



Warts: Fast Facts

- **Warts recognized Greco-Roman times**
 Am J Clin Dermatol 2000;1:143-149
- **Common: Prevalence 3-20% of population**
 Br J Dermatol 2001;144:4-11
- **Very common in children ≤ 16 years of age**
 Pediatr Dermatol. 2003;20:268-71 (USA)
 J Babol Univ Med Sci 2003;5:1-6 (Iran)
 Br J Dermatol 2009;161:148-152 (Holland)
 Actas Dermo-sifiliogr 2008;99:111-118 (Spain)
 J Formos Med Assoc 2008;107:21-29 (Taiwan)
 J Dermatol 2008;35:413-418 (Turkey)
- **Spontaneous resolution rate high (2/3-3/4 2 yrs)**
 Am J Clin Dermatol 2000;1:143-149 and 2004;5:311-317

INDICATIONS FOR THERAPY

- Patient's desire for therapy
- Pain, bleeding, itching, burning
- Disabling or disfiguring lesions
- Numerous or very large lesions
- Patient's wish to prevent spread to self or to others
- Immunocompromise

Guidelines of care for warts. JAAD 1995;32:98-103
 Guidelines for the management of cutaneous warts Br J Derm 2001; 144:4-11

THE IDEAL TREATMENT

- Eliminate warts in nearly all patients treated
- Painless and non-scarring
- Require Rx of one wart (if multiple present)
- Require few treatment sessions
- Provide lifelong immunity
- Easily obtainable and low cost

THE IDEAL TREATMENT DOESN'T EXIST

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Wart Therapy Fast Facts

- No single therapy is 100% effective
- No single therapy is uniformly superior to all reasonable alternatives
- Therapy involves trial and error
- Spontaneous resolution makes the evaluation of various therapies difficult
- Despite >6500 publications, reliable information is scant due to flawed methodology, poor quality reports and lack of randomized and/or placebo-controlled studies for virtually all Rx

BMJ 2002;325:461-69 Arch Dermatol 2003;139:801-02 Cutis 2003;71:213-222
 Am J Clin Dermatol 2004;5:311-317 Dermatol Online J 2006;12(3):5

Salicylic acid, Lactic acid, Retinoids	
Trichloroacetic acid, Bichloroacetic acid	
Formaldehyde, Glutaraldehyde	
Podophylin, Podophyllotoxin	
Interferon-alfa, Imiquimod	Placebo cures avg 48% (0-73%)
Sensitizers (DNCB, SADBE)	
Cimetidine, IL Mumps or Candida antigen	
Bleomycin, 5-Fluorouracil	Cochrane Database Syst Rev 3:CD001781, 2006
Cryotherapy, Cantharidin	
Electrodesiccation, Laser ablation, PDT	
Thermotherapy, Ultrasound, Occlusion	
Acupuncture, Hypnosis, Botanicals	

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Noah Scheinfeld, MD

“In the treatment of warts, medical care remains an art rather than a science...”

SkinMed 2006;5:37-38

Duct Tape?

- Applied for six days and removed
- Wart soaked with warm water
- Wart lightly debrided (emory board)
- Tape reapplied
- Continue process for 2 months
- Study: 51 patients, aged 3-22; Compared to Q2-3 week cryosurgery
- 85% tape vrs 60% cryo Rx clear totally
- Arch Pediatr Adolesc Med 2002;156:971-4

DOES DUCT TAPE WORK? PART II

Duct tape compared to corn pad (6wk)
 16% duct tape, 6% placebo lesions clear
 Study of 103 patients, aged 4-12
Only applied ONE NIGHT per week
Done in Netherlands...Same “duct” tape?
 Arch Pediatr Adolesc Med 2006;160:1121

