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## The Provider SOAP Note

## SOAP Note Overview

As identified in Module I, the provider note – which is stored in a patient’s health record – can be divided into four main sections: a **Subjective** portion, an **Objective** portion, and the provider’s **Assessment**, and **Plan**; this conceptual division of a provider note is termed “**SOAP**” note documentation<sup>7,9-11</sup>.

A provider note may also be categorized into the “**History & Physical,**” (H&P) containing subjective and objective findings or information, followed by the “**Assessment & Plan,**” (A&P), which contains the information related to the provider’s **Medical Decision-Making (MDM)** process. Regardless of the formatting used, the content of a provider’s note remains the same, and is presented below.

### Subjective

The **Subjective** portion of the provider note is composed of the patient’s **Chief Complaint (CC)**, **History of Present Illness (HPI)**, **Review of Systems (ROS)**, and **Past Medical, Family, and Social History (PFSH)**<sup>9,10</sup>. These terms will be further addressed later in this chapter. The subjective portion of a provider note is comprised entirely of information provided by the patient (the *subject*)<sup>9,10</sup>. Within the SOAP format of documentation, the subjective portions of the provider note are used to formulate a list of **Differential Diagnoses (DDx)**, also discussed later in this chapter<sup>9,10</sup>.



### SuperScribe Tip: Subjective vs. Objective Information

- A patient may complain of a rash on his arm, but upon physical examination, the provider identifies no rash present, and instructs you to document “skin is normal without rashes.”

The patient’s complaint of a rash is documented in the subjective portion of the provider note (CC, HPI, and ROS). The provider’s finding of no rash is documented in the objective portion of the note (PE).



## Objective

The **Objective** portion of the provider note contains the physician or provider's *objective* findings from the **Physical Examination (PE)** as well as objective results from **diagnostic studies**<sup>9,10</sup>. The objective portions of the provider note are used to **Rule In** and **Out** likely and unlikely causes for the patient's subjective Chief Complaint, while also organizing the remaining Differential Diagnoses in order of most to least likely and concerning<sup>4,9,10</sup>.

## Assessment

While Assessment and Plan have standard definitions, the way that these are entered into a patient's note may vary according to the EHR system being used, the clinic's documentation policies, and each provider's personal documentation preferences<sup>1</sup>. Here, we will provide definitions of these components of the chart and examples of what these components contain. However, each facility and provider is encouraged to clarify the specific preferences regarding A&P documentation with all new scribes. This may occur before- or during the facility's EHR training.

In the Family Practice setting, the **Assessment** portion of the provider note discusses and documents the pertinent subjective and objective information used to develop the patient's **Differential Diagnoses** and arrive at a **Definitive Diagnosis**<sup>1,9,10,18</sup>. The Assessment portion of a patient's note often includes the patient's problem list (in order of importance)<sup>1,6,9,10</sup>, which often transfers to patient diagnoses<sup>1,6</sup>. The Assessment portion of a patient's note also often discusses the provider's **Medical Decision Making (MDM)** processes<sup>1,9,10,18</sup>.

## Plan

The **Plan** addresses all future actions associated with each **Diagnosis** in the patient's chart<sup>9,10</sup>. For example, a patient's Plan typically details future laboratory and radiology testing, suggested consultations, medication changes, and patient education information that are suggested to address each problem listed in the Assessment<sup>1,9,10</sup>. In some EHRs, information entered into the Plan as structured data units are automatically transferred to the **Patient Summary Instructions**<sup>1</sup>.

Now that we've provided a broad structural framework for the provider note, let's look at the pertinent components of each portion of the provider note in greater depth.



## SuperScribe Assessment

**Define the following terms:**

- Problem List:
- Differential Diagnoses:
- Definitive Diagnosis:
- Medical Decision-Making:
- Rule-Out:
- Progress Note:

## Subjective Information

This section will review all the *subjective* information that belongs in the provider's note. This constitutes all the pertinent information provided by the *patient* (the “*subject*”)<sup>9,10</sup>. Although subjective information may be elicited or prompted by the provider, subjective information is that provided by the patient, according to the patient's subjective perception and attestation<sup>4,9,10</sup>.

