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AAAAI 2022

Expanding your Practice: Clinical, Administrative and Reimbursement Strategies for Success

Patch Testing

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Disclosure

Contracted Researcher (to NYU Winthrop Hospital)
- Shire
- Regeneron
- Pfizer
- AztraZeneca

Advisory Board/Consultant
- Regeneron
- AbbVie
- Pfizer
- Lilly

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Learning Objective

Upon completion of this session, participants should be able to:

1. Identify clinical, administrative and reimbursement strategies for patch testing in their practice.

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Patch Testing: the only way to diagnose Allergic Contact Dermatitis

THE GREATEST ABUSE OF PATCH TESTING IS FAILURE TO USE THE TEST

Colman, 1982

- **The diagnosis of ACD made solely by history is under suspected, under diagnosed or misdiagnosed when compared with those patch tested** (Sherbets EF. Controversies in contact dermatitis. Am J Contact Dermat 1994;5:130-135)
- **Relief of symptoms average 143 days sooner on patch tested vs. non patch tested patients** (RajagopalanR et al. Cutis 1996;57:360-364)

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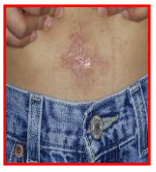
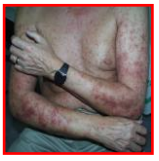
Clinical Strategies

Who to Patch Test

Any patient with:
- Chronic, itchy, eczematous dermatitis
- Persistent or recalcitrant dermatitis
- Atopic Dermatitis patients who fail to improve
- Occupational dermatitis (with caution)
- Systemic contact dermatitis
- Hand, leg or foot dermatitis
- Stasis dermatitis
- Facial dermatitis (eyelid)
- Dermatitis with unusual distribution





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Selecting Allergens

Screening Patch Test
T.R.U.E. Test® (35 allergens, currently the only FDA approved PT for ≥ 6 y.o.)

Expanded Patch Test
North American Standard Series (~70-80 allergens)
ACDS Core Allergen Series (80 allergens)

Allergens grouped for specific exposure
(hairdresser, shoes, plants, vehicles, metals, antibiotics, corticosteroids, photoallergens, etc.)

Patient Products

Allergens from cosmetic & other industry

allergEAZE®: (www.smartpractice.com)
SmartPractice
3400 E. McDowell Road Phoenix, AZ 85008-7899
Ph: 800.522.0800
info@smartpractice.com

Dormer laboratories®: (http://www.dormer.com)
91 Kelfield Street #5
5040 Toronto, ON M9W CANADA
Ph: 866 976 7637

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THE TRUE VALUE OF THE T.R.U.E. TEST®

- The usefulness of PT is enhanced with the number of allergens tested
- Allergens not found on commercially available screening series in the US frequently give relevant reactions
- Personal products is a useful supplement especially in facial or periorbital dermatitis
- The T.R.U.E. Test® may serve as triage or a screening tool in an allergists' practice
- Occupational exposures may benefit from early referral for supplemental testing

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T.R.U.E. TEST® (36) vs. NACDG Screening Series

What's the difference?

- Hypothetical detection rate of TT ® vs. NACDG: 57.9%–70.4%

- Antigens on TT® not on NACDG
  - Thimerosal
  - gold
  - quinoline mix

- Individual vs. "mixes"
  - caine mix (TT ®) vs. benzocaine & dibucaine (NACDG)
  - parthenolide (TT ®) vs. sesquiterpene lactone mix & compositae mix (NACDG)

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Dekov en et al. NACDG Patch Test Results 2017–2018 March 2021 DERMATITIS

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T.R.U.E. vs Finn loaded Allergens

Different Sensitivities for some allergens tested in both TT and Finn

– T.R.U.E. Test ® Misses:
- 50% Fragrance
- 62% Balsam of Peru
- 56% Thiuram

– T.R.U.E. Test ® better for:
- Nickel

– Finn Misses:
- 25% nickel
- 21 % neomycin
- 28% MCI/MI

– Finn better for:
- Formaldehyde

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TABLE 3. Strength of Reactions/Clinical Relevance