Oral Acitretin

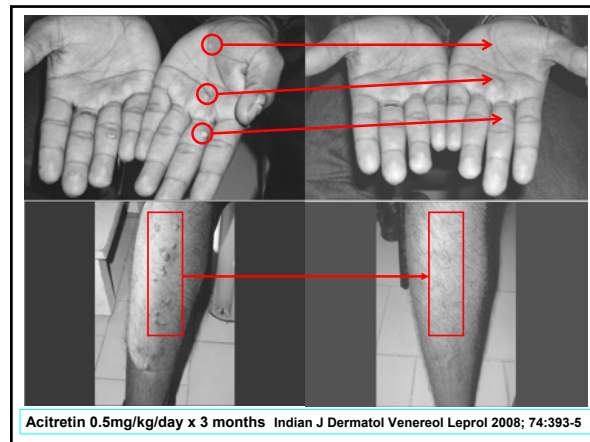
- Limited experience: abn + normal hosts
- 0.5mg/kg daily x 2-3 months
- ? Benefit may be short-lived; ? F/U Rx
- Antiproliferative effects may inhibit viral replication and assembly within cell
- Off label: FDA-approved psoriasis
- AE: dyslipidemia; arthralgia, xerosis, cheilitis, alopecia
- COST (if no insurance coverage available)

HIV+
 Monotherapy



Acitretin 25mg/day x 2 months

Eur J Dermatol Venereol 2008; 18:346

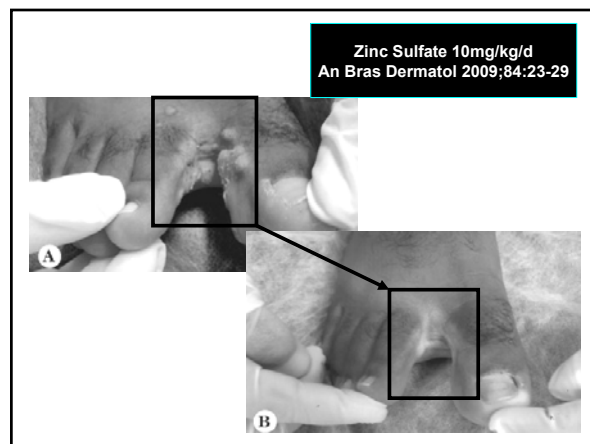
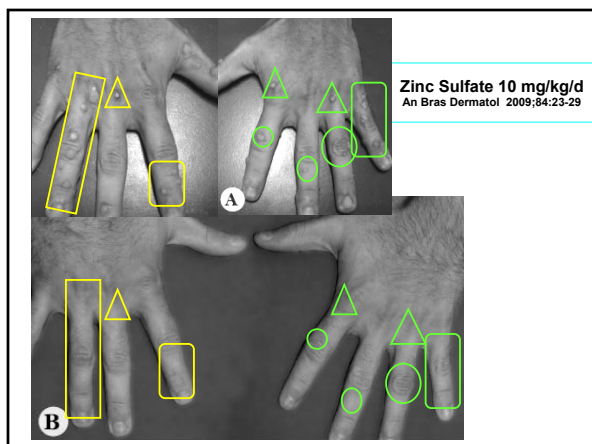


Oral Acitretin

- Eur J Dermatol 2008;18:346-347
- Indian J Derm Venereol Leprol 2008;74:393-395
- Int J Dermatol 2006;45:480-482
- Pediatr Derm 1987;4:254-58 (Etretinate)

Oral Zinc

- Experience w/ case series: normal hosts
- Zn: Acetate, Gluconate, Sulfate
- QD 10mg/kg (3 doses, pc); 2-3 mo Rx
- 100mg ZnSO₄ = 22.5mg Zinc (max 150mg)
- ? MOA; Maybe increases APC activity
- Off label: FDA-approved: Zinc deficiency
- AE: GI distress; up to gastric perforation (microcytic anemia, copper deficiency)
- Binds: PCN, TCN, Quinolone, phytates



Oral Zinc

- 62.5-87.7% success rate reported
- Failures ascribed to too low a dose, noncompliance due to GI symptoms, or too short treatment regimen
- Patients do better when serum Zn levels rise (quadruples, on average)
- Br J Dermatol 2002;146:423-31
- JAAD 2009;60:706-708
- Ann Bras Dermatol 2009;84:23-29

