Procurement Patterns in Dermatologic Practice: Opportunities for Environmental Stewardship

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INTRODUCTION

- Strong evidence both links environmental degradation with human health harms and documents negative environmental externalities from the U.S. healthcare sector[1,2]
- Given this, there has been increasing medical research and advocacy, including within dermatology, around the environment-health nexus and improving clinical practice sustainability[3]
- Recent studies have linked climate change and environmental pollutants with dermatologic conditions including atopic dermatitis, psoriasis, pemphigus, skin cancer, & dermatologic infectious disease[4-8]
- Our 2025 study found that >50% of greenhouse gas emissions from dermatologic practice are generated from indirect upstream & downstream sources – supply chain and procurement represent >70% of these sources[8]
- Studies have evaluated reducing regulated medical waste and unused, discarded items in derm clinics
- No studies within dermatology have explicitly focused on the sustainability of upstream sources[9,10]

- **Objectives: (1)** To characterize & analyze procurement/supply consumption patterns across academic and private dermatologic practice settings, including Mohs and dermatopathology, and **(2)** To evaluate environmental sustainability performance across patronized vendors

METHODS

One clinic site of a large **private** dermatology group (Mid-Atlantic U.S., Fall 2025)

Dermatology clinic at a large **academic** medical center (Mid-Atlantic U.S., Fall 2025)

Dermatologic surgery practice, including Mohs

Medical dermatology practice, including typical in-office procedures (e.g. shave & punch biopsies, intralesional steroid injections)

Dermatology labs: dermatopathology department and Mohs pathology labs

- Audited academic clinic supply storage rooms
- Interviewed staff: items restocked, frequency of restocking, & quantity per restock over a typical year; names of vendors and details around vendor selection and relationships
- Generated supply categories: dressings/wound care, personal protective equipment (PPE), procedures, chemicals/solutions, pharmaceuticals, linens, and miscellaneous supplies
- Analyzed data by supply category, reporting average number of restocks/year, units/restock, & units restocked/year and total number of units restocked/year

- Audited representative order forms/receipts from the past year
- Interviewed staff: items restocked, frequency of restocking, & quantity per restock over a typical year; names of vendors and details around vendor selection and relationships
- Grouped items into categories based on their function within the histopathology workflow
- Analyzed item categories by categorical (least, somewhat, most) ordering frequency

Analyzed patronized vendors by Carbon Disclosure Project (CDP) score (A-F) and presence/quality of a Science Based Target Initiative (SBTi) net zero or emissions reduction target

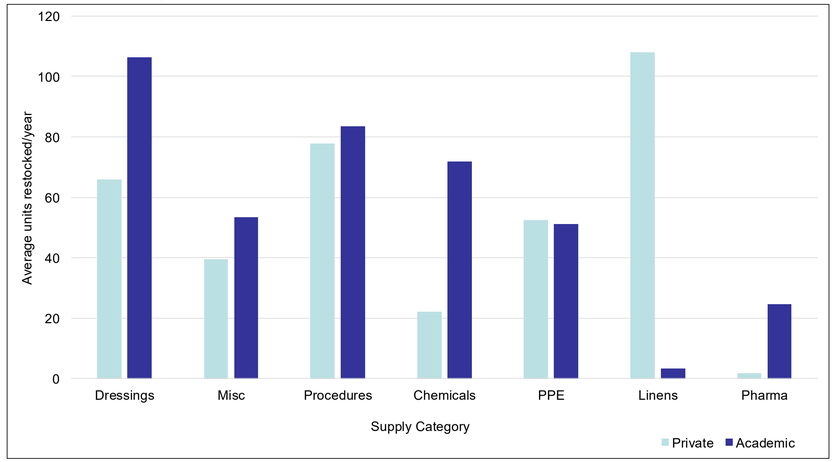
RESULTS

Table 1. Average and Total Restocking Patterns, by Supply Category and Practice Setting