Substance	n	% Positive	Positive Reactions
Nickel sulfate hexahydrate, 2.5% pet	4937	16.2	803
MI, 0.2% aq (2000 ppm)	4938	15.3	756
MCI/MI, 0.02% aq (200 ppm)	4940	11.0	543
Fragrance mix I, 8.0% pet	4944	9.2	456
Hydroperoxides of linalool, 1% pet	4934	8.9	439
Formaldehyde, 2.0% aq	4928	7.4	367
BIT, 0.1 % pet	4946	7.3	359
Myroxylon pereirae resin (balsam of Peru), 25.0% pet	4940	7.1	350
Cobalt (ii) chloride hexahydrate, 1.0% pet	4946	6.7	331
4-Phenylenediamine, 1.0% pet	4926	5.6	279
Bacitracin, 20.0% pet	4937	5.5	274
Neomycin sulfate, 20.0% pet	4938	5.4	269
Formaldehyde, 1.0% aq	4938	5.4	267
Propolis, 10.0% pet	4939	4.7	234
Fragrance mix II, 14.0% pet	4944	4.4	219

The top 15 most frequently positive allergens
- 2 metals
  - nickel & cobalt
- 2 antibiotics
  - neomycin & bacitracin
- 4 fragrances
  - FM I, FM II, M. pereirae (BOP), hydroperoxides of linalool
- 4 preservatives
  - MI*, MCI/MI*, BIT*, formaldehyde [1% & 2%]
- p-phenylenediamine
- propolis

*Isothiazolinone family
BIT: Benzisothiazolinone

DeKoven et al. NACDG Patch Test Results:2017–2018 March 2021.DERMATITIS

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T.R.U.E. TEST® (36) vs. NACDG Screening Series

Antigens in top NACDG not on TT ®

- **methylisothiazolinone**
- **fragrance mix II**
- **benzisothiazolinone**
- **hydroperoxides of linalool**
- **propolis**
- carmine
- decyl glucoside
- majantol
- ammonium persulfate
- sodium metabisulfite
- dimethylaminopropylamine
- shellac
- hydroxyethylmethacrylate
- iodopropynyl butylcarbamate
- propylene glycol
- oleamidopropyldimethylamine
- DMDM hydantoin
- lauryl glucoside
- ylang-ylang oil

Other important non-TT ® allergens
- **tosylamide formaldehyde resin**
- amidoamine
- **acrylates/methylacrylates**
- tea tree oil
- benzophenone-3
- mixed dialkyl thioureas
- **cocamidopropyl betaine**

Allergen panels developed based on recommendations from North American Contact Dermatitis (NACD) panel & American Contact Dermatitis Society (ACDS)
- Updated regularly to include most relevant allergens

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DeKoven et al. NACDG Patch Test Results:2017–2018 March 2021.DERMATITIS

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Patch Test Recommendations for Children 6-12 y.o.

	Primary Allergens				Secondary Allergens
1	Bacitracin	11	Fragrance mix 1	1	black rubber mix
2	Budesonide	12	Fragrance mix 2	2	dialkyl thioureas
3	Carba mix	13	Lanolin alcohol	3	mercaptobenzothiazole
4	Cobalt chloride	14	MCI/MI	4	para-phenylenediamine
5	Cocamidopropyl betaine	15	Myroxylon pereirae (Balsam of Peru)	5	p-tert butyl phenol formaldehyde resin
6	Colophonium	16	Neomycin sulfate		
7	Compositae mix/ dandelion extract	17	Nickel sulfate		
8	Disperse blue	18	Potassium dichromate		
9	Ethylenediamine	19	Quaternium 15		
10	Formaldehyde	20	Tixocortol-1-pivalate		

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Jacob SE, Brod B, Crawford GH. Clinically relevant patch test reactions in children—a United States based study. Pediatr Dermatol. 2008 Sep-Oct;25(5):520-7*

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Contact Dermatitis in Atopic Dermatitis

Consider CD in AD patients who have:

- Dermatitis that
  - worsens
  - changes distribution
  - fails to improve
  - immediately rebounds
- Atypical distribution/pattern
  - head predominance
  - hand or foot
  - eyelid predominance
  - cheilitis/perioral predominance
- Therapy-resistant hand eczema
- Adult- or adolescent-onset AD w/o childhood eczema
- Severe or widespread dermatitis before initiating systemic immunosuppressant

Consider the following allergens in AD

- Metals (nickel, cobalt, potassium dichromate)
- Fragrances (FM, Balsam of Peru)
- Preservatives
- Topical emollients, corticosteroids, antibiotics, antiseptics
- Patient's products

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CONCENTRATION FOR NON STANDARDIZED PT

