


TOP 10

Differential Diagnosis in Primary Care

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DISCLAIMER

This guide is not meant to replace your sound clinical judgment. It is merely an attempt at informing you of the incidence of disease in primary care settings, and thus should not be used outside of this context. The heuristical strategies used to complement this data are meant to reduce the likelihood of missed serious pathology, primarily by reminding the reader of red flags for various symptoms. However, these strategies cannot be comprehensive and the authors do not assume responsibility for misdiagnosis or other errors in clinical judgment.

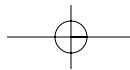


INTRODUCTION

It has widely been accepted since William Osler's time, that differential diagnosis represents a unifying concept in medical education. Indeed, as the student advances in knowledge and skill, the "differential" guides that student's history taking, physical examination and investigational plan. The mature physician, in fact, often begins this process even before encountering the patient, keeping a running list of likely diagnoses in mind, whose individual items become more or less likely according to first, the patient's presenting complaints, then the patient's age, sex and general appearance, and finally the individual historical, physical and laboratory factors that the patient reveals.

It is also now been clearly established that most medical education in North America occurs in tertiary care settings and is often directed by specialist or sub-specialist care. Although this has led to an extremely current and well-informed curriculum, its applicability to primary care settings and to overall patient needs has been in question for several decades (Engel, 1978). Indeed, it is possible for a student to finish medical school without ever seeing and managing such common conditions as primary varicella or ingrown toenails.





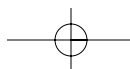
We have thus devised this guide to help your approach to the top ten symptoms that patients present with to a family doctor. These symptoms and the incidence of diagnoses emanating from them are taken from a unique four year database created in the Netherlands—the Amsterdam Transition Project created by Drs. Inge Okkes and Henk Lamberts (Okkes 2005). To our knowledge, no similar data tool—with the ability to link presenting symptom with eventual diagnosis in a primary care setting—exists, and certainly not in Canada. This may be the biggest shortcoming of our project: the assumption that primary care populations in the Netherlands and in Canada are comparable—a reasonable assumption we think, and a necessary one until better Canadian data is collected.

Each symptom also comes with a series of heuristical strategies to help your approach to diagnosis. These are largely based on personal experience as well as standard texts (Friedman, 1996; Hopcroft 2003). These strategies will include differential diagnoses for acute and chronic presentations of symptoms, red flags, as well as reassuring features that can all guide your approach.

As this is the first version of this pocketbook, *we need your feedback*. Please take a moment to send us the tear-out form at the end of this book, via internal mail available at your primary site. We are also always looking for interested students and residents to help us with this project, especially at targeting the undergraduate curriculum. Please send us a note if this sparks your interest.

We hope this guide will prove useful and wish you well in your studies,

Dr. David Ponka, Assistant Professor
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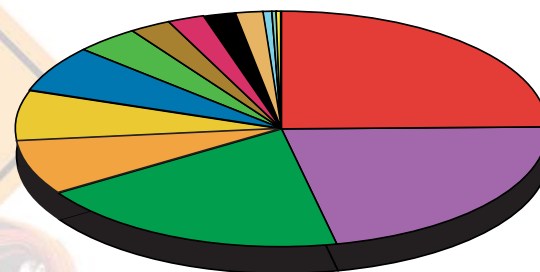
1. COUGH

Acute cough is usually readily diagnosed by clinical assessment, and usually represents a URTI, though pneumonia has to be ruled out.

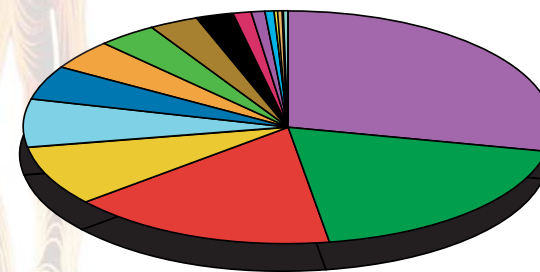
Chronic cough is a diagnostic challenge. In the absence of red flags suggesting carcinoma or tuberculosis (weight loss, chronic night sweats, hemoptysis), common causes in the primary care setting are as follows:

- Post-viral cough can last up to 6 weeks after the acute infection, especially in the context of asthma;
- Post-nasal drip can be caused or exacerbated by sinusitis and seasonal allergies;
- Whooping cough usually necessitates culture or serologic diagnosis, and management would not be altered after 3 weeks into the illness (before this point, treatment would be offered to prevent spread to close contacts);
- GERD;
- COPD: and
- ACE-inhibitor induced cough.

