SUPPLEMENTARY MATERIALS

for the following Original Article in the Journal of American Academy of Dermatology:

Title: **Significant improvement of facial actinic keratoses after blue light photodynamic therapy with oral vitamin D pretreatment: An interventional cohort-controlled trial**

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Supplem. Figure 1. Side effect frequencies after PDT with or without neoadjuvant VD3

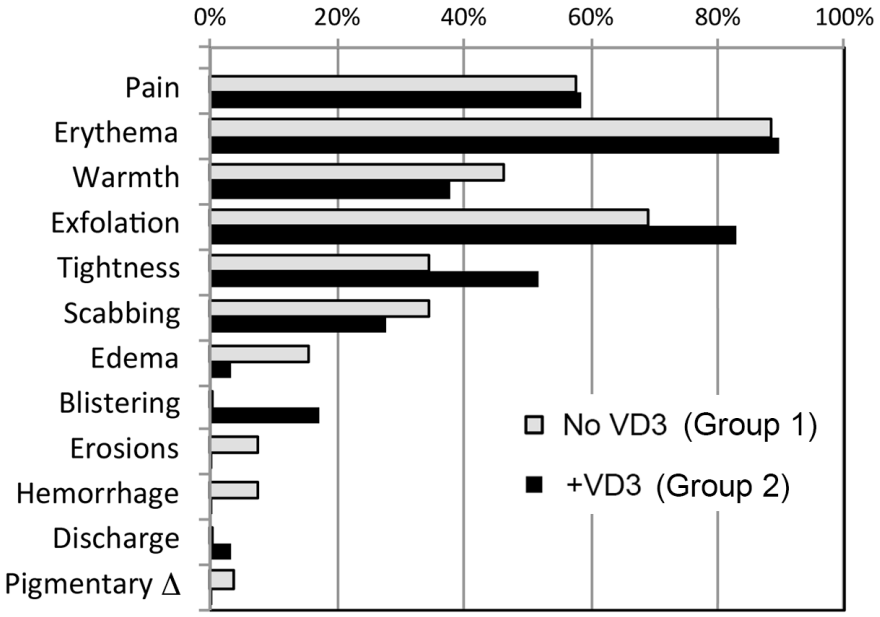
Supplem. Table 1. Patient demographics, Vitamin D levels, and AK lesion counts.

Supplem. Table 2. Scalp AK counts, with or without neoadjuvant VD3

Supplem. Methods Study eligibility, enrollment, and recruitment.

Supplementary Figure 1. *Side effects after PDT, with or without Vitamin D pretreatment.*

For each post-treatment side effect listed below, patients were asked whether they had experienced it (Yes or No) during the week immediately following PDT. Each bar represents the percentage of 29 patients in each Group who responded 'Yes' to that particular symptom or clinical sign.



SUPPLEMENTARY TABLE 1. Patient demographics, Vitamin D levels, and Actinic Keratosis Lesion Counts

