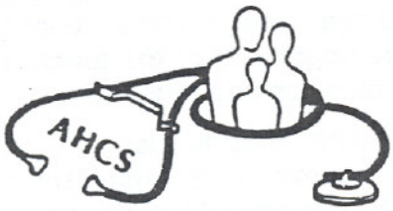

Adult Health Care Specialists

Walter Rosett, M.D. • L. Staffan Pettersson, M.D.
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8312 Kaseman Ct., N.E. • Albuquerque, NM 87110
(505) 296-5411

SMAC (Sequential Multiple Analyzer Computerized)

Did you ever wonder what a "SMAC" blood test was? SMAC 25 is a quantitative chemical analysis of 25 different components of blood.

GLUCOSE	Diabetes, Diseases of the Pancreas
BUN	Kidney function
CREATININE	Kidney function
BUN/CREATININE RATIO	Kidney function
URIC ACID	Gout, Kidney disease
ALKALINE PHOSPHATASE	Bone, Liver, Gall Bladder
LDH	Disorders of Liver, Heart, Lung, Muscle
SGOT	Disorders of Liver, Heart, Muscle
SGPT	Liver disease
GGT	Liver and Gall Bladder disease
TOTAL BILIRUBIN	Disease of Gall Bladder, Liver
DIRECT BILIRUBIN	Disease of Gall Bladder, Liver
INDIRECT BILIRUBIN	Disease of Gall Bladder, Liver
TOTAL PROTEIN	Nutrition, Liver
ALBUMIN	Liver function and disease
GLOBULIN	Liver function and disease, Immune system
A/G RATIO	Liver function and disease, Immune system
SODIUM	Medication Use
POTASSIUM	Dehydration, Kidney disease, Diuretic use, Diabetes complications
CHLORIDE	Dehydration, Kidney disease, Diuretic use, Diabetes complications
CO_2	Lung and Kidney function
CALCIUM	Parathyroid, Kidney disease, Bone damage
PHOSPHOROUS	Bone and Kidney disease
IRON	Hidden Bleeding, Anemia
CHOLESTEROL	Obesity, Diabetes, Hardening of the arteries, Thyroid
TRIGLYCERIDES	Obesity, Diabetes, Hardening of the arteries, Thyroid

SMAC

GLUCOSE: This is a measure of the sugar level in our blood. High values can be associated with eating before the test and diabetes. Even if you know you have diabetes, it is important to have periodic glucose checks.

BUN (blood urea nitrogen): Is a waste product produced in the liver and excreted by the kidneys. High values may mean the kidneys are not working as well as they should. BUN is also affected by high protein diets and/or strenuous exercise which raise levels, and by pregnancy which lowers it.

CREATININE: Is a waste product. The amount present is not affected by the quantity of protein you eat. High values require medical evaluation, especially with high BUN levels. Low values are not significant.

BUN/CREATININE RATIO: Is a ratio between BUN and Creatinine. Values outside expected ranges are of no importance if both BUN and Creatinine are within the expected ranges. A high ratio may mean you need to drink more fluids.

URIC ACID: Is normally excreted in urine. High values are associated with gout, arthritis, kidney problems, and the use of some diuretics. Low values are not important.

ALKALINE PHOSPHATASE: Is an enzyme found in liver and bone and is useful in detecting diseases of these organs. Expected values for this test are higher in adolescents and pregnant women.

LDH: Is an enzyme present in all the cells in the body. Anything which damages cells, including blood drawing itself, will raise amounts of LDH in the blood.

SGOT & SGPT: These are proteins called enzymes which aid various chemical activities within cells. Injury to cells releases these enzymes into the blood. They are found in muscle, the liver, and the heart. Damage from alcohol and a number of diseases can cause high values. Low values are not significant.

GGT: Is an enzyme found in liver and high results may indicate liver disease. Moderate intake of alcohol and some common medications may cause elevated values to occur.

BILIRUBIN: Is the pigment (color) in bile. High levels may indicate liver disease or some other disorder which reduces the normal flow of bile. Many normal people will have levels up to 2-3.

PROTEIN, ALBUMIN, GLOBULIN: These measure the amount and type of protein in your blood. They are a useful index of overall health and nutrition. Globulin is the "antibody" protein important for fighting disease. If one of these is high, but all other values are within ranges, the result may not be significant.

A/G RATIO: Is the ratio of albumin to globulin. High or low values are not important in the screening situation if both albumin and globulin fall within expected ranges.

URINALYSIS: This is done as another way of checking for kidney disease or disease of the bladder. Protein and sugar are measured. It is normal to have a few white cells and rare red cells. Usually, urine will not show sugar or protein in significant amounts.

EKG: This is an electrocardiogram, which looks at the electrical pattern of the heart. It can show evidence of damage or strain or of previous heart disease.