### Chief Complaint (CC)

The **Chief Complaint (CC)** constitutes the primary reason for the patient's encounter with the provider<sup>4,9,10,18-20</sup>. The CC is typically stated briefly in a one to two-word statement, such as “migraine,” “vomiting,” or “follow up (FU) labs.” Occasionally, the CC may identify the reason prompting the evaluation within a one-sentence description of the patient.

### History of Present Illness (HPI)

The **History of Present Illness (HPI)** constitutes the patient's subjective account of his or her progression of symptoms<sup>4,9,10,19-21</sup>. The purpose of the HPI is to provide background information that may be required for the provider to formulate a list of differential diagnoses.

An HPI can include any of the following elements<sup>4,9,10,19,20</sup>:

- **Location:** “The pain is in the right low back.”
- **Quality:** “The patient describes the pain as aching, burning, and radiating to the right thigh.”
- **Severity:** “The patient rates the pain as a 7/10 in severity.”
- **Duration:** “Onset was 5 days ago.”
- **Timing:** “The pain is constant/intermittent/waxing and waning.”
- **Context:** “The pain onset after the patient was moving furniture.”
- **Modifying Factors:** “The pain is worsened with movement and improved with rest and ice.”
- **Associated Symptoms:** “The patient has had right leg numbness and tingling associated with the pain.”

Several mnemonic devices exist to aid in recalling the different elements of the HPI:

- **OPQRST:** Onset, Provoking factors, Quality of the pain, Region & Radiating pain, Severity, and Timing.
- **OLD CHARTS:** Onset, Location, Duration, Character (sharp/dull), Alleviating or Aggravating factors, Radiation, Temporal pattern (intermittent, in the mornings, constant), and associated Symptoms.
- **LOCQSMAT:** Location, Onset, Chronology, Quality, Severity, Modifying factors, Additional symptoms, and Treatments the patient has tried.

## Past Medical, Family, and Social History (PFSH)

The **Past Medical, Family, and Social History (PFSH)** section of the provider note is comprised of three components that aid the provider in the **Medical Decision-Making (MDM)** process<sup>4,9,10,19,20</sup>. The PFSH components are also requirements for reimbursement by the **Centers for Medicare and Medicaid Services (CMS)**<sup>4,19,20</sup>. CMS reimbursement requirements will be addressed in Module III. The three components of the PFSH are: the **Past Medical History (PH)**, the **Family Health History (FH)**, and the **Social History (SH)**, as identified below<sup>4,9,10,19,20</sup>.

- ***Past Medical History (PH, PHx):***

The total sum of the patient's health status, including pertinent current or past medical conditions, illnesses, operations, injuries, and treatments<sup>4,9,10,19,20,22,23</sup>. Many providers may include separate headings for patient surgical history, allergies, and medications, though these all qualify as the patient's PH and may be documented accordingly in one group<sup>1</sup>.

- ***Family History (FH, FHx):***

"A review of medical events in the patient's family, including diseases which may be hereditary or place the patient at risk\*."

- ***Social History (SH, SHx):***

"An age-appropriate review of past and current activities\*." The Social History typically includes information on the patient's living condition (lives alone, with a roommate, with family, at Assisted Living Facility (ALF)), substance use (history of tobacco, alcohol, or illicit drug use), employment (particularly if employment may affect the patient's health), diet, and exercise regimen<sup>1,4,9,10,19,20</sup>.

\*The definitions above are provided by CMS<sup>4,19,20</sup>, and reproduced in various sources<sup>9,10,22</sup>.

## Review of Systems (ROS)

The **Review of Systems (ROS)** provides a stepwise review of the patient's symptoms, grouped by organ system or body area<sup>4,9,10,19,20</sup>. The provider may conduct the ROS; however, the responses are provided by the patient, qualifying the information in this portion of the provider note as *subjective*. The provider may seem to ask the patient a laundry list of questions when conducting and obtaining the ROS during the patient-provider encounter<sup>1</sup>. For billing purposes a complete Review of Systems must contain elements from  $\geq 10$  different organ systems or body areas<sup>4,19,20</sup>. ROS walkthrough and terminology are addressed subsequently in this module, and billing criteria is addressed in Module III.