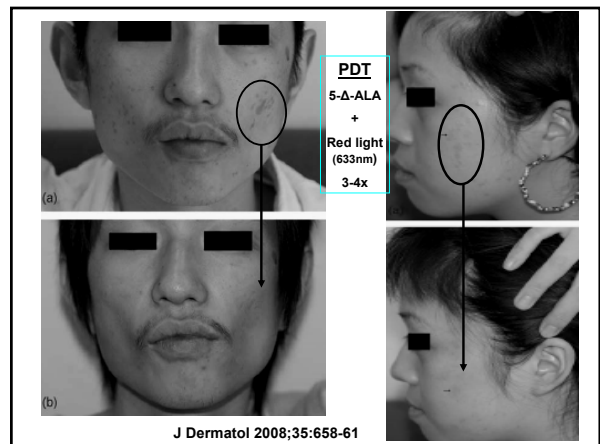
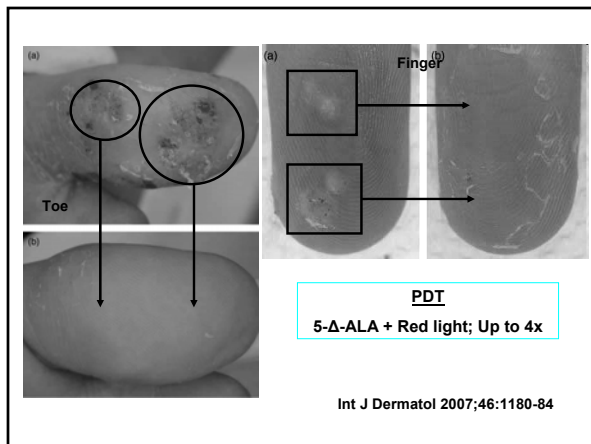
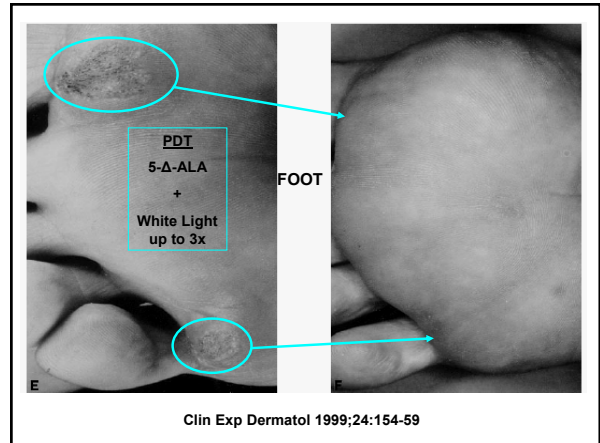
Problem Patient 3 year history

Failed:
5% 5-FU , Imiquimod 5%, Tazarotene 0.1%
(+ combinations of above three topicals)
LN₂, Electrodesiccation

Lets try Zinc (10mg/kg ZnSO₄) PLUS Acitretin 25mg/day

PDT

- Experience: Normal hosts; Case series & RCT
- Pre-treatment preparation:
Flat warts: No prep
Common/Plantar: Pared or Salicylic acid & curettage
- 20% 5-Δ-ALA; Occlusion 3-6 hours
- Red, White or Blue lights; Dose = 50-125J/cm² (Majority w/ red light and 50-75J/cm²)
- Re-treatment every 3-14 days (Majority every 2 weeks)
- Requires 2-4 treatment sessions; 70-90% cure
- PAIN in 1/5 warts so treated severe; require Rx
Photodermatol Photoimmunol Photomed 2006;22:304