Also consider aspirated foreign body in children and the debilitated. Certain authors suggest that an aural foreign body, even wax, can lead to chronic cough!



Under 45



45 and Older

	AGE	
	Under 45	45 and Older
Acute Bronchitis	21.90 %	28.60 %
URI	25.00	16.40
Cough NYD	19.00	19.00
Acute Laryngitis/Tracheitis	6.90	8.30
Asthma	7.70	4.10
Sinusitis	3.80	3.70
Pneumonia	2.50	3.10
Influenza	2.00	2.20
COPD	0.60	6.70
Other Viral Disease	2.20	0.90
CHF	0.00	0.90
Allergic Rhinitis	0.40	0.20
Medication Side Effect	0.01	0.50
Lung Malignancy	0.01	0.40
Pertussis	1.70	0.20
Other	6.30	4.80

2. FATIGUE

Fatigue is normal when the result of a particularly full day of work or physical activity, or after prolonged stress or mental strain.

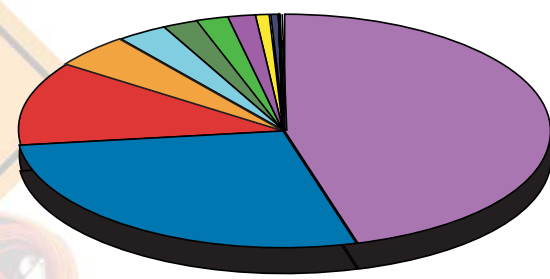
Chronic fatigue, however, is not a normal state.

A pearl that sometimes proves useful in clinical practice is that fatigue from organic disease is constant, and only relieved by sleep and decreased activity. Fatigue from anxiety or depression however, may improve with exercise and is often not relieved by rest.

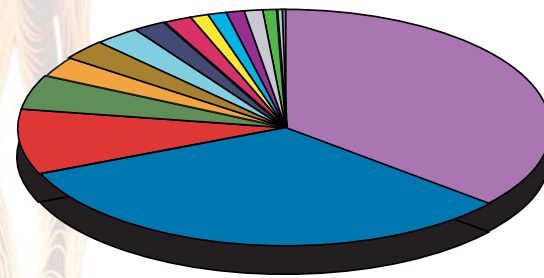
Only about 15% of patients in this primary care setting had an organic cause found for their fatigue, thus ruling out the common organic etiologies without over-investigating is usually sufficient, unless history and physical exam suggest otherwise. These are the principal organic etiologies to consider:

- infectious causes;
- anemia;
- endocrinopathies including diabetes and hypothyroidism;
- sleep disturbances including sleep apnea;
- medication side-effects;
- adrenal insufficiency (rare without other signs or symptoms); and
- malignancies (rare presentation).

Chronic fatigue syndrome is a specific clinical diagnosis that may include symptoms of sore throat, myalgia, arthralgia and lymphadenopathy, and is at least characterized by 6 weeks of fatigue limiting activities by 50% or more.



Under 45



45 and Older

	AGE	
	Under 45	45 and Older
Fatigue NYD	45.80%	36.60%
Viral Illness	11.80	8.00
Depression	2.10	4.70
Anemia	3.30	2.80
Anxiety/Stress	4.50	2.80
Sinusitis	1.90	1.00
CHF	0.00	2.80
Medication Side Effect	0.40	2.10
Influenza	1.00	1.30
Diabetes Mellitus	0.10	1.60
Mononucleosis	1.60	0.04
COPD	0.02	1.10
Ischemic Heart Disease	0.02	1.10
GI Malignancy	0.08	1.00
Lymphoma/Leukemia	0.01	0.30
Other	27.40	32.80

3. LOW BACK PAIN

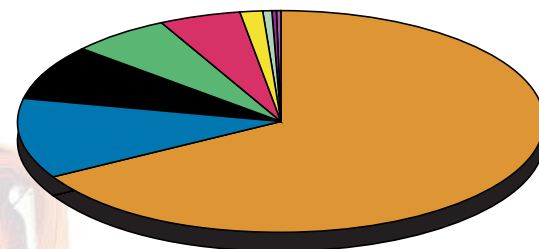
Despite the frequency of this complaint, a specific anatomic diagnosis is often elusive, and can be counter-productive, as different practitioners invariably disagree on specific anatomical diagnoses, thus confusing the patient.