Supply Category	Private Medical Dermatology + Dermatologic Surgery				Academic Medical Dermatology			
	Restocks per year (mean (SD); range)	Units per restock (mean (SD); range)	Annual units restocked (mean (SD); range)	Total units restocked annually (units)	Restocks per year	Units per restock	Annual units restocked	Total units restocked annually
Dressing/ Wound Care	11.79 (12.59); 3.3-52	4.43 (4.50); 1-6	66.04 (96.66); 5.1-286	990.6	4.68 (3.85); 1-50	15.16 (13.43); 1-50	106.30 (158.67); 1-600	2,338.5
PPE	9.6 (4.16); 4.8-12	4.67 (2.84); 1.5-7	52.4 (40.17); 7.2-84	157.2	2.06 (1.57); 1-5	12.13 (20.61); 1-60	51.19 (104.21); 1-300	409.5
Procedures	16.89 (21.95); 3-17	4.61 (3.05); 1-5	77.78 (96.13); 3.27-520	2,877.95	4.09 (3.66); 1-12	10.27 (14.63); 1-60	83.64 (173.61); 2-720	1,840
Chemicals/ Solutions	5.96 (3.51); 2.4-12	4.96 (3.68); 1-48	22.14 (14.34); 6-37.4	243.5	7.06 (12.69); 1-52	7.06 (11.44); 1-52	71.94 (142.48); 1-480	1,151
Pharma (mL)*	4.8 (0); 4.8	3,487.5 (4,790.65); 100-6875	16,740 (22,995.1); 480-33000	33,480	32.75 (47.69); 3-104	375 (352.38); 150-900	24,637.5 (45,980); 750-93,600	98,550
Linens	11.2 (8.67); 4.8-24	6.25 (5.90); 2.5-15	108 (168.26); 12-360	432	2.33 (1.53); 1.5-2	1.50 (0.50); 1.5-2	3.33 (2.31); 2-6	10
Misc Supplies	19.39 (37.41); 3-104	5.42 (4.86); 1-12	39.54 (35.29); 8-104	276.8	3.14 (3.76); 0.33-52	8.06 (10.08); 1-30	53.43 (120.21); 0.99-360	854.82

Pharmaceutical supply units are reported in milliliters. All other units represent standard units of supply ordering (e.g. pack, case).

Figure 1. Average Annual Supply Procurement for Private Medical/Surgical Dermatology and Academic Medical Dermatology

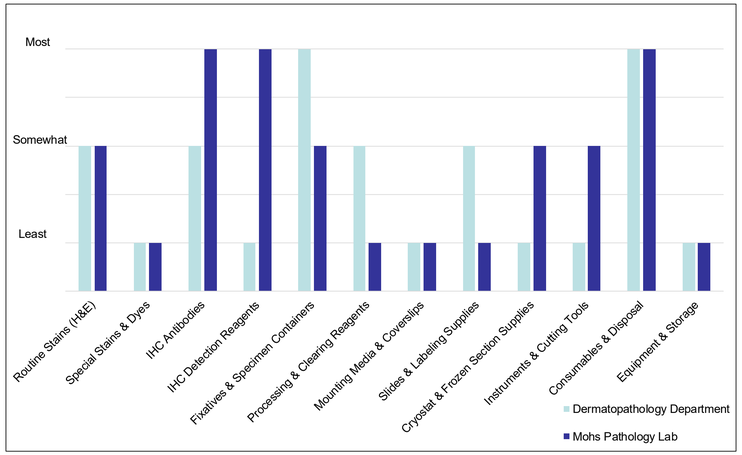


Average units restocked/year by supply category for the private (combined medical/surgical) and academic (medical) dermatology practice settings. Values represent average units restocked annually across the items within each category. Categories: Dressings/Wound Care, Misc (Miscellaneous Supplies), Procedures, Chemicals/Solutions, PPE (Personal Protective Equipment), Linens, and Pharma (Pharmaceutical Supplies). For the pharmaceuticals category, the units (mL) have been divided by 1,000 for scale.

Key Findings

- Academic medical derm: 62 providers, 200 patients/day
- Private medical/surgical derm: 9 providers, 100-110 patients/day, ~20% per day Mohs
- Largely single-use items for procedures and dressings/wound care were restocked more frequently and at higher volumes than other supply types across both settings
- Most discrepant ordering patterns between settings: linens (10 units/yr academic vs. 432 units/yr private) and injectable pharmaceuticals (98,550 mL/yr academic vs. 33,480 mL/yr private) → driven by differences in reusability
- 1 of 25 total vendors earned a CDP score above B, with the primary vendors for both academic & private settings scoring F and C; only 16% of vendors set an SBTi target

Figure 2. Average Annual Dermatopathology Supply Restocking Trends, Academic Practice



Relative restocking frequency of pathology supply categories for the academic medical center's dermatopathology department and Mohs pathology lab. Bars represent ordinal restocking levels (Least, Somewhat, Most) based on staff-reported ordering patterns and available order records.

DISCUSSION & CONCLUSIONS

- Dressings/wound care and procedures consistently lead annual consumption
- Reusability decisions drive the most discrepant supply utilization differences between practices, especially for injectable medications and linens
- Most patronized supply vendors have minimal public climate/sustainability reporting and are generally low-scoring on widely used environmental performance standards

- Dermatology practices may promote environmentally sustainable procurement by optimizing efficiency in supply categories with high-frequency restocking, prioritizing reusability, and considering vendor environmental performance
- This data, along with general sustainable healthcare procurement guidelines, may inform the development of specialty-specific best practices for procurement and supply utilization

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CONFLICTS OF INTEREST & FUNDING

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