### SuperScribe Tip: Documenting Tobacco Use in the Social History

Because tobacco use is associated with different levels of reimbursement and preventative measures, documenting this part of a patient's Social History is particularly important<sup>1-4</sup>.

## Objective Information

The **Subjective** portion of the provider note is followed by the **Objective** portion of the note, containing *objective* findings from the **Physical Examination** and **Diagnostic Studies** that are used to **rule-in and -out** likely and unlikely differential diagnoses<sup>9,10</sup>. Let's address the different components of the **objective** portion of the provider note in greater depth below.

### Physical Examination (PE)

The **Physical Examination (PE)** provides an examination of bodily functions and conditions of an individual<sup>21</sup>, conducted by the medical provider<sup>4,9,19,20</sup>. The physical examination is typically conducted and documented by organ system or body area. As a clinical scribe, it is important to accurately document all findings relayed by the provider. Therefore, Chapter 8 of this module addresses Medical Terminology that is suggested for use in documentation.

**Subjective ROS, Objective PE:** The ROS provides a *subjective* review of symptoms provided by the patient, while the PE contains an *objective* review of clinical findings elicited by the provider.

Both the ROS and PE are organized by organ system or body area. Because the ROS is subjective and the PE is objective, findings in these two portions of the provider note do not need to match.

## Diagnostic Studies

Diagnostic studies typically include laboratory and radiology studies and some medical procedures, such as biopsies<sup>4,9,10,19,20</sup>. These include a wide variety of tests and imaging studies that a provider may order or review to assist in the Medical Decision-Making (MDM) process<sup>4,9,10,19,20</sup>. A detailed list of diagnostic study resources can be found in Chapters 9-11.



### SuperScribe Tip: Medical Terminology

- A study conducted to identify “best practices” and “barriers” of successfully implementing new scribe programs into Family Practice clinics found that when prompted to cite area of dissatisfaction in scribe charting, providers often cited Medical Terminology<sup>8</sup>.
- In the study, providers gave the example that they may report “swollen glands” on physical examination in the room, and the scribe would document “swollen glands” rather than “adenopathy.”
- For this reason, Chapter 8 of this Module addresses Medical Terminology in depth. Research suggest that utilizing a “call back” system, in which the scribe repeats the findings while documenting them into the patient chart can help providers ensure satisfactory documentation in real time<sup>8,12</sup>.

## Assessment

The **Assessment** constitutes the portion of the provider note in which the provider describes his or her **medical decision making** process, in which differential diagnoses are ruled-in and ruled-out to arrive at a definitive diagnosis<sup>4,9,10</sup>. The pertinent elements of the assessment portion of a provider note are identified below.

## Differential Diagnoses (DD)

The **Differential Diagnoses (DD)** constitute a list of all possible diagnoses that could be identified as contributing to the patient’s chief complaint(s), based on the patient’s presentation<sup>9,10,21</sup>. The provider uses this list of all existing and “possible/probable/likely diagnoses<sup>4</sup>” to determine which diagnostic studies are medically necessary and appropriate to rule-out different diagnoses

in order to arrive at a definitive diagnosis. “Unlikely” or less probable diagnoses may also be included in a differential diagnosis<sup>4</sup>.

## Diagnostic Impression/Definitive Diagnosis

After using the PE and diagnostic studies to eliminate options from the *Differential Diagnoses*, the provider arrives at a *Diagnostic Impression* or a *Definitive Diagnosis*. Patients receive treatment based on the provider’s diagnostic impression, which may include more than one definitive diagnosis<sup>4,9,10,19,20</sup>.

## Problem List

The patient’s Problem List documents the most important health problems facing the patient<sup>6,9,24</sup>. These can include problems such as nontransitive illnesses or diseases, patient injuries, or any ongoing complaints. The patient’s problem list is often found in the Assessment portion of the patient’s chart<sup>1,6,9,24</sup>, and is addressed more thoroughly below.