Useful, common categorization, affecting approach to treatment and follow-up, is as follows:

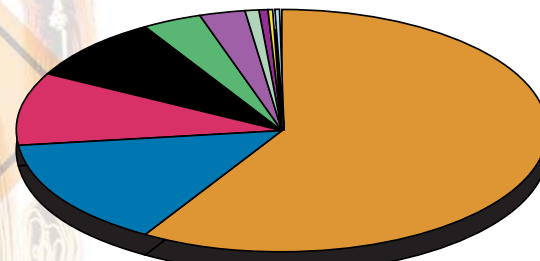
- Ddx

 - acute mechanical low-back pain/strain;
 - sciatica/radiculopathy;
 - DDD;
 - inflammatory causes include the spondyloarthropathies, characterized by significant stiffness and limited range of motion;
 - leading to intermittent claudication that is worse when walking perfectly upright;
 - rare serious causes include neoplasm (usually metastases), infections (discitis, TB) and cauda equina syndrome; and
 - also consider visceral causes, including perivisceral infections, nephrolithiasis, pancreatic disease and AAA.

In the absence of red flags, xrays can be counter-productive, but are reasonable in the context of trauma, the elderly, or known osteoporosis.



Under 45



45 and Older

	AGE	
	Under 45	45 and Older
Mechanical Low Back Pain	67.10 %	58.70 %
Sciatica	8.00	8.50
Muscle Strain	6.30	3.80
DDD	4.80	9.60
Osteoporosis	0.07	2.80
RA	0.40	0.50
UTI	0.50	0.80
Nephrolithiasis	1.20	0.40
Prostate CA	0.00	0.30
Other	11.60	14.60

4. FEVER

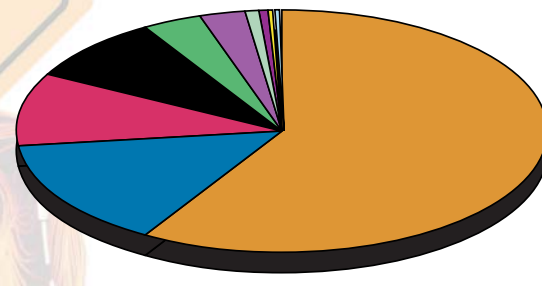
The differential of acute fever is well known to the general practitioner.

A prolonged fever of unknown origin (FUO) of over 3 weeks duration is a diagnostic challenge and should elicit the following thoughts in the appropriate context:

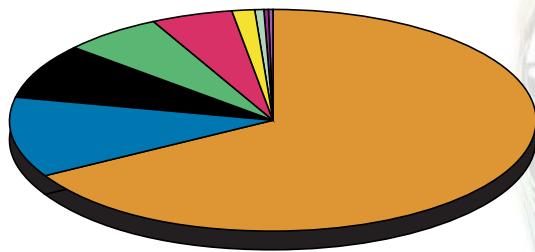
- Ddx**

 - Abdominal abscess;
 - Neoplasms, especially lymphomas, leukemia, multiple myeloma and bronchial carcinoma;
 - Connective-tissue disease;
 - TB;
 - AIDS;
 - Infective endocarditis;
 - Multiple PEs;
 - Malaria and other tropical diseases in the returning traveller; and
 - Drug fever.

Do not give a therapeutic trial for FUO, unless in an area with limited resources (e.g malaria in sub-Saharan Africa).



45 and Older



Under 45

	AGE	
	Under 45	45 and Older
URI	18.60 %	8.10 %
Other Viral Disease	21.10	10.70
Acute Bronchitis	10.50	16.40
Acute OM	8.50	0.20
Influenza	5.30	9.00
Fever NYD	5.10	7.20
Pneumonia	3.20	9.70
Sinusitis	3.00	4.30
GI Infection	2.70	2.00
UTI	4.00	6.80
Strep Throat	3.30	0.50
COPD Exacerbation	0.70	2.20
Mononucleosis	1.20	0.06
Meningitis	0.40	0.03
Appendicitis	0.30	0.09
Iatrogenic	0.30	0.43
GI Malignancy	0.20	0.60
Lymphoma/Leukemia	0.09	0.25
Lung Malignancy	0.09	0.25
Other	11.40	21.00

5. DYSPNEA

The best way to approach dyspnea, is of course to first divide it into acute and chronic forms.