Product	Concentration	Vehicle
Make up- non volatile (e.g.foundation, powder, eye shadow, eye-liner, moisturizer, antiperspirant)	As is	
Make up-volatile (e.g. mascara, after shave lotion)	Apply to chamber and wait 5 min before application	dry
Hair spray	As is	dry
Shampoo, soap	Doubtful value, test ingredients	
Perfume, cologne, toilet water	Apply to chamber and wait 5 min before application	dry
Nail polish	Paint on chamber as is and allow to dry for at least 15 min	dry
Skin care preparations (body/hand cream, moisturizers)	As is	
Baby products (e.g. cream, powder, lotion, oil	As is	
Topical medications: (antibacterial, corticosteroids)	As is – 20%	
Clothing, shoes, gloves	2 x 2 cm moisten in saline, minimum 10mm punch	
Foods **- cauliflower, clove, spice, fruit** **- garlic, onion**	As is 50%	
Household & industrial products should only be tested after determining their safety from MSDS information and using non-irritating patch test concentrations based on an authoritative text	Refer to Occupational Health Care Professional	

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Allergen Chambers

Square vs Round

Chamber sizes
Finn Chambers (8mm,12mm,18mm)

Aluminum vs. Plastic

Built in vs. separate filter paper

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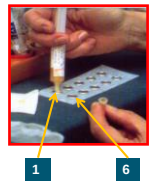
Patch Testing Preparations

- Majority of adults on >20 mg/day of prednisone have diminished skin test reactivity
  - less understood for children
- Avoid TCS or TCI on test site 5-7 days before PT
- Avoid UV exposure of test site 5-7 days before PT



- Number & diagram chambers correctly
- 5-mm ribbon of petrolatum based antigen is sufficient
- For liquid antigens, apply 1 drop of liquid on filter paper disk in the Finn chamber

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Pre Loading Allergens

Ideally tests would be prepared at the time they are placed.

Allergen in Petrolatum can be prepared ahead of time except….

Avoid early preparation of acrylates, fragrances, and all allergens in aqueous vehicle.

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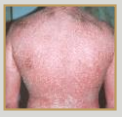
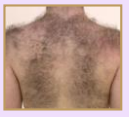
Nightmares on Application Day

The eczema flare



The hairy back

-remove hair 1-2 days prior to PT



The oily back

-no emollients on day of PT for good adherence

The Tattoo

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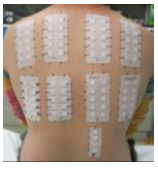
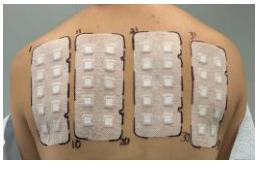
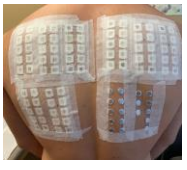
Avoid the midback
(2.5 cm lateral spine)

Label





Reinforce



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The "Right Time to Read"

Most true allergic reactions occur between 72-96 hours.

Allergens that may peak early
- thiuram mix
- carba mix
- balsam of Peru

Allergens that Disappear after 5 Days
- Balsam of Peru
- Benzoic Acid
- Disperse Blue #124
- Fragrance mix
- Mercury
- Methylydibromogluteronitrile/ phenoxyethanol
- Octyl gallate

Delayed Patch Test Reactions after 5 days
- Metals
  - Gold
  - Potassium Dichromate
  - Nickel
  - Cobalt
- Topical Antibiotics
  - Neomycin
  - Bacitracin
- Topical Corticosteroids
- PPD

Davis M et al. Delayed Patch Test reading after 5 days : the Mayo Clinic Experience. JAAD Aug 2008; 59 (2):225 -233
Higgins et al. The relevance of 7 -day patch test reading. Dermatitis. 24(5):237-240, 2013.

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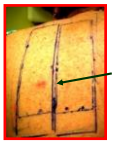
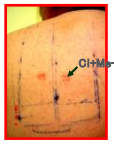
PATCH TEST READING

- Two readings:
  - 1st reading after 48 hours
  - 2nd reading –3, 4 or 7 days after application



1 vs. 2 readings

- 2nd reading helps distinguish irritant from allergic responses
- 30% of (-) tests at 48 hrs. may be (+) on delayed readings



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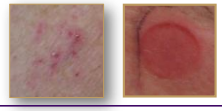
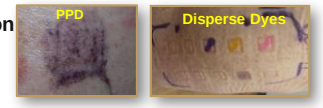
Characterize Reactions

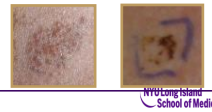
Irritant Morphology
Pustules, Dry Skin, Scaling, Petechiae, Shiny Skin, Cigarette Paper Appearance