### SuperScribe Tip: Documenting the Provider’s Assessment and Medical Decision Making:



The complexity of a provider’s medical decision making process is a key factor that contributes to the amount of reimbursement a provider can bill for- and receive (as documented in the A&P and addressed in Module III)<sup>4</sup>. For this reason, the following tips are particularly prudent when documenting the A&P portion of any medical record:

- Thoroughly document all pertinent findings identified in the patient **H&P**
- Ensure each patient’s **Problem List is up to date**
- Document the **MDM and DD with complete thoroughness and accuracy**
- Most insurance providers now require documentation of **pertinent positive or negative signs and symptoms** that justify medical necessity of diagnostic studies ordered and billed for. For example: “RLQ Abdominal Pain” would be required to justify a CT Scan of the Abdomen that was ordered to rule out appendicitis. Documenting “R/O Appendicitis” will not suffice.



## Plan

### Treatment Plan and Disposition

The **Treatment Plan** encompasses the provider's treatment proposal to address the patient's diagnosis while the patient is still in the facility<sup>9,10</sup>. An important component of the treatment plan is the **Patient**

**Summary Instructions**<sup>1,4</sup>. These may also be referred to as the “discharge instructions” (in inpatient settings)<sup>6</sup>; other terms may also be used<sup>1,4</sup>. Overall, the summary instructions identify continuing health care plans following the patient's departure from the clinic; often these are structured around each of a patient's presenting problems<sup>1,4,9</sup>.

For example: a treatment **plan** for a patient with elevated blood pressure (HTN) may be to receive an antihypertensive medication during the patient encounter. The **Plan** for this patient may include discharge to home with a prescription for a blood pressure medication to take as directed and **Patient Education** regarding dietary and exercise recommendations<sup>1</sup>.

### Diagnostic Impression/Assessment & Plan (I&P/A&P)

Typically grouped together, the **Impression** – or **Assessment** – and **Plan** (termed **I&P** or **A&P**, respectively) constitute the **Medical Decision Making (MDM)** portion of the provider's note<sup>4,9,10,18</sup>. This section typically begins with a summary of pertinent aspects of the patient's history, physical examination, and supporting diagnostic findings, then proceeds with the differential diagnoses, followed by the plan of care that addresses the diagnostic and therapeutic approaches to the patient's problem(s)<sup>18</sup>, including the patient's instructions on follow up care<sup>1,4,6,9,10</sup>.

## Problem-Oriented Charting (POC)

Many providers, healthcare facilities, and electronic health record systems (EHRs) use what is termed **“Problem-Oriented Charting” (POC)**, in which data is organized around individual medical problems<sup>5-7</sup>. In EHRs, these problems are usually found (and documented) in the patient **Problem List**<sup>1,6</sup>.

Problem oriented charting (POC) consists of 4 components<sup>6,7</sup>:

- A database or collection of all information known about a patient
- A patient **problem list**
- An **initial plan** for each problem
- A daily up-to-date progress note in the SOAP format.

Many electronic health record systems (EHRs) incorporate problem-oriented charting (POC) into the electronic medical record interface. These EHRs are often designed to center the Assessment and Plan (A&P) portion of a patient’s medical record around individual problems that are identified in the **Problem List**<sup>6</sup>. Specifically, all documentation for a specific problem is typically recorded in the “Assessment & Plan / A&P” section or box (which may also be termed the “Overview” section/box) for each given problem<sup>1,6</sup>. This “A&P/Overview” section is then updated at each encounter, enabling users to view changes in the treatment plan for each specific problem over time<sup>6</sup>.

Many POC-oriented EHRs also populate information from the “A&P/Overview” section for each individual problem into the discharge/encounter summary for each patient<sup>1,6</sup>. For this reason, it is particularly important for clinical scribes to ensure that the patient Problem List is accurate and up to date during each patient encounter. **It is also imperative for clinical scribes to review the patient discharge or summary instructions in the medical record before these instructions are provided to the patient to ensure that each patient receives accurate information regarding his or her encounter and treatment plan**<sup>1</sup>.

In 2017, three teaching physicians published a review article on problem-oriented charting that includes a section on ***problem-oriented charting in the electronic medical record*** (cited below)<sup>6</sup>.