ACUTE DYSPNEA

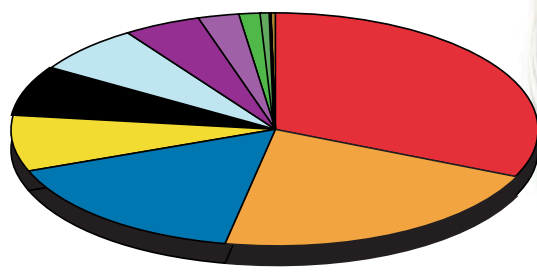
If the patient is in obvious respiratory distress, then the generalist's role in the community should be limited to stabilizing the airway, providing oxygen and transferring to an acute facility for definitive diagnosis. There, the practitioner needs to consider these most common causes:

- Pneumonia;
- Congestive heart failure;
- Acute asthma or COPD exacerbation;
- PE;
- Pneumothorax (especially in suddenly worsening dyspnea in an asthmatic);
- Foreign body aspiration (especially in children, the debilitated, or the intoxicated);
- Hyperventilation (especially when accompanied by dysesthesias); and
- DKA or another metabolic process.

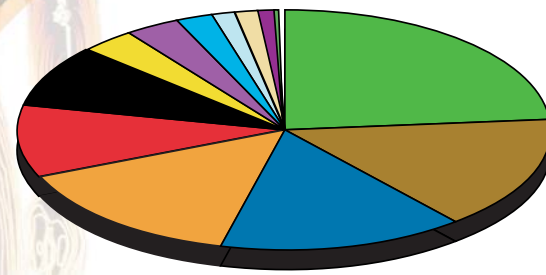
CHRONIC DYSPNEA

The more common presentation in the community setting. In addition the usual cardio-respiratory etiologies, and if standard work-up looking for these is not fruitful, one must consider:

- anemia;
- hyperthyroidism;
- obesity or deconditioning;
- chest wall pathology; and
- neuromuscular disease.



Under 45



45 and Older

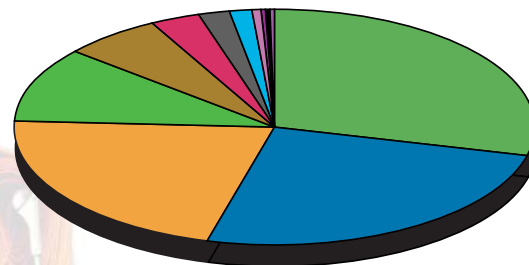
	AGE	
	Under 45	45 and Older
Asthma	31.80 %	9.90 %
Acute Bronchitis	21.50	14.70
COPD	1.50	23.70
CHF	0.07	15.30
Dyspnea NYD	7.00	8.20
Anxiety	7.80	3.30
URI	6.70	1.50
Pneumonia	2.50	3.30
Acute Laryngitis/Tracheitis	4.70	1.00
Ischemic Heart Disease	0.20	2.30
Lung Malignancy	0.00	1.30
PE	0.30	0.50
Other	16.00	15.00

6. GENERALIZED ABDOMINAL PAIN

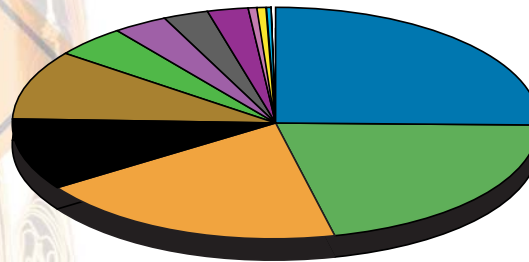
The approach to acute abdominal pain will be guided by a detailed history and especially to location and quality of the pain, as well as the presence or absence of peritoneal signs. The only caveat that we will mention here is to always examine the genitals and testes in a man with acute abdominal pain, and always perform a pregnancy test in a woman of childbearing age with abdominal pain.