SODIUM & CHLORIDE: These are regulated by the kidneys and adrenal glands. They are important for the functioning of nerves, muscles and most cells.

POTASSIUM: Is controlled very carefully by the kidneys. It is important for the proper functioning of nerves and muscles, particularly the heart.

CALCIUM & PHOSPHATE: These are controlled by the parathyroid glands and the kidneys. These minerals are found mostly in bone but are also important for normal cellular activity.

IRON AND FERRETIN: This test measures the iron supply in the blood which the body uses to make new red blood cells. It is not the same as the anemia screening test, although low levels may help to explain anemia.

CHOLESTEROL: This is a blood fat which has been associated with heart disease in some people.

TRIGLYCERIDES: This is a fat in the blood that is affected by what you have eaten. Triglycerides in your blood may remain at a high level for up to 12 hours after a meal.

HDL (high density lipoprotein): This is one of several types of fats which are measured as total cholesterol. It has been referred to as the "good cholesterol." It has been shown that the HIGHER the level of HDL cholesterol the LOWER the risk of developing heart disease.

CBC: This is a complete blood count. It includes white and red blood cell count. White cells relate to different kinds of infection or diseases of the blood, and the red cell count relates to anemia. It is not unusual for one of these numbers to be slightly abnormal without having any particular significance.

CHEST X-RAY: This is to look at the lungs and the heart to check for growths in the lungs, evidence of lung disease, enlargement of the heart or abnormalities of the chest in general.

Instructions/Recommendations

_____

_____

_____

502 456-4700
800 800-4700

LOUISVILLE, KY 40213-1955
CLIA #18D0321540 CLIA #18D0320891 MEDICARE #1
CAP #16158-01 ILL #1290 KY #2000-48

DATE REPORTED	DATE RECEIVED	PATIENT NAME – I.D.	PHONE	AGE
19-MAR-94	16-MAR-94	[redacted]	[redacted]	70
DATE COLLECTED	**TIME COLLECTED**	**HOSPITAL I.D.**	**REQUISITION NO.**	**ACCESSION**
15-MAR-94	9:35 AM	[redacted]	0167261B2	3401052

CLIENT NAME/ADDRESS

CROSS LANES MEDICAL CORP. - 57375-1
BAMTRUCK AND SATONCOTRACT, MD'S (ASD
5400 BIG TYLER ROAD (43
CROSS LANES, WV 25313 564-55957.003

TEST REQUESTED

SUSPECTED HYPOTHYROID PROFI

PHYSICIAN	VOLUME	FASTING	PATIENT SS#	COMMENTS
SAMTROCK		YES		

CHEMISTRY		RENAL		LIPIDS					ELECTROLYTES		
GLUCOSE 65-115 mg / dL	B.U.N. 5-25 mg / dL	CREATININE 0.6-1.5 mg / dL	BUN/CREAT RATIO 6-20	CHOLESTEROL 130-* mg / dL (see back)	TRIGLYCERIDE 30-150 mg / dL	CALCIUM 8.5-10.8 mg / dL	PHOSPHORUS 2.5-4.5 mg / dL *	SODIUM 135-147 mmol/L	POTASSIUM 3.5-5.3 mmol/L	CHLORIDE 96-109 mmol/L	FERRI M 20-4 F 10-35 ng / m
[redacted]											

PROTEIN					LIVER						
URIC ACID M 3.5-9.0 F 2.2-7.7 mg / dL	TOTAL PROTEIN 6.0-8.5 g / dL	ALBUMIN 3.5-5.5 g / dL	GLOBULIN 2.0-3.9 g / dL	ALB / GLB RATIO 1.0-2.4	TOTAL BILIRUBIN ≤ 1.2 mg / dL	ALK. PHOS. 25-140 U / L *	LD (LDH) ≤ 240 U / L	AST (SGOT) ≤ 40 U / L	ALT (SGPT) ≤ 45 U / L	GGT M 0-65 F 0-45 U / L	IONIZE CALCIU 3.5-5. mg / dL
[redacted]											

THYROID											
T3 UPTAKE 25-35%	T4 TOTAL 4.5-12 µg / dL	T7 (T3U x T4) 1.2-4.2	T3 by RIA 70-210 ng / dL	TSH 0.4-6.0 µU / mL	B_{12} 200-1150 pg / mL	FOLATE 2.5-17.3 ng / mL	CORTISOL AM 7.0-25.0 PM 2.0-9.0 µg / dL	DIGOXIN 0.5-2.0 ng / mL	DILANTIN THER: 10-20 TOX: > 25 µg / mL	PHENOBARB THER: 15-40 TOX: > 40 µg / mL	THEOPHYL THER: 10 TOX: > 2 µg / mL
LOW 24	HIGH 12.1	2.7		HIGH 7.9							