- Chowdhry SM, Mishuris RG, Mann D. Problem-oriented charting: A review. *Int J Med Inform.* 2017;103:95-102. <https://www.ncbi.nlm.nih.gov/pubmed/28551008>; <http://dx.doi.org/10.1016/j.ijmedinf.2017.04.016>

The article also provides instructional screen shots from the most common commercial POC-oriented electronic health record (EHR) system, EPIC (<https://www.epic.com/>) (Fig. 2)<sup>6</sup>. The figure provides a screenshot of “a representative problem list for a test patient [including] the A/P tab [that] allows users to write an overview, assessment, and plan for each problem<sup>6</sup>.” The figure also provides a screenshot of the “overview section and assessment and plan for a sample patient with congestive heart failure<sup>6</sup>.” **We suggest all independent scribes and scribe supervisors using a POC-oriented EHR (such as EPIC) read this article before beginning Phase II EHR-specific training.**

By directly linking A&P documentation to a patient’s problem list, POC-oriented EHRs can help providers ensure that each specific condition is addressed during a given encounter<sup>5-7</sup>. This “longitudinal view of care” can help simplify charting review for providers<sup>5,6</sup> and can help ensure each medical record meets reimbursement criteria for risk adjustment documentation (as addressed in Module III)<sup>1,5,6,25,26</sup>. POC charting has also been shown to improve organization of medical documentation and inter-provider communication among consultants, increase speed of billing procedures and simplify methods for medical chart auditing, and aid in medical teaching<sup>6</sup>.



### SuperScribe Tip: Problem-Oriented Charting (POC)

Many providers, healthcare facilities, and electronic health record systems (EHRs) use **Problem-Oriented Charting (POC)**, in which Assessment & Plan (A&P/I&P) documentation originates in the patient problem list<sup>1,5-7</sup>. A Problem-Oriented Assessment may use the following structure:

***“Problem 1, Differential Diagnosis, Discussion, Plan for Problem 1.***

***Problem 2, Differential Diagnosis, Discussion, Plan for Problem 2.***

***Repeat for additional problems<sup>9</sup>.”***

Here are actions you can take to help ensure accurate electronic POC documentation:

- Ensure each patient’s Problem List is accurate and up to date
- Notify your provider if a patient problem exists that has not been addressed in >1 yr. (or ask your provider if s/he would like you to provide these notifications)
- Ensure that problems from the Problem List are accurately transferred into other areas of the chart, such as Patient Summary Instructions and Patient Education Information.

## Review & Assessment

### Recommended Resources

1. Chowdhry SM, Mishuris RG, Mann D. Problem-oriented charting: A review. *Int J Med Inform.* 2017;103:95-102<sup>1</sup>.
  - Reviews problem-oriented charting (POC) with focus on POC in the EMR.
  - Provides instructional screen shots from EPIC (popular POC-oriented EHR)
    - ▶ Representative problem list for a test patient
    - ▶ A&P tab that allows users to write an overview, assessment, and plan for each problem
    - ▶ “Overview” and “A&P” sections for a sample patient
    - ▶ <http://dx.doi.org/10.1016/j.ijmedinf.2017.04.016>

### Review

1. The **Subjective** portion of the provider note is composed of the patient’s **Chief Complaint (CC)**, **History of Present Illness (HPI)**, **Review of Systems (ROS)**, and **Past Medical, Family, and Social Histories (PFSH)**<sup>2-4</sup>.
2. The **Objective** portion of the provider note contains the provider’s **Physical Examination (PE)** findings as well as the results from **diagnostic studies**<sup>2-4</sup>.
3. The provider uses the subjective portions of the provider note to create a list of **Differential Diagnoses (DD)** – all possible etiologies causing the patient’s symptoms. The provider uses the objective portions of the provider note to “**rule in**” or “**rule out**” differential diagnoses, arriving at a **definitive diagnosis**, or **diagnostic impression** that drives the treatment. This **Medical Decision-Making (MDM)** process is discussed in the “**Assessment and Plan**” portion of the provider note<sup>2-5</sup>.
4. The important components of the **Subjective** portion of the provider note, containing subjective information are<sup>2-4,6</sup>:
  - **Chief Complaint (CC):** 1-2-word description of the pt’s reason for presenting to the clinic.
  - **History of Present Illness (HPI):** Brief explanation providing pertinent information relating to the patient’s CC. This information is used by the provider to develop a list of differential diagnoses.