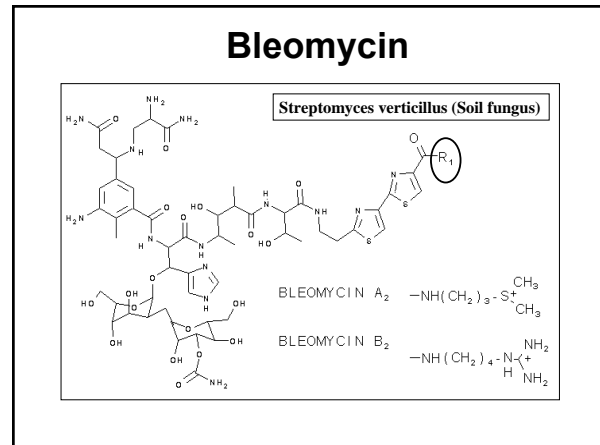




PDT

- J Dermatol 2008;35:658-661
- JEADV 2007;21:1170-1174
- Int J Dermatol 2007;46:1180-1184
- Br J Dermatol 2003;149:1087-1088
- J Photochem Photobiol 2001;61:30-34
- Lancet 2000;355:963-966
- Clin Exp Dermatol 1999;24:154-159
- Dermatology 1995;191:346-347

INTRALESIONAL BLEOMYCIN

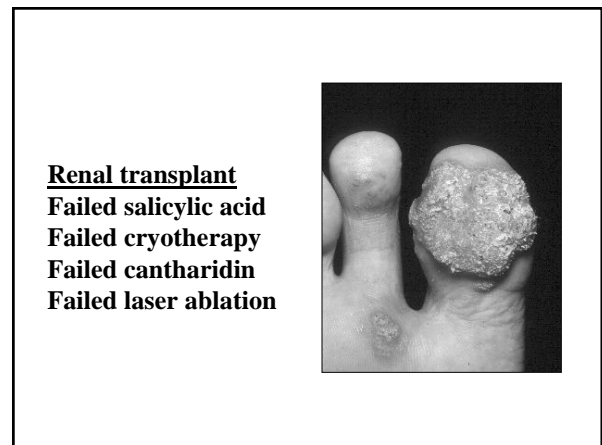
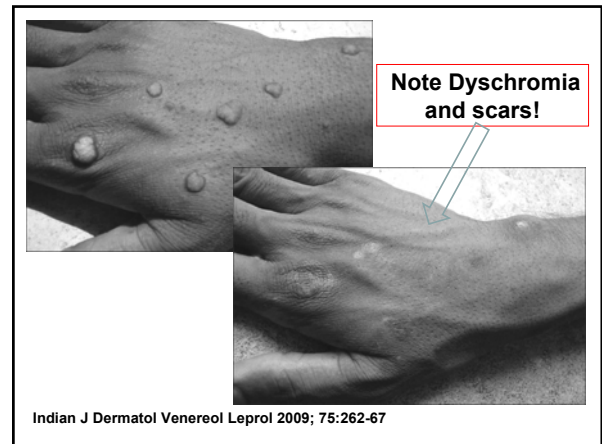
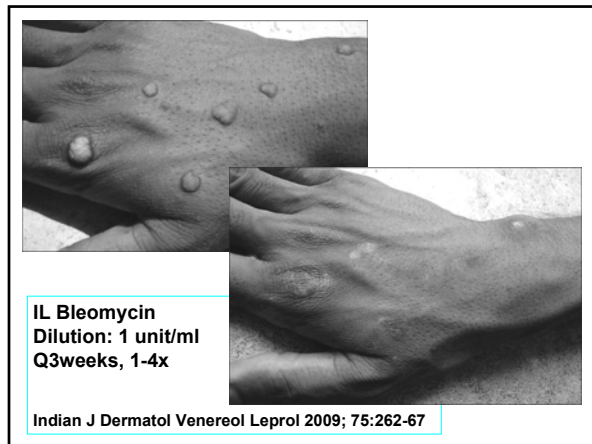


Intralesional Bleomycin

- Experience case series: abn+norm hosts
- Commercial bleo: Mixture of bleomycins
- 15 unit vial; Reconstituted to 1U/ml with bacteriostatic water or 0.9% saline
- Stability: 10-28 days refrigerated; 1-14 days room temp. post-reconstitution
- MOA: Breaks DNA; Aberrant synthesis and replication of DNA (RNA and Protein, also)
- Off label: FDA-approved cancer therapy