BLOOD CELL PROFILE								SEROLOGY			
WBC 3.7-10.5 x 10^3 / µL	RBC M 4.1-5.6 F 3.8-5.1 x 10^6 / µL *	HGB M 12.5-17 F 11.5-15 g / dL *	HCT M 36-50 F 34-44 % *	MCV 80-98 fL	MCH 27-34 pg	MCHC 32-36 %	RPR NON-REACTIVE	MONO TEST NEG	STREPTOZYME NEG	RHEUMATOID FACTOR < 1:10	C-RP NEG
[redacted]											

DIFFERENTIAL											
NEUT 40-74 %	LYMPH 14-46 %	MONO 4-13 %	EOSIN 0-7 %	BASO 0-3 %	PLATELET COUNT 155-385 x 10^3 / µL	WINTROBE ESR M 0-10 F 0-20 mm / Hr	RUBELLA	BLOOD GROUP	$RH_0(D)$		ANTIBOD SCREEN
[redacted]											

URINALYSIS											
APPEARANCE CLEAR	COLOR YELLOW	SP. GRAVITY 1.005-1.035	pH 5.0-7.5	PROTEIN NEG	GLUCOSE NEG	KETONES NEG	BILIRUBIN NEG	BLOOD NEG	NITRITE NEG	UROBILINOGEN < 2	LEUKOCY TEST NEG
[redacted]											

RESULT NAME	RESULT	UNITS	REFERENCE RANGE
TSH			
*	[redacted]		

RECEIVED
MAR 22 1994
MEDICAL REPORTS

[redacted]

003 (6/93

TF–RESULT TO FOLLOW ★–SEE BACK FOR FURTHER BREAKDOWN

HEALTHMARK CENTERS, INC.

URINALYSIS DIAGNOSTIC PROFILE

Name: [redacted] Date: 4/5/94

TEST						COMMENT
Leukocytes	Neg	Trace	+	++		
Nitrite	Neg	Pos				
Urobilinogen	Normal	1	4	8	12 mg/dl	
Protein	Neg	Trace	+ 30	++ 100	+++ 500 mg/dl	
pH	5	6	7	8	9	
Blood	Neg	About 5-10	About 50	About 250		
Specific Gravity	1.000	1.005	1.010	1.015	1.020	1.025
Ketones	Neg	+ Small	++ Mod	+++ Large		
Bilirubin	Neg	+	++	+++		
Glucose	Normal	+ 1/10	++ 1/4	+++ 1 g/dl		
Hemoglobin		About 5-10	About 50	About 250		
Weight						

APR 2 1994

OVERWEIGHT (278.0), UNDERWEIGHT (783.4)

	CLEAR	CLEAR WITH RESTRICTIONS	DEFER	MRB/ADVISOR	MNQ
CRITERIA	→ 1) Any weight >120% IBW or < 75% IBW - no risk factors.	→ 1) N/A	→ 1) Weight > 120% IBW with: • diabetes • osteoarthritis[1] • MI • coronary artery dz • hypertension[2] • hyperlipidemia [2] • hypertension and hyperlipidemia → 2) Wt > 150% IBW with: • substance abuse • hypertension • hyperlipidemia • thyroid dz • gout • chronic back pain → 3) Wt < 75% IBW with: • substance abuse • osteoporosis • malabsorption • eating disorder • thyroid dz • chronic back pain	→ 1) Doesn't meet guideline but applicant's Dr. states therapy is optimized.	→ 1) N/A
ACTION	**CLEAR**	**CLEAR WITH RESTRICTIONS**	**DEFER**	**MRB/ADVISOR**	**MNQ**

RESTRICTIONS/ DEFER

* Notify VRS evaluate need to accommodate weight condition

UNTIL:
1) Weight <120% or waist to hip ratio ≤1.05 for males or ≤ 0.9 for females
2) Weight <150% or waist to hip ratio ≤ 1.05 for males or ≤ 0.9 for females
3) Weight >75%

1-3 note: also must meet specific guidelines for each risk factor

RATIONALE

[1] weight bearing joints - spine, legs, hips
[2] combined with gout, substance abuse, or thyroid disease.

MEDICAL INFORMATION NEEDED: Needs supplemental medical Hx if wt > 120% IBW or < 75% IBW

IBW = Ideal Body Weight

7/24/95

ALLERGY

TABLE OF CONTENTS

DRUG ALLERGY

Includes Penicillins, Cephalosporins, Sulfonamides, Macrolides , Tetracyclines, Aspirin, NSAIDs, Codeine, and Other Drug Allergies.

For Malignant Hyperthermia; See "Malignant Hyperthermia" Guideline.