The more common presentation in the office setting is generalized chronic or recurrent pain. In general, and as with all symptoms, the longer the history of undiagnosed abdominal pain, the less likely that a serious etiology has been missed. Avoid repeating exhaustive investigations unless new symptoms, and especially red flags appear:

- New onset of pain, change in pain or altered bowel habits in the elderly;
- weight loss;
- bleeding per rectum or melena stool;
- anemia;
- supraclavicular nodes;
- a personal or family history of serious bowel pathology; and
- pain waking the patient at night.



Under 45



45 and Older

	AGE	
	Under 45	45 and Older
Abdominal Pain NYD	28.90 %	21.21 %
Irritable Bowel Syndrome	21.50	19.20
GI Infection	10.50	4.60
Constipation	6.10	9.60
Diverticular Disease	0.30	10.00
UTI	2.00	2.80
Other Viral Infection	2.90	0.20
GI Malignancy	0.20	3.20
Biliary Colic	0.30	2.60
Appendicitis	1.30	0.30
Duodenal Ulcer	0.50	0.50
Other Malignancies	0.00	0.50
Other	25.40	25.30

7. HEADACHE

This is a challenging symptom to work-up in primary care because serious causes are rare but devastating if missed. Always ask about these red flags:

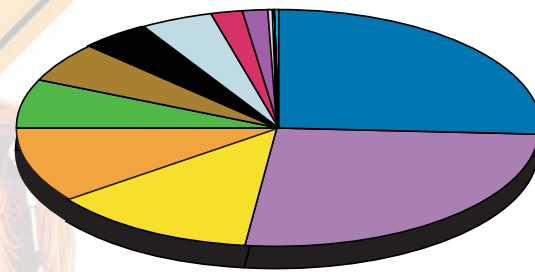
- worst headache or thunder clap headache (subarachnoid hemorrhage);
- visual loss (temporal arteritis);
- new onset headache in the elderly;
- positional exacerbation or worsening with valsalva;
- morning headaches;
- headache in pregnancy, especially in the third trimester;
- trauma or intoxication or anticoagulation;
- history of carcinoma; and
- other neurological deficits.

An expanding intracranial mass paradoxically presents with relatively mild unremitting headache.

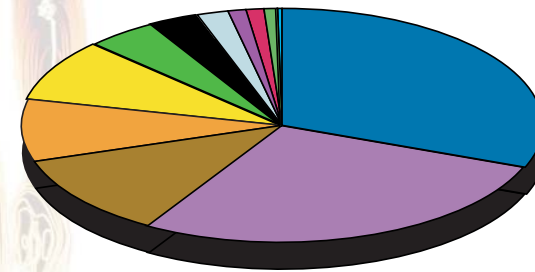
Much more common causes are of course:

- tension headache;
- migraine;
- cervical disc disease;
- eye disorders including refractive errors;
- sinusitis;
- rebound headache from overuse of analgesia; and
- iatrogenic headache (most commonly nitrates and Ca channel blockers).

Remember to always explore the patients fears, which often include intracranial tumour and hypertension (rarely alone a cause of headache).



Under 45



45 and Older

	AGE	
	Under 45	45 and Over
Headache NYD	25.90 %	28.00 %
Sinusitis	12.80	8.40
Tension Headache	10.30	8.60
Migraine	6.70	4.50
Cervical Disease	5.40	11.40
URI	4.30	3.20
Other Viral Disease	4.20	1.80
Concussion	2.10	1.00
Influenza	1.70	1.30
GI Malignancy	0.03	0.05
CNS Malignancy	0.02	0.02
CVA	0.10	0.90
Meningitis	0.20	0.02
Other	26.00	31.00

8. VERTIGO/DIZZINESS

First, clarify what the patient means by "dizziness". True vertigo must be differentiated from lightheadedness or ocular symptoms, such as diplopia.