Intralesional Bleomycin

- Soak with tap water to soften wart
- Inject intralesionally to induce “blanch”
- Also introduced by “scarification”
- Process repeated Q2-4 weeks
- Immediate or delayed pain; vasospasm post-Rx dyschromia and scar formation
- Contraindicated: Raynaud’s, PVD, pregnancy (Category D)
- COST: 15 unit vial = \$200-350



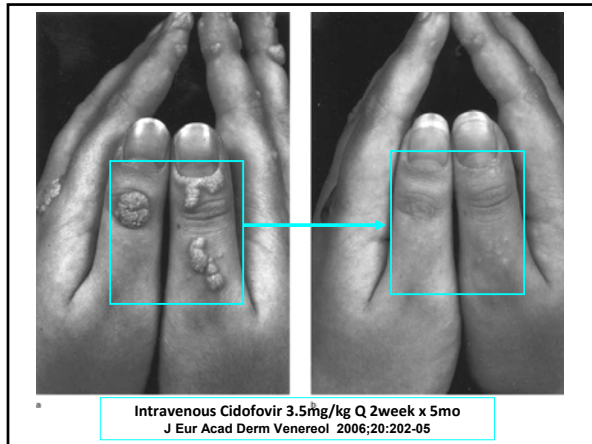
Intralesional Bleomycin

- **Summary of all studies to 2006: 23-99% cure rate, with plantar warts being more resistant**
J Drugs Dermatol 2006;5:499-504
- **More recent studies compared IL Bleomycin head-to-head, same patient, with cryosurgery**

Pts Rx # (Max)	Interval	Bleo Cure Rate	Cryo Cure Rate	Sites Treated	Reference
N = 44 3	2 weeks	86.4%	68.2%	Hands Feet	Dermatol Online J 13(3):4, 2007 (1/2 unit/ml)
N = 73 4	3 weeks	97%	82%	Hands Feet +	Ind J Derm Venereol Leprol 75:262-267, 2009 (1 unit/ml)

Intravenous Cidofovir

- **Limited experience: abnormal hosts**
- **3.5 to 5.0mg/kg (Probenecid + hydration)**
- **Q2 weeks; Multiple courses over 5-6 mo**
- **Halts DNA synthesis, Fragments HPV DNA; Upregulates caspase-3**
- **Off label: FDA-approved CMV retinitis**
- **AE: nephrotoxic; iritis/uveitis; neutropenia (metabolic acidosis; teratogenic?)**
- **COST (1 vial ~\$1500 + infusion costs)**

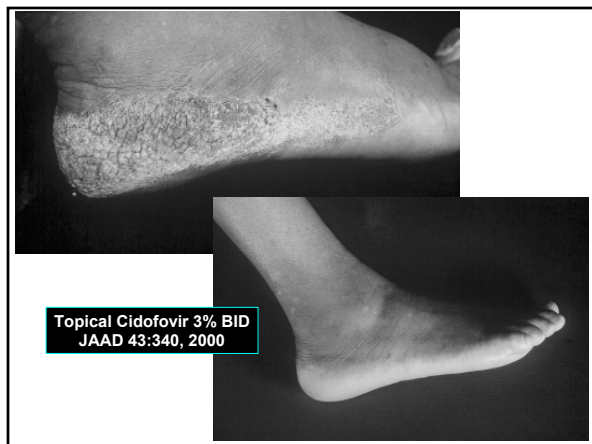


Intravenous Cidofovir

- **Pediatr Dermatol 2008;25:387-89**
- **JEADV 2006;20:202-205**
- **JAAD 2006;55:533-536**
- **Arch Dermatol 2004;140:13-14**