INFORMATION REQUIRED *Any history.*

All Applicants:

- Report of Medical Examination to include the following:
  - Drug(s) to which allergic
  - Date of last reaction
  - Description of reaction to include description of angioedema and symptoms associated with respiratory or cardiovascular comprimise.
  - Severity of reaction
  - Treatment to include resuscitative or life-support treatment if required.
  - Recommendations for follow-up over the next 3 years.

If Applicable:

- Copy of drug skin tests, drug challenge tests, and other diagnostic test reports.
- Copy of discharge summary for *all* related emergency room visits and hospitalizations.

CLEARANCE CRITERIA

1. Allergic to drugs in *two or fewer* drug classes.
2. Mild or self-limited allergic reaction. Reaction *may include* one or more of the following symptoms: urticaria (hives), rash, puritis (itching), flushing, or other hypersensitivity reaction, e.g., mild GI symptoms.
3. If reaction includes angioedema, edema does *not* cause airway obstruction, i.e., does *not* involve the neck, oropharynx (tongue, soft palate, lips), or larynx.
4. Reaction is *not* severe or life-threatening (anaphylactoid or anaphylaxis), i.e., does *not* include any of the following symptoms:
   - Significant respiratory compromise (brochospasm, stidor, dyspnea, apnea) .
   - Significant cardiovascular compromise (hypotension, syncope, shock).
   - Loss of conscienceless.
5. No resuscitative or life support treatment required.

CLEARANCE CRITERIA	REVIEWER	GUIDANCE
Meets clearance criteria 1-5, AND • Drug Allergy: Penicillins, e.g., amoxicillin (Amoxil), amoxicillin plus clavulanate (Augmentin).	RN	CLEAR **PCMO FOLLOW-UP** Avoid penicillins. Consider cross sensitivity with cephalosporins prior to use. Medical Alert bracelet or identification recommended.
Meets clearance criteria 1-5, AND • Drug Allergy: Cephalosporins, e.g., Cephaclor (Ceclor), Cephalexin (Keflex), Cefinir (Omnicef), Cefixime (Suprax).	RN	CLEAR **PCMO FOLLOW-UP** Avoid cephalosporins. Consider cross sensitivity with penicillins prior to use. Medical Alert bracelet or identification recommended.
Meets clearance criteria 1-5, AND • Drug Allergy: Sulfonamides. • Applicant *does not appeal* restriction.	RN	CLEAR WITH RESTRICTION List 1 Restrict (see comments) **PCMO FOLLOW-UP** Avoid Sulfonamides. Medical Alert bracelet or identification recommended.

(continued on next page)

DRUG ALLERGY

Meets clearance criteria 1-5, AND • Drug Allergy: Sulfonamides. • Applicant *appeals* restriction.	**RN** | **CLEAR** **PCMO FOLLOW-UP** Avoid Sulfonamides. Medical Alert bracelet or identification recommended. *Note: Quinine sulfate AND doxycyfine is the treatment of choice for interim self- treatment of malaria in individuals with a sulfa drug allergy. Fansider is contraindicated.*
Meets clearance criteria 1-5, AND • Drug Allergy: Tetracyclines, e.g., doxycycline, minocycline (Minocin), tetracycline HCL (Sumycin).	**RN** | **CLEAR WITH RESTRICTION** List 1 Restrict (see comments) **PCMO FOLLOW-UP** Avoid Tetracyclines. Medical Alert bracelet or identification recommended.
Meets clearance criteria 1-5, AND • Drug Allergy: Macrolides, e.g., erythromycin (E-mycin), clarithromycin (biaxin), zithromycin (Zithromax).	**RN** | **CLEAR** **PCMO FOLLOW-UP** Avoid Macrolides. Medical Alert bracelet or identification recommended.
Meets clearance criteria 1-5, AND • Drug Allergy: Floroquinolones, e.g., ciprofloxicin (Cipro), Norfloxacin (Noroxin).	**RN** | **CLEAR** **PCMO FOLLOW-UP** Avoid Fluroquinolones. Medical Alert bracelet or identification recommended.
Meets clearance criteria 1-5, AND • Drug Allergy: Aspirin	**RN** | **CLEAR** **PCMO FOLLOW-UP** Avoid Aspirin. Medical Alert bracelet or identification recommended.
Meets clearance criteria 1-5, AND • Drug Allergy: NSAIDs.	**RN** | **CLEAR** **PCMO FOLLOW-UP** Avoid NSAIDs. Medical Alert bracelet or identification recommended.
Meets clearance criteria 1-5, AND • Drug Allergy: Codeine.	**RN** | **CLEAR** **PCMO FOLLOW-UP** Avoid Codeine. Medical Alert bracelet or identification recommended.
Meets clearance criteria 1-5, AND • Drug Allergy: Other.	**MED ADVISOR** | —— Risk varies - assess based on detailed history. **PCMO FOLLOW-UP** Avoid (specify drug). Medical Alert bracelet or identification recommended.

