Welcome

- The objective of this document is to provide a basic overview of patch testing products, methods, result interpretation and patient management strategies.
- The information contained within this handout are by no means exhaustive in its information and further training is recommended.

What is Patch Testing?

- Patch test techniques for diagnosing allergic contact dermatitis (ACD) have been used for more than 100 years, and the present test methods are based on the established principle of placing a controlled application of a biologic or chemical substance on the skin to detect an allergic hypersensitivity.
- Patch testing attempts to reproduce an allergic reaction in a controlled way.
- Small amounts of test substances diluted in a vehicle such as water, alcohol or petrolatum are applied in a chamber to the skin under a patch of cloth or paper tape and an impermeable membrane.
  - Patch tests allergens are comprised of materials that are found in the home, workplace and/or recreational environment and determined to have allergenic potential.
  - The patches are placed on the back or upper arm and are removed after 48 hours. Reactions are read 72 - 96 hours after application. Any skin reactions are examined and scored from 0 (no reaction) to 3+ (indicating severe blistering and angry redness of the exposed skin).
  - The diagnostic value of patch testing depends on the choice of test substance, vehicle, concentration, results interpretation and patient counseling.

Tests substances may be

- Ready-to-use (e.g. T.R.U.E. TEST®)
- Prepared using patient-provided products or commercially-available allergens:
  - allergEAZE®
  - Chemotechnique®
  - TROLAB®

Patch Test Chambers

Patch test chambers are available pre-set on tape or panels or as individual chambers. The chambers may be round or square and made of plastic or metal.

Round Chambers
- Finn® Chambers
- Curatest® & Curatest F®

Square Chambers
- allergEAZE® Chambers
- IQ Ultra® Chambers
- van der Bend® Chambers
Patch Testing Indications
• Persistent dermatitis
• Frequent dermatitis
• Hand dermatitis
• Facial dermatitis (not seborrheic)

How To Patch Test: 10 STEPS
1. Patient History / Physical Examination
2. Patient Consultation
3. Select Allergens
4. Panel Preparation
5. Skin Preparation
6. Panel Placement
7. Test Instructions
8. Panel Removal
9. Patch Test Readings
10. Patient Counseling

STEP 1: Patient History / Physical Examination
Review Relevant Risk Factors:
• Existing conditions
• Symptoms, onset, frequency, severity, pattern
• Medications (topical & oral)
• Devices (implants, stents, dental appliances)
• Personal and family allergy history
• Occupational / recreational / personal care exposure
• Case complexity

Note: If patient has severe ongoing dermatitis, defer patch testing until acute symptoms subside to avoid eliciting excited skin syndrome and false-positive reactions.

Distribution Clues:
Eyelids:
• Main DDx:
  – Irritant Contact Dermatitis (ICD)
  – Psoriasis / Seborrhea
  – Atopic Dermatitis

• Primary Causes
  – Shampoo
  – Conditioner
  – Hand soap
  – Hand moisturizer
  – Nail cosmetics
  – Airborne

Peripheral Face:
– Pre-auricular
– Sub-mental
– Jawline

• Main DDx:
  – Seborrhea
  – Irritant Dermatitis

• Primary Causes:
  – Shampoo
  – Conditioner
  – Facial Cleansers
**PATCH TESTING 101 FOR PROVIDERS**

### Central Face:
- Cheeks  
  - Main DDx:  
    - Seborrhea  
    - Atopic Dermatitis  
  - Primary Causes:  
    - Make-up  
    - Moisturizers  
    - Jewelry
- Forehead  
- Chin

### Lips:
- Main DDx:  
  - Licking  
  - ICD  
  - “Product addiction”  
- Increased Suspicion of ACD if:  
  - Violates the vermillion border  
- Primary Causes:  
  - Toothpaste  
  - Lip balms  
  - Cosmetics

### Neck:
- Main DDx:  
  - Atopic dermatitis  
  - Irritant dermatitis  
  - Airborne Plant Allergens

**Lateral neck most likely:**
- Perfume/Cologne
- Nail cosmetics

### Feet:
- Main DDx:  
  - Psoriasis  
  - Tinea  
  - Keratoderm  
  - Frictional  
  - Juvenile Plantar Dermatosis  
- Increased Suspicion of ACD if:  
  - Dorsal Foot  
  - Used OTC Products