Expected Discoloration
Dye retention



Unique Appearance



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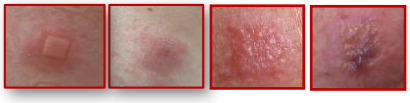
Characterize Reactions

Allergic Morphology
- **Erythema, infiltration & edema filling application site**
- **Papules**
- **Vesicles, Bullae**



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Determining Relevance

Current Relevance

- ***Definite***
  - (+) "use test" with suspected item or
  - (+) PT with the object or product
- ***Probable***
  - Suspected allergen is verified in known skin contactants with a consistent clinical presentation
- ***Possible***
  - If patient's skin is in contact with materials that likely contain the suspected allergen
- ***Past***
  - Patient no longer has exposure to the (+) allergen

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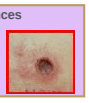
CAUSES OF FALSE POSITIVE REACTIONS

Use of irritant substances
- Sharply demarcated
- Confined to disc area
- Shiny, often w/ blister
- Burning or painful



Pressure reaction →

Edge effect →

•Angry Back Syndrome
marked 2+ to 3+ surrounded by (+/-) or (+) responses to contiguous site
•Excited Skin Syndrome

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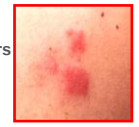
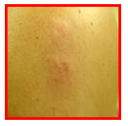
Gold:

96 hours





3 months later

- In TRUE Test ® (routine epicutaneous PT)
- May be late reactor (as late as 3 weeks)
- Persistent PT reactions (as long as months)
- Clinical relevance of (+) PT has long been a matter of debate
  - **PT (+) reported t as high as 30.7%**
  - **2 largest studies show clinical relevance in only 10-15%**
- Possible relevance in
  - **suspected jewelry allergy**
  - **patients with facial or eyelid dermatitis**
  - **gold dental restorations**
- Trial of gold avoidance may be warranted if with + PT to gold
- Avoidance period for benefit is long & may only be partial

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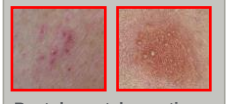
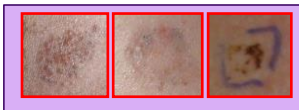
False Positive reactions to Metals



Pustular patch reaction
- **Common in atopics**
- **Nickel, copper , arsenic & mercuric chloride**
- **Minimal pruritus**



Cobalt
-false (+) cobalt "poral" reaction
- punctate erythema, almost petechial
- probably toxic effect of cobalt on acrosyringium (superficial or intraepidermal portion of the sweat duct)

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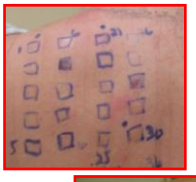
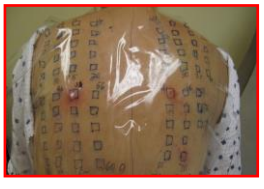
Mapping





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Recommendation Prior to Patch Testing
"Lo.C.A.L. (Low contact allergen) Skin Diet (Zug KA)

Eliminates most common allergens:

- Fragrance
- Formaldehyde Releasing Preservatives
- MCI/MI
- MDG/PE
- Lanolin
- CAPB
- Benzophenone-3

- Cover girl clean fragrance free liquid make-up
- Clinique blushing blush powder blush
- Clinique soft pressed eye shadow
- Max factor vivid impact lip liner-all shades
- Almay hypoallergenic roll-on anti-perspirant/ deodorant
- Cerave moisturizing lotion/ vanicream
- Cetaphil gentle skin cleanser
- Free & Clear shampoo
- Free & Clear hair spray - firm hold

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Topical Skin Care Product Databases

- Traditional approach:
  - Give name of the allergen
  - Patient is asked to review package labeling to identify products free of the allergen.
- Since typical allergen names are long, difficult to spell, commonly have numerous complex synonyms, and are often frankly intimidating for patients, compliance with allergen avoidance is frequently difficult
- A Database generating a list of allergens to avoid *and* comprehensive list of skin care products that are free of their identified allergens
  - Increase patient compliance and faster resolution of clinical disease
  - Decrease required physician for patient education.

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The identification and avoidance of contact with the offending agent(s) is the key to the success of ICD and ACD treatment.