(continued on next page)

Does not meet clearance criteria due to one or more of the following: • Allergic to drugs in *three or more* drug classes. • Reaction includes angioedema *with* associated airway obstruction, i.e., edema involves the neck, oropharynx (tongue, soft palate, lips), or larynx.	**MED ADVISOR**	——— Risk varies - assess based on detailed history. If cleared, consider Medical Alert bracelet or identification.
Does not meet clearance criteria due to one or more of the following: • Reaction *is* severe or life-threatening (anaphylactoid or anaphylaxis), i.e., includes any of the following symptoms: - Significant respiratory compromise (brochospasm, stidor, dyspnea, apnea) . - Significant cardiovascular compromise (hypotension, syncope, shock). - Loss of conscienceless. • Resuscitative or life support treatment required.	**MED ADVISOR**	**DEFER/MNQ**

DIAGNOSTIC CODES

995.2 Drug Allergy (Allergic Reaction)

Cross Reference ICD.9.CM

NOTES AND INSTRUCTIONS FOR REVIEWERS:

Reviewers to Consider:

- Screening nurses should document intolerance to medication or hypersensitivity reaction, e.g., mild GI symptoms, on problem list if applicable.

COMMENTS:

Definitions:

• Anaphylaxis: Immediate systemic reaction caused by rapid IgE-mediated immune release of potent mediators from tissue mast cells and peripheral blood basophils. Clinically, the term anaphylaxis is used to describe a rapidly developing generalized reactions that may include pruritis, urticaria, angioedema (especially laryngeal edema), hypotension, wheezing and bronchospasm, nausea, vomiting, pain, diarrhea, uterine contractions, and/or direct cardiac effects, including arrhythmias.

• Anaphylactoid reactions: Immediate systemic reactions that are clinically similar to anaphylactic episodes but are not caused by an IgE-mediated immune response. One of the most common mechanisms of production of anaphylactoid reactions involves the direct (nonantigen-IgE) release of mediators from mast cells and basophils. This occurs in reactions to drugs and biologicals, most cases of idiopathic anaphylaxis, the majority of cases of exercise-induced anaphylaxis, and probably anaphylaxis from other physical factors, such as cold and sunlight. It may also be produced by chemical agents capable of causing mast cell degranulation, e.g., radiocontrast material or opiates.

• Angioedema: Edema extending into the deep dermis and subcutaneous tissue. The lesions of angioedema are large plaques (swollen and nonpitting), often on the eyelids, lips, palms, soles, or other parts of the face and extremities. Clinically it is characterized by swelling of the subcutaneous or submucosal tissue but without puritis. Involvement of the mucous membranes or the oropharynx may cause airway obstruction.

• Urticaria (hives): Raised, erythematous areas of edema involving only the superficial part of dermis. Urticaria lesions are typically localized, raised, swellings that are intensely itchy.

Symptoms: Evaluation of symptoms should include the upper and lower airways (evidence of edema, stridor, dyspnea, wheezing, or apnea), the cardiovascular system (hypotension or syncope), the skin (urticaria, angioedema, or flushing), the gastrointestinal system (vomiting and diarrhea), and the state of consciousness. Signs and symptoms of potentially life-threatening anaphylaxis include stridor, respiratory distress, wheezing, hypotension, cardiac arrhythmia, shock, seizures, and loss of consciousness. Such patients require immediate treatment.

Frequency of Occurrence of Signs and Symptoms of Anaphylaxis

SIGNS/SYMPTOMS	PERCENT
Urticaria and angioedema	88
Upper airway edema	56
Dyspnea, wheeze	47
Flush	46
Dizziness, syncope, hypotension	33
Nausea, vomiting, diarrhea, cramping abdominal pain	30
Headache	15
Rhinitis	16
Substernal pain	6
Itch without rash	4.5
Seizure	1.5

Risk of Recurrence: Major risk factors for recurrence of anaphylaxis include a prior history of such reactions, beta-adrenergic blocker or possibly ACE inhibitor therapy, and the multiple antibiotic sensitivity syndrome. Atopic background may be a risk factor for venom-and latex-induced anaphylaxis and possibly anaphylactoid reactions to radiographic contrast material but not for anaphylactic reactions to many medications.

[The diagnosis and management of anaphylaxis. Joint Task Force on Practice Parameters, American Academy of Allergy, Asthma and Immunology, American College of Allergy, Asthma and Immunology, and the Joint Council of Allergy, Asthma and Immunology 1998 Aug;102(2):264 and 1998]

Death from Anaphylaxis: Is usually due to respiratory obstruction and/or cardiovascular collapse. In patients dying from respiratory obstruction there is edema of the airway and pulmonary hyperinflation. Upper airway edema can be found in about 60% of deaths. Bronchial obstruction with hyperinflation of the lungs occurs in about half the cases. Bronchial obstruction is due to a combination of spasm, submucosal edema, and secretions. When death is due to cardiovascular collapse, there may be no postmortem findings. Myocardial damage, however, can be detected in the majority of cases.