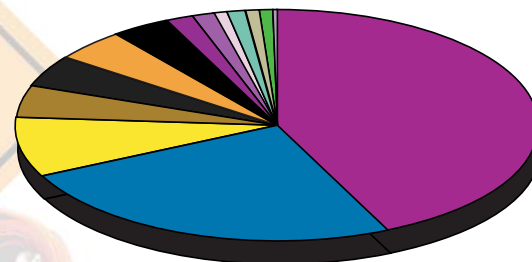
Vertigo, a subjective impression of movement of self or of one's environment, has a long differential diagnosis. It is convenient to attempt to classify vertigo into central versus peripheral causes. The latter are usually more benign (with the exception of acoustic neuroma), but paradoxically produce more intense symptoms, including severe, episodic nausea or vomiting. Causes of peripheral vertigo also tend to have associated hearing loss or tinnitus.

Constant nystagmus or vertical nystagmus usually points to a more serious disorder, as does persistent ataxia or other neurological deficits.

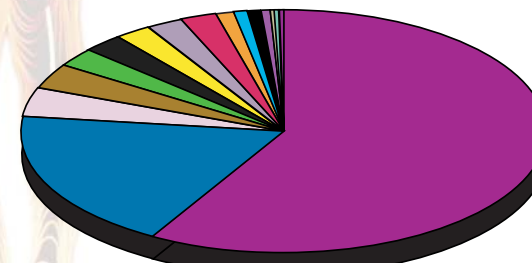
The most common causes of vertigo in the generalist's office include:

- viral labyrinthitis;
- benign positional vertigo;
- Eustachian tube dysfunction (often with serous OM);
- Meniere's disease; and
- Vertebrobasilar insufficiency (in the elderly with vasculopathy).

Ddx



Under 45



45 and Over

	AGE	
	Under 45	45 and Over
Vertigo NYD	43.90 %	57.80 %
Anxiety	8.50	2.20
Postural Hypotension	4.50	2.40
HTN	1.00	4.00
Fatigue	4.40	1.20
Medication Side Effect	0.80	2.50
Cervical Disease	4.60	3.10
Iron Deficiency Anemia	3.90	0.80
CVA	0.09	2.20
TIA	0.00	2.20
URI	1.30	0.40
Concussion	1.60	0.20
Atrial Fibrillation	0.00	0.90
Sinusitis	1.00	0.30
Tension Headache	1.00	0.30
Other	25.10	18.40

9. CHEST PAIN

The diagnosis of prolonged, severe chest pain in an ill-appearing patient will be confirmed in the emergency room, but management should begin in the community. There is no reason not to give oxygen, aspirin (except in the rare case of allergy or suspected dissection) and nitroglycerin (if the patient is hemodynamically stable).

Recurrent chest pain in the community setting is a diagnostic challenge, but as always, a good history is key. In most cases, one would never rule out ischemia based on history alone however, unless the patient is very low risk (young), the patient has a clear cause precipitating musculoskeletal injury, or other symptoms clearly pointing towards another diagnosis (e.g. waterbrash for GERD). The following also argue *against* angina:

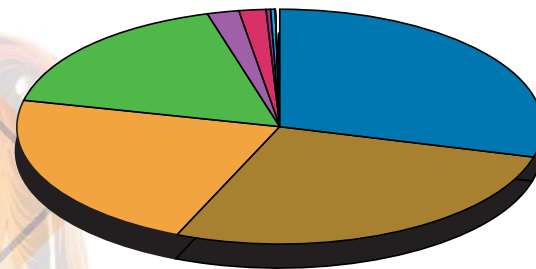
- Duration of pain less than 30 seconds or more than 30 minutes;
- if the pain can be localized with one finger;
- if the pain is immediately severe with no crescendo pattern; and
- in the case of a recurrent pain, if it occurs exclusively at rest (through Prinzmetal's variant angina needs to be considered).

Asking about nitroglycerin's effect on the pain can also be helpful, with the caveat that it also classically relieves esophageal spasm. The timing of relief for angina is typically under 3 minutes. A relief occurring after 10 minutes since administration actually argues against angina.

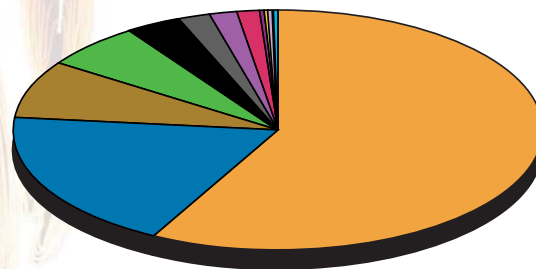
Remember that a normal resting EKG does not rule out ischemia. If you think the chest pain is worrisome enough to warrant an EKG in the office, it probably

warrants a period of observation in the emergency room, including cardiac markers.