- **Personal, Family, & Social History (PFSH):** Lists of the patient's past medical history (PH), family health history (FH), and social history (SH) that aid the provider in the medical decision-making process. The PFSH are charting requirements for reimbursement by Centers for Medicare and Medicaid Services (CMS).
  - **Review of Systems (ROS):** Stepwise review of the patient's symptoms, grouped by organ system or body area, usually asked by the provider and answered by the patient.
5. Elements included in the HPI are<sup>2-4</sup>:
- Location
  - Quality
  - Severity
  - Duration
  - Timing/Context
  - Modifying factors
  - Associated Symptoms
6. Several pneumonic devices exist to aid in recalling the different elements of the HPI:
- ***OPQRST***: Onset, Provoking factors, Quality of the pain, Region & Radiating pain, Severity, and Timing.
  - ***OLD CHARTS***: Onset, Location, Duration, Character (sharp/dull), Alleviating or Aggravating factors, Radiation, Temporal pattern (intermittent, in the mornings, constant), and associated Symptoms.
  - ***LOCQSMAT***: Location, Onset, Chronology, Quality, Severity, Modifying factors, Additional symptoms, and Treatments the patient has tried.
7. **Past Medical History (PH, PHx):** The total sum of the patient's health status, including pertinent current or past medical conditions, illnesses, operations, injuries, and treatments<sup>2-4,7-10</sup>. Many providers may include separate headings for patient surgical history, allergies, and medications, though these all qualify as the patient's PH and may be documented accordingly in one group<sup>5</sup>.
8. **Family History (FH, FHx):** "A review of medical events in the patient's family, including diseases which may be hereditary or place the patient at risk\*."

9. **Social History (SH, SHx):** “An age-appropriate review of past and current activities\*.” The Social History typically includes information on the patient’s living condition (lives alone, with a roommate, with family, at Assisted Living Facility (ALF)), substance use (history of tobacco, alcohol, or illicit drug use), employment (particularly if employment may affect the patient’s health), diet, and exercise regimen<sup>2-5,7,8</sup>.
  - Because tobacco use is associated with different levels of reimbursement and preventative measures, documenting this part of a patient’s Social History is particularly important<sup>4,5,11,12</sup>
10. The important components of the **Objective** Portion of the provider note are<sup>2-4</sup>:
  - **Physical Examination (PE):** Examination of bodily functions and conditions of an individual, conducted by the medical provider.
  - **Diagnostic findings** from: laboratory, radiology, and procedural studies.
11. The ROS and PE appear seem similar to the untrained eye; however, they are very different:
  - ROS provides a *subjective* review of symptoms provided by the patient.
  - PE constitutes an *objective* review of body system(s)/area(s) conducted by the provider.
  - Physical exam findings do not need to match the patient’s complaints or ROS findings.
12. The **Assessment** constitutes the portion of the provider note in which the provider describes the first portion of his or her **Medical Decision-Making (MDM)** process, that of **ruling-in** and **ruling-out differential diagnoses** to arrive at a definitive diagnosis<sup>2-4,13</sup>.
13. The patient’s **Problem List** is often found in the Assessment portion of the patient’s chart, and documents the most important health problems facing the patient<sup>1,2,5,14</sup>. These can include problems such as nontransitive illnesses or diseases, patient injuries, or any ongoing complaints.
14. The complexity of a provider’s medical decision making process is a key factor that contributes to the amount of reimbursement a provider can bill for- and receive (as documented in the A&P and addressed in Module III)<sup>4</sup>. For this reason, the following tips are particularly prudent when documenting the A&P portion of any medical record:
  - Thoroughly document all pertinent findings identified in the patient **H&P**
  - Ensure each patient’s **Problem List is up to date**
  - Document the **MDM and DD with complete thoroughness and accuracy**
  - Most insurance providers now require documentation of **pertinent positive or negative**

**signs and symptoms** that justify medical necessity of diagnostic studies ordered and billed for. For example: “RLQ Abdominal Pain” would be required to justify a CT Scan of the Abdomen that was ordered to rule out appendicitis. Documenting “R/O Appendicitis” will not suffice.