Penicillin and Related Antibiotics (Beta-lactam Antibiotics): Penicillin is the most frequent cause of anaphylaxis and is estimated to be responsible for 75% of all anaphylactic deaths in the United States. It occurs most commonly in adults aged 20-49. Parenteral administration is significantly more likely to trigger anaphylaxis than oral administration. Patients with a history of penicillin reaction are 6 times more likely to have a subsequent reaction than are those with no such history. If a patient has a positive history and a positive skin test response, there is a ≥50% chance of an immediate reaction if penicillin is given again.

Previous history of penicillin allergy may not be a reliable guide to the patient's current status. Greater than 80% of patients with a history of penicillin allergy do not have penicillin-specific IgE antibodies on skin testing. The two main reasons for this are 1) minor rashes in childhood may be wrongly attributed to penicillin, and 2) the majority of individuals with documented penicillin allergy lose their hypersensitivity over time. Patients with a history of urticarial rash (but not morbilliform rashes, which are more common) or anaphylactic reaction in response to ampicillin or amoxicillin are at a higher risk of reaction to penicillin. Carbapenems (e.g., imipenem) are considered cross-reactive with penicillin. Aztreonam (a monobactam) rarely cross-reacts with penicillin.

Management: Patients with a history of penicillin allergy should have skin testing for the presence of penicillin-specific IgE antibodies before penicillin is used again. A positive response identifies individuals at risk of an immediate reaction, although not various delayed reactions that may occur. Individuals with a positive response should be given an alternate antibiotic unless the indication for penicillin is clear, in which case the patient should be desensitized before treatment. 97-99% of patients with a negative skin test to major and minor determinants of penicillin will tolerate penicillin. Patients with a history of IgE-mediated reaction to a cephalosporin who requires penicillin should also undergo penicillin skin testing.

Cephalosporins: Although cephalosporins and penicillins have a common beta-lactam ring structure, the risk of allergic reactions to cephalosporins in individuals allergic to penicillin appears to be be low (<10%), although first-generation cephalosporins appear to pose a somewhat greater risk than 2nd or 3rd generation products. *[Nicklas et al. 1998]*

Management: If a cephalosporin is being considered in a patient with a history of an allergic reaction to penicillin, skin testing to major and minor determinants of penicillin should be carried out. If the test is positive, either an alternate antibiotic should be considered, a graded test dose (a small dose) may be given, or desensitization may be undertaken. *[Nicklas et al. 1998]*

DRUG ALLERGY

Sulfa Allergy: The Peace Corps Office of Medical Services restricts applicants with a sulfa allergy from serving in countries that require sulfa-containing anti-malarial drugs, i.e., FANSIDAR (sulfadoxine and pyrimethamine), for self-treatment of presumed malaria. In general, these are countries that have cholorquin-resistant P.falciparum malaria. Applicants may appeal this restriction and worldwide clearance is considered on a case by case basis.

Tetracycline Allergy: The Peace Corps Office of Medical Services restricts applicants with a tetracycline allergy from serving in countries where quinine sulfate and doxycycline are the treatment of choice for uncomplicated malaria. In general, these are countries that have cholorquin-resistant P.falciparum malaria. Applicants may be cleared to countries with chloroquin sensitive malaria.

Aspirin and Nonsteroidal Antiinflammatory Drugs (NSAIDs): Are associated with a variety of non-IgE-mediated allergic effects, which can be systemic and life-threatening. Avoidance of aspirin and NSAIDs is critical in preventing future reactions in patients who have had systemic reactions to these drugs. If there is a need to determine definitively whether a patient is sensitive to one of these products, an oral challenge test may be used.

Multiple Drug Allergies: The Peace Corps Office of Medical Services has determined that applicants with multiple drug allergies require special consideration. Volunteers are more susceptible to infections of all types and adequate treatment of infections may be difficult when multiple drug allergies exist.

Skin Testing and Drug Challenges: Peace Corps does not recommend drug challenges and does not suggest that applicants seek them.

Literature review and abstract available.

FOOD ALLERGY

Includes Nuts, Seafood, Eggs, and Other Food Allergy.

INFORMATION REQUIRED *Any history.*

All Applicants:

- Report of Medical Examination to include the following:
  - Specific food(s) to which allergic, e.g., type of nut, class of seafood.
  - Date of last reaction
  - Description of reaction to include description of angioedema and symptoms associated with respiratory or cardiovascular comprimise.
  - Severity of reaction
  - Treatment to include resuscitative or life-support treatment if required.
  - Atopic history, i.e., triad of asthma, rhinitis, and chronic urticaria.
  - Recommendations for follow-up over the next 3 years.

