstrated increased PA requirements, longer time to coverage decision, and increased denial rates over time.²²

As the therapeutic market is expanding, reform of the PA process is imperative. In an attempt to alleviate the PA burden, one potential answer is to shift the costs of PAs from providers and practices to patients. In our study, medications with the highest absolute number of PAs submitted were tretinoin, topical tacrolimus, and clobetasol. Processing PAs for these generic topical medications, where the cost of performing the PA often equals or exceeds the out-of-pocket cost, is likely not cost-effective. Eliminating PAs for these medications would decrease the overall PA burden.^{23,24} However, displacing these costs to patients may increase health care disparities and worsen patient outcomes, as seen when PAs are denied, if patients elect to not pay for their prescriptions. Another possible solution is to use the EHR more effectively. Providers endorse that a lack of transparency in pricing prohibits them from choosing among similar medications and that the uncertainty of coverage prevents them from having conversations with patients about exact treatment regimens.^{1,6,10} Insurance companies generally have their formularies and PA requirements available online, but third-party companies, which are responsible for importing this information into the EHR do not keep this information up to date and accurate. Without this information, it is unlikely that providers are able to alter their prescribing patterns based on knowledge of medication coverage.

Limitations of our study include that it was conducted at a single academic center and that the pharmacy intervention was funded as part of a larger institution-wide program. These results may not be reproducible in other practice settings, but overall prescribing trends and PA requirements likely reflect general dermatology visits and are similar to previously published PA survey data.³

In addition, because this was a retrospective review, medication adherence was not obtained,

and evaluation of disease improvement was based on individual provider assessment.

Further, we did not evaluate for demographic differences, if any, between the preintervention and postintervention groups; however, our institution's patient population did not change before or after the intervention. We also did not evaluate for changes in provider prescribing trends, if any, before and after intervention; however, we found no difference in types of medications prescribed during the time periods.

Lastly, prescription drug coverage was not recorded in the EHR, which limited our ability to stratify data by payors.

CONCLUSION

Our study highlights the current PA burden for dermatologists and the subsequent delays in patient care and resultant negative patient outcomes, including decreased likelihood for disease improvement at the follow-up visit with prescription denials. A centralized pharmacy intervention is a cost-effective measure resulting in fewer delays in the PA process and improved PA decision outcomes. Despite this intervention, however, PAs actually increased during the study period. In summary, PAs represent a costly administrative strain and hinder dermatologists' ability to provide effective patient care. The PA paradigm requires further action to ameliorate these current problems and improve health care delivery.

REFERENCES

1. Albrecht J, Lebwohl M, Asgari MM, et al. The state and consequences of dermatology drug prices in the United States. *J Am Acad Dermatol*. 2016;75(3):603-605.
2. Rosenberg ME, Rosenberg SP. Changes in retail prices of prescription dermatologic drugs from 2009 to 2015. *JAMA Dermatol*. 2016;152(2):158.
3. Secrest AM, Asgari MM, Kourosh AS, et al. Prior authorizations for dermatologic medications: an American Academy of Dermatology survey of US dermatology providers and staff. *J Am Acad Dermatol*. 2017;77(4):784-786.
4. Bergeson JG, Worley K, Louder A, et al. Retrospective database analysis of the impact of prior authorization for type 2 diabetes medications on health care costs in a Medicare Advantage Prescription Drug Plan population. *J Manag Care Pharm*. 2013;19(5):374-384.
5. Dickens DS, Pollock H. Medication prior authorization in pediatric hematology and oncology. *Pediatr Blood Cancer*. 2017;64(6):e26339.
6. Epling JW, Mader EM, Morley CP. Practice characteristics and prior authorization costs: secondary analysis of data collected by SALT-Net in 9 central New York primary care practices. *BMC Health Serv Res*. 2014;14(1):109.
7. Geynisman DM, Meeker CR, Doyle JL, et al. Provider and patient burdens of obtaining oral anticancer medications. *Am J Manag Care*. 2018;24(4):e128-e133.

8. Keast SL, Kim H, Deyo RA, et al. Effects of a prior authorization policy for extended-release/long-acting opioids on utilization and outcomes in a state Medicaid program. *Addiction*. 2018; 113(9):1651-1660.
9. Park Y, Raza S, George A, et al. The effect of formulary restrictions on patient and payer outcomes: a systematic literature review. *J Manag Care Spec Pharm*. 2017;23(8):893-901.
10. Raper JL, Willig JH, Lin H, et al. Uncompensated medical provider costs associated with prior authorization for prescription medications in an HIV clinic. *Clin Infect Dis*. 2010; 51(6):718-724.
11. Rao SK, Kimball AB, Lehrhoff SR, et al. The impact of administrative burden on academic physicians: results of a hospital-wide physician survey. *Acad Med*. 2017;92(2):237-243.
12. Cutler T, She Y, Barca J, et al. Impact of pharmacy intervention on prior authorization success and efficiency at a university medical center. *J Manag Care Spec Pharm*. 2016;22(10):1167-1171.
13. Leinss R, Karpinski T, Patel B. Implementation of a comprehensive medication prior-authorization service. *Am J Health Syst Pharm*. 2015;72(2):159-163.
14. American Academy of Dermatology. Practice Management Center. Prior authorization assistance. <https://www.aad.org/practicecenter/managing-a-practice/prior-authorization-assistance/prior-authorization-assistance-learning-center>; 2018. Accessed January 7, 2018.
15. U.S. Food & Drug Administration. Drugs@FDA: FDA Approved Drug Products. <https://www.accessdata.fda.gov/scripts/cder/daf/index.cfm>. Accessed August 18, 2018.
16. CenterWatch. FDA Approved Drugs for Dermatology. <https://www.centerwatch.com/drug-information/fda-approved-drugs/therapeutic-area/3/dermatology>. Accessed August 18, 2018.
17. U.S. Food & Drug Administration. Approved Drug Products with Therapeutic Equivalence Evaluations (Orange Book). <https://www.fda.gov/Drugs/InformationOnDrugs/ucm129662.htm>. Accessed August 18, 2018.
18. Robeznieks A. Prior authorization is a major practice burden. How do you compare? *AMA Wire*. <https://wire.ama-assn.org/practice-management/prior-authorization-major-practice-burden-how-do-you-compare>; April 6, 2018. Accessed October 31, 2017.
19. Kostecki J. Dermatology Practice Profile Survey 2009 Report. American Academy of Dermatology Association; 2009. Available at: <https://www.aad.org/File%20Library/Global%20navigation/Practice%20management%20resources/2009-AAD-Practice-Profile-Survey.pdf>. Accessed October 31, 2017.
20. Vitiligo Support International. <https://www.vitiligosupport.org>. Accessed June 14, 2018.
21. National Alopecia Areata Foundation. <https://www.naaf.org>. Accessed June 14, 2018.
22. Abdelnabi M, Patel A, Rengifo-Pardo M, Ehrlich A. Insurance coverage of biologics for moderate-to-severe psoriasis: a retrospective, observational 5-year chart review. *Am J Clin Dermatol*. 2016;17(4):421-424.
23. Balkrishnan R, Bhosle MJ, Fleischer AB, Feldman SR. Prior authorization for topical psoriasis treatments: Is it cost-beneficial for managed care? *J Dermatolog Treat*. 2010;21(3):178-184.
24. Feldman SR, Fleischer AB, Chen GJ. Is prior authorization of topical tretinoin for acne cost effective? *Am J Manag Care*. 1999;5(4):457-463.