15. The **Plan and Patient Summary** encompass the provider’s treatment proposal to address the patient’s diagnosis upon leaving the clinic<sup>2-5</sup>.
16. Additional resources on SOAP Note Charting are available online at:
  - Lew V, Ghassemzadeh S. SOAP Notes. *StatPearls*. Treasure Island (FL): StatPearls Publishing LLC.; 2018. <https://www.ncbi.nlm.nih.gov/books/NBK482263/>
  - Pearce PF, Ferguson LA, George GS, Langford CA. The essential SOAP note in an EHR age. *The Nurse practitioner*. 2016;41(2):29-36.
  - <https://insights.ovid.com/pubmed?pmid=26795838>
17. Many providers, healthcare facilities, and electronic health record systems (EHRs) use **Problem-Oriented Charting (POC)**, in which information entered into the patient **Problem List** is populated into the Assessment & Plan (“**A&P/Overview**”) portion of the patient’s medical record for each encounter<sup>1,5</sup>. This information must be updated manually during each encounter, and is often automatically populated into the **Encounter Summary, Patient Education**, and **Discharge Instructions/Care Plan** portions of the patient’s medical record<sup>1,5</sup>.
  - For this reason, it is imperative that clinical scribes review the following sections of the medical record for accuracy and currency *before the patient is provided with the patient summary/discharge instructions* to ensure each patient receives accurate information regarding his/her encounter and treatment plan<sup>5</sup>:
    - ▶ Patient Problem List
    - ▶ Assessment & Plan (A&P)/Overview Box/Section
    - ▶ Patient Education information
    - ▶ Patient Discharge or Summary Instructions
18. Additional information on problem-oriented charting, including screenshots from a common POC-oriented EHR system (EPIC, [www.epic.com](http://www.epic.com)) is available at:
  - Chowdhry SM, Mishuris RG, Mann D. Problem-oriented charting: A review. *Int J Med Inform*. 2017;103:95-102. <https://www.ncbi.nlm.nih.gov/pubmed/28551008>; <http://dx.doi.org/10.1016/j.ijmedinf.2017.04.016>

## Assessment

1. List the four parts of the SOAP note:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

2. What is an HPI?

3. How does an HPI differ from a CC?

4. Identify 5 important elements of an HPI?

5. This chapter identified several mnemonic devices that can be used to remember important elements that should be documented in a patient's HPI: identify one of these acronyms that you might use on the floor:

6. What are the three components of "patient histories" that are charting requirements for reimbursement by Centers for Medicare and Medicaid Services (CMS)?

7. **Thinking Ahead:** What is CMS, and why might CMS be relevant to you as a scribe?

8. A patient tells the provider she used to smoke cigarettes but quit smoking 3 weeks ago. What part of the provider note would you document this information in? Is this information subjective or objective?

9. Your provider does not ask a patient about his or her social history in the room; however, you notice the patient is wearing a wedding ring and has a child; can you document in the Social History that the patient is married with a child? Why or why not?

10. The physician instructs you to document on the patient's physical exam that the patient "smells of tobacco." You notice that the patient's smoking status is not identified in his social history; can you update this information in his electronic medical record (EMR)? Why or why not, and how would you make this decision?

- If the patient's smoking status is identified as "non-smoker" in his electronic health record (EHR), how would you proceed?

11. Define the ROS and PE; how do the two differ?

12. You are seeing a patient who complains of a rash that has been itching and foul smelling.



The physician later tells you to document that the patient has a “normal skin exam, with no cellulitis. No rashes. No erythema.” How would you handle this documentation?

- If the patient’s chief complaint is “rash” what information can you enter into the different subjective and objective portions of the patient’s medical record based on the information provided above?
- What is one differential diagnosis the physician could rule out based on his physical examination findings?
- Thinking Ahead: What is the medical term for “itching?”
- What might be the next step in this patient’s plan of care, after the physical exam?