Applicants with Egg Allergy:

- Specialist Evaluation to include the above information.

Applicants With a History of Immunotherapy:

- Copy of immunotherapy report to include initiation and termination dates.

If Applicable:

- Copy of food skin tests, food challenge tests, and other diagnostic test reports.
- Copy of discharge summary for *all* related emergency room visits and hospitalizations.

CLEARANCE CRITERIA

1. Food allergy; excludes egg or egg protein.
2. Mild or self-limited allergic reaction. Reaction *may include* one or more of the following symptoms: urticaria (hives), rash, puritis (itching), flushing, or other hypersensitivity reaction, e.g., mild GI symptoms.
3. If reaction includes angioedema, edema does *not* cause airway obstruction, i.e., does *not* involve the neck, oropharynx (tongue, soft palate, lips), or larynx.
4. No significant circulatory (hypotension, syncope, shock) or respiratory (wheezing, SOB) comprimise.
5. No anaphylactoid reaction or anaphylaxis, i.e., severe life-threatening allergic reaction.
6. No resuscitative or life support treatment required.
7. No coexisting atopy, i.e., triad of asthma, rhinitis, and chronic urticaria.

REVIEWER	GUIDANCE
Meets clearance criteria 1-7, AND • Allergy: Nuts, e.g., peanuts, walnuts, pecans, etc.	**RN** → **CLEAR** Consider geographic restriction (avoid West Africa and SE Asia). **PCMO FOLLOW-UP** Avoid specific nuts. Anaphylaxis kit required.
Meets clearance criteria 1-7, AND • Allergy: Seafood, e.g., crustaceans (shrimp,crab, lobster) and mollusks/bivalves (clams, mussels, oysters, abalone).	**RN** → **CLEAR** **PCMO FOLLOW-UP** Avoid specific seafood. Anaphylaxis kit required.
Meets clearance criteria 1-7, AND • Food Allergy: Other.	**RN** → **CLEAR** **PCMO FOLLOW-UP** Avoid specific food. Anaphylaxis kit required.

(continued on next page)

Does not meet clearance due to one or more of the following: • Allergy: Egg or Egg Proteins; documented by specialist.	**RN**	**CLEAR WITH RESTRICTION** Yellow fever countries restrict. **PCMO FOLLOW-UP** Avoid egg and egg protein. No yellow fever, MMR, rabies (RabAvert only), or influenza vaccines.
Does not meet clearance criteria due to one or more of the following: • Reaction includes angioedema *with* associated airway obstruction, i.e., edema involves the neck, oropharynx (tongue, soft palate, lips), or larynx. • Coexisting atopy, i.e., triad of asthma, vasomotor rhinitis, and chronic urticaria.	**MED ADVISOR**	—— Risk varies - assess based on detailed history.
Does not meet clearance criteria due to one or more of the following: • Reaction *is* severe or life-threatening (anaphylactoid or anaphylaxis), i.e., includes any of the following symptoms: - Significant respiratory compromise (brochospasm, stidor, dyspnea, apnea) . - Significant cardiovascular compromise (hypotension, syncope, shock). - Loss of conscienceless. • Resuscitative or life support treatment required.	**MED ADVISOR**	**DEFER/MNQ**

DIAGNOSTIC CODES

693.1 Food Allergy (Allergic Reaction)

Cross Reference ICD.9.CM

NOTES AND INSTRUCTIONS FOR REVIEWERS:

Reviewers to Consider:

- Screening nurses should document intolerance to food or hypersensitivity reaction, e.g., mild GI symptoms, on problem list if applicable.

COMMENTS:

Definitions:

• Anaphylaxis: Immediate systemic reaction caused by rapid IgE-mediated immune release of potent mediators from tissue mast cells and peripheral blood basophils. Clinically, the term anaphylaxis is used to describe a rapidly developing generalized reactions that may include pruritis, urticaria, angioedema (especially laryngeal edema), hypotension, wheezing and bronchospasm, nausea, vomiting, pain, diarrhea, uterine contractions, and/or direct cardiac effects, including arrhythmias.

• Anaphylactoid reactions: Immediate systemic reactions that are clinically similar to anaphylactic episodes but are not caused by an IgE-mediated immune response. One of the most common mechanisms of production of anaphylactoid reactions involves the direct (nonantigen-IgE) release of mediators from mast cells and basophils. This occurs in reactions to drugs and biologicals, most cases of idiopathic anaphylaxis, the majority of cases of exercise-induced anaphylaxis, and probably anaphylaxis from other physical factors, such as cold and sunlight. It may also be produced by chemical agents capable of causing mast cell degranulation, e.g., radiocontrast material or opiates.