Group 1: *PDT alone (no additional VD3)*

Subj. ID	Age	Sex	Baseline AK counts (Face)	Baseline AK counts (Scalp)	Time between Visits 1 and 2 (days)	Serum 25-OH D3 (mg/dL)	% Change in AK counts		
							%Δ AK counts Face	%Δ AK counts Scalp	%Δ AK counts (Face+Scalp)
86	79	M	31	none	77	14.9	**-48.4%**	NA	**-48.4%**
105	67	F	21	none	76	18.1	**-66.7%**	NA	**-66.7%**
49	65	F	14	none	98	25.3	**-42.9%**	NA	**-42.9%**
103	74	F	13	17	102	25.7	**-23.1%**	**-70.6%**	**-46.8%**
39	80	M	37	121	91	26.0	19.0%	**-81.8%**	**-31.4%**
100	72	M	18	none	112	29.1	**-61.1%**	NA	**-61.1%**
53	54	M	25	none	80	29.3	**-44.0%**	NA	**-44.0%**
110	76	M	none	33	90	32.0	NA	**-63.6%**	**-63.6%**
107	67	M	4	15	118	33.5	NA	**-46.7%**	**-46.7%**
65	73	M	none	15	182	35	NA	**-60.0%**	**-60.0%**
95	64	M	19	none	91	35	**-52.6%**	NA	**-52.6%**
59	70	M	none	79	91	37.4	NA	**-81.0%**	**-81.0%**
99	76	M	19	none	161	38.4	**-78.9%**	NA	**-78.9%**
94	77	M	31	none	147	39.3	**-67.7%**	NA	**-67.7%**
69	74	M	1	62	118	41.7	NA	**-82.3%**	**-82.3%**
60	49	M	8	12	90	41.8	NA	**-41.7%**	**-41.7%**
68	69	M	3	79	175	41.9	NA	**-72.2%**	**-72.2%**
24	73	M	53	none	84	42.7	**-43.4%**	NA	**-43.4%**
52	69	M	62	14	101	43.6	**-74.2%**	**35.7%**	**-19.2%**
108	79	M	10	56	98	43.8	**-50.0%**	**-66.1%**	**-58.0%**
93	67	M	47	30	84	46.6	**-80.9%**	**-66.7%**	**-73.8%**
88	57	M	none	37	137	47.8	NA	**-43.2%**	**-43.2%**
106	63	M	44	none	102	47.9	**-47.7%**	NA	**-47.7%**
101	74	M	34	none	105	54.9	**-67.6%**	NA	**-67.6%**
56	85	M	18	67	94	57.9	**-88.9%**	**-70.1%**	**-79.5%**
111	80	M	10	21	90	60.4	**-60.0%**	**-66.7%**	**-64.5%**
50	80	M	41	18	171	61.1	**-48.8%**	**-44.4%**	**-46.6%**
104	75	M	45	none	153	61.5	**-62.2%**	NA	**-62.2%**
89	75	M	53	10	101	83.3	**-52.8%**	**-70.0%**	**-61.4%**
	71.1	**90%**	**26.4**	**40.4**	**111**	**42.6**	**-54.4%**	**-58.3%**	**-57.1%**
	8.2	male	17.5	31.8	31	14.9	22.8%	27.6%	15.5%
							n=21	n=17	n=29

(n=7 deficient, n=22 normal serum 25-OH D3)