The Levine sign has been studied and really does seem to be helpful. If a patient clenches a fist during assessment, take that seriously.



Under 45



45 and Over

	AGE	
	Under 45	45 and Over
Ischemic Heart Disease	22.2 %	58.0 %
Chest Pain NYD	16.9	6.0
Anxiety	27.2	7.9
CHF	0.0	3.4
Atrial Fibrillation	0.1	1.9
HTN	1.7	1.4
GERD	2.0	1.7
Pneumonia	0.2	0.4
Acute Bronchitis	0.2	0.2
COPD	0.1	0.2
PE	0.0	0.2
Other	29.3	18.8

10. EDEMA

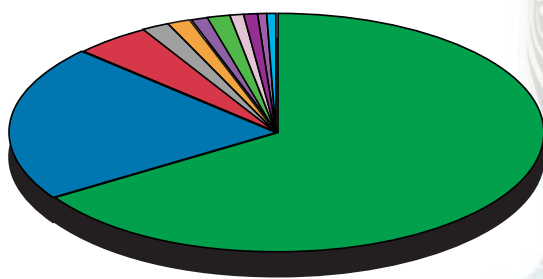
The most logical approach to the diagnosis of edema is of course to first think whether it is localized or generalized, then whether or not it is pitting.

LOCALIZED EDEMA

Most commonly involving one or both lower limb, the most common causes are:

- venous insufficiency;
- immobility or trauma;
- cellulitis;
- ruptured Baker's cyst;
- thrombophlebitis; and
- DVT.

Lymphedema (from lymphatic obstruction) is rarer, and classically produces non-pitting edema, as opposed to most other causes which rely on transuded fluid from the venous system (whether because of oncotic factors, i.e. low albumin, or because of high venous pressure, e.g. CHF or abdominal compression), and thus cause pitting. Obesity can of course mimic edema, and this is called pseudoedema. Pregnancy or an abdominal mass can compress the inferior vena cava, leading to bilateral lower limb edema. In the tropics, the differential is much broader and would include the filariases (e.g. elephantiasis).



Under 45

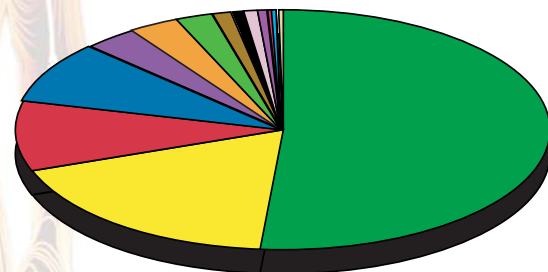
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GENERALIZED EDEMA (SYSTEMIC DISEASE)

One must always consider:

- CHF;
- renal insufficiency;
- cirrhosis;
- malnutrition or protein-losing enteropathy;
- drugs (calcium channel blockers, NSAIDs);
- myxedema; and
- premenstrual syndrome.

Ddx



45 and Over

	AGE	
	Under 45	45 and Over
Edema NYD	65.80 %	51.40 %
CHF	0.00	18.10
Venous Insufficiency	4.70	9.30
Thrombophlebitis	1.20	3.20
HTN	1.50	3.00
Medication Side Effect	1.20	2.30
Ischemic Heart Disease	0.00	1.10
PVD	0.00	0.90
Infection	0.90	0.80
Atrial Fibrillation	0.00	0.40
Arthritis	0.60	0.50
Renal Disease	0.90	0.10
GI Malignancy	0.30	0.20
Pregnancy	1.60	0.00
Cirrhosis	0.00	0.03
Other	21.20	8.50

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TOP 10 Differential Diagnosis in Primary Care

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FEEDBACK FORM

Did you find this document useful? Yes No

What did you find more useful?
 Piechart data or Heuristical strategies

Did anything surprise you in this document?

How often did you refer to this document in the primary care setting?
 2-3 times per week once a week
 once a month less than once a month

Amongst the times you referred to this document, what percentage of the time did it influence your management?
 0-20% 20-40% 40-60%
 60-80% 80-100%

What would you change about this document:

Other comments:

Thank you! Please return via internal mail to:
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