• Angioedema: Edema extending into the deep dermis and subcutaneous tissue. The lesions of angioedema are large plaques (swollen and nonpitting), often on the eyelids, lips, palms, soles, or other parts of the face and extremities.

Clinically it is characterized by swelling of the subcutaneous or submucosal tissue but without puritis. Involvement of the mucous membranes or the oropharynx may cause airway obstruction.

- Urticaria (hives): Raised, erythematous areas of edema involving only the superficial part of dermis. Urticaria lesions are typically localized, raised, swellings that are intensely itchy.

Symptoms: Evaluation of symptoms should include the upper and lower airways (evidence of edema, stridor, dyspnea, wheezing, or apnea), the cardiovascular system (hypotension or syncope), the skin (urticaria, angioedema, or flushing), the gastrointestinal system (vomiting and diarrhea), and the state of consciousness. Signs and symptoms of potentially life-threatening anaphylaxis include stridor, respiratory distress, wheezing, hypotension, cardiac arrhythmia, shock, seizures, and loss of consciousness. Such patients require immediate treatment.

Frequency of Occurrence of Signs and Symptoms of Anaphylaxis

SIGNS/SYMPTOMS	PERCENT
Urticaria and angioedema	88
Upper airway edema	56
Dyspnea, wheeze	47
Flush	46
Dizziness, syncope, hypotension	33
Nausea, vomiting, diarrhea, cramping abdominal pain	30
Headache	15
Rhinitis	16
Substernal pain	6
Itch without rash	4.5
Seizure	1.5

Risk of Recurrence: Major risk factors for recurrence of anaphylaxis include a prior history of such reactions, beta-adrenergic blocker or possibly ACE inhibitor therapy, and the multiple antibiotic sensitivity syndrome. Atopic background may be a risk factor for venom-and latex-induced anaphylaxis and possibly anaphylactoid reactions to radiographic contrast material but not for anaphylactic reactions to many medications.

[The diagnosis and management of anaphylaxis. Joint Task Force on Practice Parameters, American Academy of Allergy, Asthma and Immunology, American College of Allergy, Asthma and Immunology, and the Joint Council of Allergy, Asthma and Immunology 1998 Aug;102(2):264 and 1998]

Atopy: Atopic subjects appear to be predisposed to anaphylaxis and anaphylactoid reactions in general because they account for an inordinate percentage of cases in random series and in series of cases of idiopathic anaphylaxis, exercise-induced anaphylaxis, and anaphylactoid reactions to radiocontrast material. It is unclear why atopics exhibit a heightened predisposition. It is evident that increased levels of IgE and IgE mast cell interaction (as conventionally understood) ar not sufficient alone to account for this phenomenon. *[Middleton: Allergy: Principles and Practice, 5th ed.,1998]*

Death from Anaphylaxis: Is usually due to respiratory obstruction and/or cardiovascular collapse. In patients dying from respiratory obstruction there is edema of the airway and pulmonary hyperinflation. Upper airway edema can be found in about 60% of deaths. Bronchial obstruction with hyperinflation of the lungs occurs in about half the cases. Bronchial obstruction is due to a combination of spasm, submucosal edema, and secretions. When death is due to cardiovascular collapse, there may be no postmortem findings. Myocardial damage, however, can be detected in the majority of cases.

Food Allergy:

- The most frequently implicated foods are peanuts, other legumes, true nuts (walnuts, pecans, etc.), fish, shellfish, milk and eggs.
- Reactions almost always occur immediately.
- Severe food reactions may involve the GI, cutaneous, ocular, respiratory and cardiovascular systems.
- About 1000 severe food-related anaphylactic reactions are estimated to occur each year (based on extrapolations from emergency departments).

Management: Skin tests and food challenges are the most useful diagnostic tests. Avoidance of triggers is the most effective prophylaxis. *[Nicklas et al. 1998]*

Egg and Egg Protein Allergy: Egg proteins are found in MMR, influenza, Rabies (RabAvert), and yellow fever vaccines. Persons who can eat eggs or egg-containing foods without adverse effects can safely receive these vaccines. Persons with urticaria, angioedema, throat swelling, or other reactions (even if mild) are at risk for severe allergic reactions. *[TG 300, 4.4: Hypersensitivity to Vaccine Components]*

OMS Experience: Our experience suggests that in the Peace Corps, Volunteers' environment and diet are not always under their control, especially when living with host families. Placing Volunteers in these situations may compromise their health and put them at risk for serious symptoms should they experience an allergic reaction. Any history of a "severe allergic reaction" suggests a need for immediate access to urgent medical care. Such access would be very difficult to guarantee in Peace Corps assignment areas. It is difficult to guarantee safe placement with such a history and the remote nature of Peace Corps training sites and assignments.

Literature review available.