Group 2: *PDT combined with neoadjuvant VD3*

Subj. ID	Age	Sex	Baseline AK counts (Face)	Baseline AK counts (Scalp)	Time between Visits 1 and 2 (days)	Serum 25-OH D3 (mg/dL)	% Change in AK counts		
							%Δ AK counts Face	%Δ AK counts Scalp	%Δ AK counts (Face+Scalp)
302	72	M	47	53	157	14.2	**-70.2%**	**-71.7%**	**-71.0%**
326	69	M	16	none	122	15.4	**-75.0%**	NA	**-75.0%**
323	81	M	48	2	91	20.4	**-72.9%**	NA	**-72.9%**
303	55	M	19	none	196	22.5	**-78.9%**	NA	**-78.9%**
311	68	M	57	none	136	22.9	**-66.7%**	NA	**-66.7%**
312	58	M	12	17	123	26.4	**-66.7%**	**-41.2%**	**-53.9%**
324	82	M	30	18	116	28.1	**-76.7%**	**-77.8%**	**-77.2%**
317	74	M	77	none	98	28.7	**-61.0%**	NA	**-61.0%**
331	60	M	72	7	105	31	**-69.4%**	NA	**-69.4%**
328	69	M	19	25	112	32.2	**-89.5%**	**-44.0%**	**-66.7%**
333	86	M	17	60	98	33	**-88.2%**	**-56.7%**	**-72.5%**
319	75	M	none	30	95	33.8	NA	**-33.3%**	**-33.3%**
322	77	M	51	none	137	35.2	**-23.5%**	NA	**-23.5%**
329	64	F	34	none	102	36	**-82.4%**	NA	**-82.4%**
306	53	M	32	27	161	36.8	**-71.9%**	**-63.0%**	**-67.4%**
316	73	M	16	none	102	37.3	**-75.0%**	NA	**-75.0%**
320	92	M	6	31	95	37.7	NA	**-64.5%**	**-64.5%**
309	76	M	72	13	147	41	**-73.6%**	**-76.9%**	**-75.3%**
332	73	M	15	none	94	41.3	**-73.3%**	NA	**-73.3%**
310	72	M	20	none	165	42.2	**-60.0%**	NA	**-60.0%**
308	75	M	49	none	91	43.3	**-75.5%**	NA	**-75.5%**
313	68	M	26	none	116	45.3	**-84.6%**	NA	**-84.6%**
318	71	F	16	none	144	46.8	**-50.0%**	NA	**-50.0%**
307	67	M	12	38	154	50.2	**-91.7%**	**-84.2%**	**-87.9%**
315	75	M	25	none	133	50.7	**-84.0%**	NA	**-84.0%**
327	67	M	61	9	88	56.1	**-68.9%**	NA	**-68.9%**
334	70	M	18	75	161	61.7	**-66.7%**	**-40.0%**	**-53.3%**
330	66	M	25	none	91	69.4	**-84.0%**	NA	**-84.0%**
301	76	M	54	35	165	100	**-75.9%**	**-68.6%**	**-72.2%**
	71.2	**93%**	**33.8**	**29.3**	**124**	**39.3**	**-72.5%**	**-60.2%**	**-68.3%**
	8.5	male	20.9	20.6	30	17.4	13.6%	17.0%	14.6%
							n=27	n=12	n=29

(n=8 deficient, n=21 normal serum 25-OH D3)

FOOTNOTE: All patients were either Fitzpatrick skin type 1 or 2

SUPPLEMENTARY TABLE 2
Scalp AK clearance rates after PDT with or without oral Vitamin D pretreatment

	Group 1 (PDT only)	**Group 2** (VD3 + PDT)
VitD deficient (< 31 mg/dL)		
No. of patients (n)	2	3
25OH-D3 values (mg/dL), range	14.9 to 29.3	14.2 to 28.7
AK clearance (%, mean ± SD)	**76.2** ± 7.9	**63.6** ± 19.6
VitD replete (> 31 mg/dL)		
No. of patients (n)	15	9
25OH-D3 values (mg/dL), range	32.0 to 83.3	31.0 to 100
AK clearance (%, mean ± SD)	**55.9** ± 28.5	**59.0** ± 17.1
*Are the VitD deficient and replete groups statistically different? **	*No, p = 0.47 **	*No, p = 0.77 **
All patients	17	12
AK clearance (%, mean ± SD)	**58.3** ± 27.6	**60.2** ± 17.0
Statistical comparison between Group 1 and 2, by Student t-test:	-----	*p = 0.84 **

*These P values are not significant.

Supplementary Methods. *Details of study eligibility, enrollment, and recruitment.*

To be eligible, patients needed to be 18 years or older and have 10 or more Grade 1 or 2 AKs on the face or the scalp (Grade 1: slightly palpable, better felt than seen; Grade 2: moderately thick, easily seen and felt). Pregnant females were excluded. For patients in the VDAK study in particular, any condition associated with an elevated risk for hypercalcemia (e.g., renal disease) was reason for exclusion.

The study was limited to the face and scalp because blue light PDT was only approved for those two body sites at the time the study began. Patients enrolled in the study had already been considered medically appropriate to receive PDT by their referring dermatologists, i.e., no history of porphyria, photosensitization, or recent tetracycline or retinoid use. To reflect real-world conditions, we did not exclude patients who had previously had non-melanoma skin cancers on the face or scalp, or those who had received AK treatments at least twice within the previous 2 years.

For any patient with grade 3 AKs in the treatment area, the particular lesion was carefully noted on photographs and excluded from the analysis.