**Dorsal most likely:**
- OTC Prescription/Topicals
  - Shoes

### Hands:
- Main DDx:  
  - Vesicular dermatoses  
    - Dyshidrosis  
    - Pompholyx  
    - Chronic Vesicular  
    - Psoriasis  
    - Irritant Dermatitis  
    - Hyperkeratotic Hand Dermatitis  
- Palm slightly more likely:  
  - Hair Styling Products  
  - Hand Soaps (especially public restrooms)  
  - Moisturizers  
  - OTC / Rx Topicals  
  - Gloves
STEP 2: Patient Consultation

Important Points to Discuss with Patients:

- Counsel patients about the nature, goals and limitations of patch testing
- Patients should wear loose clothing during testing
- Test sites may be itchy and uncomfortable
- Stop taking oral and topical corticosteroid medications 2-3 weeks before testing
- No showering (sponge baths only); patch test panels must be kept dry
- Vigorous exercise must be avoided and other activities may be limited
- A flare-up of dermatitis elsewhere on their body may occur
- Patients should contact their doctor if reactions become severe
- Coordinate scheduling to encourage patient compliance and a commitment to return for all patch test readings
- Advise patient to limit sun exposure on test area at least 3 weeks before testing

STEP 3: Select Allergens

Depending on the patient’s history, you may select:

- A standard series (T.R.U.E. TEST Standard, Core Series, North American Baseline Series, etc.)
- An occupational grouping
- Prepare the patient’s “Patch Test Data Form”
- Determine sequence and allergen placement

STEP 4: Panel Preparation (Syringe-Based)

A. Number Chambers

- Match numbering sequence with your Patch Test Data Form

B. Fill Chambers

- Turn over panel & dispense allergen in the first chamber on the upper right corner of the panel (chamber #1)
- If filling chambers several hours in advance, cover allergens & refrigerate. If you’re preparing allergens up to 1 week in advance, use patchTransport and refrigerate. In either case, make sure to clearly label the patient’s name and Panel # on each panel so that you don’t get confused which panel is which.
- Never pre-fill liquid and / or volatile allergens
- Fill chamber with proper dose of test substance. An 8mm chamber typically requires between 15-20µL. To standardize doses, you may wish to use TruVol Precision Allergen Dispenser which delivers a consistent 20 µL dose per use.
- Due to variances in chamber sizes, additional allergen may be required. Review instructions for each chamber used.

Tips:
- Add liquid and / or volatile allergens to the chambers immediately before placement
- Use filter papers for liquid allergens
- Allergens are easier to dispense from a syringe at room temperature
STEP 5: Skin Preparation

- The skin should be dry and clean — may be cleaned with warm water and dried gently
- Healthy (no dermatitis, acne, scars)
- Smooth skin, no hair (patient may shave area before visit)
- Free of ointments, lotions, powders

STEP 6: Panel Placement

Patch Test Panel Placement

- Be sure you know where you are going to apply each panel prior to starting panel application. Preferred sites are: Upper back or the outer surface of the upper arm.
- Position the patch test panel on patient’s back
- Place panel 1 on the upper left side of the patient’s back (about 5 cm from the midline) so that the #1 allergen is in the upper left corner
- From the center of the panel, smooth outward toward the edges, making sure that each allergen contacts the skin firmly and completely
- With a skin marker, mark the location of the panel’s notches or corners on the skin to enable patch identification on panel removal
  - A fluorescent skin marker can also be used to mark the panel notches and detected later using a Wood’s lamp. There are at least two reasons for using a surgical skin marker with Gentian violet rather than a permanent marker (like a sharpie) or other type of marker. First, gentian violet is antimicrobial / antifungal. Second, there have been a few reported instances of patients that have reacted to permanent markers.
- Repeat the process with the remaining panels
- For best results with potential late-blooming allergens, use patchMap to help identify the exact location of patch test chambers after skin markings have faded.