Topical Skin Care Product Databases

	CAMP Contact Allergen Management Program (American Contact Dermatitis Society)	CARD Contact Allergen Replacement Database (MAYO Clinic)
Web Address	www.contactderm.org	www.AllergyFreeSkin.com
Physician	*Requires ACDS Membership* For reference, send CV: Luz Fonacier, MD. Head of Allergy NYU Winthrop Hospital Luz.fonacier@nyulangone.org	*No membership requirements* *Provider portal* *Patient portal* *Web and Smart Device*

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Flow and Staffing

CPT Codes

- **99203** - New Patient Office visit- Consultation visit
- **95044** - Patch application (specify number of tests)
  - May be done in the first visit or placement visit only (can be done by assistant/nurse)
- **99212 or 99213** - Established Patient Office
  - Photo to document integrity of patch
  - Remove patches (can be done by assistant)
  - Wait 30 min
  - Physician does 48 hour read. Important for allergic vs. irritant reactions (crescendo/decrescendo)
- **99214** - Established Patient Office- Read visit
  - Counseling (time based)
  - Provision of safe list

*****_Modifiers are only necessary on these visits if another problem area is addressed in addition to the patch testing process._

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Coding & Reimbursement Pearls:

- ICD-10 Codes for E/M visits
  - Allergic Contact Dermatitis, Metals L23.0
  - Allergic Contact Dermatitis, Cosmetics L23.2
  - Allergic Contact Dermatitis, Unspecified L23.9
  - Allergic Contact Dermatitis due to other agents L23.89
    - Although it seems general, you are completing the testing to determine what agents the patient is allergic to; therefore, it is best to keep the description general.

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Typical Reimbursement Rates

Visits	CPT Code	Avg. Fee Schedule	Master Fee Schedule (150% Medicare fees)
Initial Consult	99203 -Non-Referring Provider/Medicare	98.67	166.00
Patch Application (2nd Visit)	95044 (no RVU)	5.50 (per allergen) X 80 units= 440.00	8.00 X 80 units= 640.00
Patch Removal (3rd Visit)	99212 - Office Visit	44.98	83.00
Patch Read/Counseling (4th Visit)	99214- Office Visit	106.47	191.00
Total average reimbursement		690.12	1080.00

- Average reimbursement rates

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Variables per state…per insurance….

- Medicare reimbursement rates for PT **per unit** of 95044: $4-$8
- Private insurance rates for PT per unit range from around $5-$12
- Medicare PT reimbursement **by county** for the US for 2018
  - Reimbursement per allergen ranges from $4.83 in Mississippi to $7.45 in Santa Clara County, California.
  - The mean reimbursement across all counties is $5.37
- Limits to the **number of tests** that can be done in a year and what insurance limits them?
  - 80 allergens **per day**. Medicare does not limit the amount per year, only per day.
  - There are plans that do limit per year, depending on the employer contract with the insurance company.

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Estimated Practice Cost

- T.R.U.E. ™ Test: 1 box is $698 (5 tests)
  - Cost: ~$140/set of 36 allergens
  - Reimbursement: 36 allergens/patient X $5.37/test= $193.32
- NACD panel: **$2,871.00**
  - Each syringe can do ~100 tests, cost at $28.71 per patient/test.
  - 80 allergens/patient
  - Reimbursement about $5.37/test =$429.60
  - If you PT 7 patients (80 tests each), reimbursement of ~ **$3007.20**
- Add Finn chamber, tape, patch map, nursing time etc.)

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Common Denial Overview

- Missing information - Leaving just one required field blank on a claim form can trigger a denial. Demographic and technical errors, which could be an incorrect diagnosis code, incorrect modifier or number of units, incorrect insurance ID #, prompt 61% of initial medical billing denials and account for 42% of denial write-offs.
- Duplicate claim or service - Duplicates, which are claims submitted for a single encounter on the same date by the same provider for the same beneficiary for the same service item, are among the biggest reasons for Medicare Part B claim denials (up to 32%).
- If you ever encounter a plan that does not cover patch testing, please let CDI and ACDS know.

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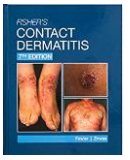
Useful Resources



American Contact Dermatitis Society (www.contactderm.org)
- requires membership

Contact Dermatitis Institute (www.contactdermatitisinstitute.com/mypatchlink.php)
- Patient handouts, webinars

NIH (http://householdproducts.nlm.nih.gov/)
- List of products to avoid

•https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PFSlookup/
•http://www.medicarepaymentandreimbursement.com/2016/08/cpt-code-99243-office-visit.html
•https://www.changehealthcare.com/blog/medical-billing-denials-avoidable/

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