Topical Cidofovir

- **Limited experience: normal + abn hosts**
- **1-3% compounded in bland ointment**
- **QD-BID (mostly QHS) x 1-8 weeks**
Few cases cycle: 2wk on – 2wk off
- **Halts DNA synthesis, Fragments HPV DNA; Upregulates caspase-3**
- **Off label: Not FDA-approved**
- **AE: Local erythema, scaling, irritation, (nephrotoxicity; allergc contact)**
- **COST (30 gram = \$750-1000)**

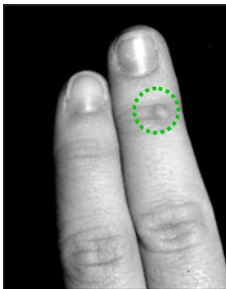


%	Regimen	Clear	Age	Ref
1%	QD	4/7	Pediatric	BJD 2009;160:223
1%	QD	1 HIV+	Adult	Int J STD AIDS 2008;19:715
2.5-5.0%	QOD	2/2 Transplant	Adult	Transplant Int 2006;20:238
1%	BID	1 GVHD	Adult	Transpl Infect Dis 2005;7:158
1%	QD	1 ALL	Pediatric	BJD 2005;152:386
1%	QD	2/4 HIV+	Adult	Ann Dermatol Venereol 2004;131:445
3%	BID	1 HIV+	Adult	JAAD 2000;43:340
1%	QD	1 HIV+	Adult	Surg Med Oral Path Oral Radiol Endo 2000;90:713
1%	BID	10/10 HIV+	Adult	JEADV 2000;14:484
3%	BID & QD	2/2	Pediatric	JAMA 1997;278:1236

Others....

- **Imiquimod 5% (debridement/occlusion)**
BJD 2005;152:122 Clin Exp Derm 2003;28(S1):48 BJD 2000;143:1026
Ann Derm Venereol 2000;80:134 Ann Intern Med 2000;132:95
- **Intralesional Candida Antigen (multiple Rx's)**
J Drugs Dermatol 2009;8:268 Arch Dermatol 2005;141:589
Pediatr Derm 2003;20:268 Cutis 2002;70:185 Arch Derm 2000;136:1274
- **Intralesional interferon alfa-2a**
Clin Exp Derm 2008;34:16 Arch Dermatol 1986;122:272
- **Botanicals**
Tea Tree Oil: Complement Ther Clin Pract 2008;14:225
Thuja Occidentalis Extract: Nurse Practitioner 2006;31:53
Garlic Extract: Int J Dermatol 2005;44:612
- **Hypnosis**
Am J Clin Hypnosis 2005;47:259 Altern Ther Health Med 2002;8:144
Am J Clin Hypnosis 1992;35:1 Psychosom Med 1990;52:109

Theory: Induce local T-cell response
Inject 0.1cc Candida Antigen to large wart(s)
Re-injection Q 2-4 weeks; total of 5-10x
58-74% Complete response; ~20% no benefit
Distant warts may also respond (~40%)
Adding concomitant INF alfa-2b no better
Arch Derm 136:1274, 2000
Arch Derm 137:451, 2001
Pediatr Dermatol 20:268, 2003
Arch Derm 141:589, 2005
WARNING: PAINFUL, PURPLE DIGIT
Dermatitis 16:216, 2005



FAILED
Cryotherapy
IL Bleomycin
Imiquimod + Cryo
Topical 5FU

Why Might Botanical Work?

- **Contents of stem-leaf extract**
- Isopimaric acid
- Deoxypodorhizone
- Isopicrodeoxypodophyllotoxin
- Dexoypodophyllotoxin
- J Nat Prod 63:1253, 2000
- Blocks microtubular array
- Blocks DNA topoisomerase II

Hypnosis

- **Allegedly works best with children**
- **My success rate is 0 for 6**
- **Your experience may differ!?!?**
- **Practitioner 220:305, 1978**
Aust NZ J Psychiatry 16:30, 1982
Psychosom Med 52:109, 1990
Am J Clin Hypnosis 35:1, 1992
Altern Ther Health Med 8:144, 2002
Am J Clin Hypnosis 47:259, 2005