Tips:
- Avoid applying the panel on the margin of the scapula, vertebrae or other bony areas
  - Be sure to press the space between and around chambers to ensure good adhesion and occlusion
  - Gently press chambers to ensure an even distribution of allergens at each site (if T.R.U.E. TEST wasn’t used)
  - Position patient in a relaxed position with the back bent forward, slightly hunched
STEP 7: Patient Instructions

Inform Patients of the Following:

- Keep the panels and surrounding skin dry
- Unless a water-resistant chamber or patch cover was used, do not shower for the first 48 hours
- No vigorous exercising (light exercise is possible with the use of a water-resistant chamber)
- No sunbathing
- Itching and burning are common
- Do not scratch
- Contact your doctor if severe itching or burning occurs
- Keep all appointments
- Reactions appear within a span of days to weeks
- Results will be discussed during your final appointment

Tip: Even with the use of a water-resistant chamber, prolonged exposure to water should be avoided

STEP 8: Panel Removal

48 Hours from Panel Placement:

- Re-mark notches or corners of panels on skin with skin marker
- Gently remove panels and wait 15-20 minutes to allow transient erythema from occlusion to subside
- Examine the test site for skin reactions
- Align the notches of the reading guide with skin markings
- Read and record 48-hour reactions

STEP 9: Patch Test Readings

Interpretations Should Be Annotated Using the Universal Scoring Guide Below:

- + Weak Positive
- ++ Strong Positive
- +++ Extreme Positive
- ? Doubtful
- IR Irritant
At 72-96 Hours After Application:

- Record positive reactions on the Standard Data Collection Form
- The second reading is essential to confirm allergic reactions and to allow irritant reactions to diminish
- Additional readings may be necessary at 96 hours or 1 week after application as necessary to detect “late” reactions
- Advise patients to be aware of potential reactions at these sites (a reading template for at-home use may be helpful)

Reminders:

72-Hour Read:

The second reading helps to identify and confirm allergic reactions and allows irritant reactions to diminish

Additional Readings:

Reading at 1 week or later after application may be necessary to detect “late” or “persistent” reactions

- Strong irritant reactions are not expected with T.R.U.E. TEST
- Health, sweating and humidity can affect strength and appearance of reactions

Positive Reactions:

- Extreme positive (+++) and strong positive reactions (+++) are usually true positive reactions
- Review relevance:
  - Nature and distribution of the skin eruption
  - Relationship between allergen and recent exposure
  - Patient’s history, especially regarding allergic reactions
- Unexplained Positive Reactions:
  - Incomplete medical or occupational history
  - Exposure to unsuspected, undetected, unrecognized allergens
  - Cross-reactivity to a related allergen
  - Low environmental exposure to an allergen before testing
- Weak Positive Reaction Criteria:
  - Papular
  - Erythema
  - Infiltration
False Positive Reactions:
• Defined as positive patch test reactions in the absence of contact allergy (occurs more frequently with metals, mixes & balsam of Peru)
• May be caused by:
  – Too high a test concentration
  – Technical errors
  – Impure or contaminated test substance
  – Vehicle is an irritant (especially solvents)
  – Excess dosage of allergen
  – Adjacent allergen’s reaction
  – Current or recent dermatitis at test skin sites
  – Recent (<3 weeks) contact allergen testing
  – Generally irritable skin
  – Tape or patch reaction
  – Pressure effect of tape
  – Allergen degradation (improper storage-expired allergen)

STEP 10: Advise Your Patient

Discuss Positive Results:
Provide information about:
• Where the substance can be found at work and at home
• What products are likely to contain this substance
• Steps you can take to avoid this substance
• Alternative products to use

Discuss Negative Results:
Provide information about:
• Condition is not caused by common allergens
• Reduces restrictions on product use
• Common (25% of patients who undergo patch testing)
• Helps diagnose and refine treatment
• Other allergens-additional testing may be necessary

Potential Adverse Events:
• Pruritus
• Erythema
• Persistent reaction
• Late reaction
• Active sensitization
• Ectopic flare
• Irritation to adhesive tape
• Scarring
• Hyper / Hypopigmentation
• Systemic reaction
• Pressure effect
• Excited back