**13.** True or false: negative findings are not as relevant as positive findings on a ROS or PE?

**14.** Define the following terms:

- Problem List
- Differential Diagnoses:
- Definitive Diagnosis:
- Medical Decision-Making:
- Rule-Out:
- Progress Note:

**15.** Define and describe the terms “differential diagnoses” and “definitive diagnoses.” How do the two terms differ?

**16.** What is Problem-Oriented Charting (POC)? How can you identify whether your provider or facility use a POC-oriented EHR system? What resource(s) are recommended for you to review if your facility uses a POC-oriented EHR?



7

## Example Provider Note

## Example Provider Note

### Chief Complaint (CC)

Headache

### History of Present Illness (HPI)

32 y/o F presents to discuss HA.

Pt c/o pounding HA x 4 days. Pt states that HA is located in the front of her head. Pt admits photophobia, nausea, and neck stiffness secondary to the HA. Pt admits Hx of migraines x 4 yrs, notes that current symptoms are consistent with typical migraine headaches. Pt denies trauma or preceding illness. Denies currently taking any medication at this time.

BP elevated in office. Pt notes that she has had elevated BP in the past, but does not have hx/o HTN. Denies taking any meds. Admits dizziness. Denies lightheadedness, CP or SOB.



### SuperScribe Tip: HPI Template

- The following template may be used as a helpful starting point to prompt important components of the HPI.

Age y/o F/M presents with/for [chief complaint] x [duration]. [Complaint] onset [enter information on timing and context (ex: when the patient was moving furniture/after eating uncooked food)]. Patient describes the [symptom(s)] as [patient description of quality, severity, radiation, and location]. Associated factors/symptoms include [sxs]. The patient denies [sxs]. Admits [sxs asked by provider]. [Enter any interventions, treatments, or medications the patient has tried, and whether any interventions have provided relief]. [Enter any other information related to the chief complaint that may be less pertinent, such as missing work].

## Past, Family, and Social History (PFSH)

- Pt has a Hx of migraines and asthma.
- No pertinent family Hx.
- Pt denies any history of alcohol, tobacco, or illicit drug use.

## Review of Systems (ROS)

- **Constitutional:** Denies fever. Admits dizziness.
- **HEENT:** Admits photophobia, denies tinnitus. Denies facial numbness.
- **GI:** Admits to nausea, denies vomiting. Denies abnormal bowel movements.
- **Musculoskeletal:** Denies neck or back pain or stiffness. Denies recent trauma or injury.
- **Neurological:** Admits to headache. Denies vertigo. Denies focal weakness, paresthesia, confusion, difficulties with speech, or ataxia.

## Vital Signs

**Temperature:** 98.1°F; **Pulse:** 80 bpm; **Respiratory Rate:** 20; **Blood Pressure:** 154/89 mm Hg; **Height:** 5'5"; **Weight:** 113lb; **BMI:** 20.0

## Physical Examination (PE)

- **General/Constitutional:** Well-nourished female, in no acute distress.
- **Skin:** Dry and warm. Not consistent with dehydration.
- **Head:** Normocephalic/atraumatic. No meningismus.
- **Neck:** Soft, non-tender. No nuchal rigidity. Negative Kernig's Sign.
- **Eyes:** EOMs intact bilaterally, PERRLA. No nystagmus.
- **ENT:** Moist mucus membranes. TMs normal, without bulge or erythema. Nasal turbinates pink and non-swollen bilaterally. Posterior pharynx non-erythematous, without exudate.
- **Heart:** RRR, no murmurs, rubs, or gallops.
- **Lungs:** Lungs clear bilaterally, no wheezes, rales, or rhonchi.
- **Abdomen:** Soft and non-tender, without rebound or guarding.

- **Extremities:** No edema, 2+ pulses to all extremities.
- **Neurological:** A&O x 3, cranial nerves II-XII intact.

## Diagnostics Studies

- **Laboratory:** CBC, CMP, UA. See results.

## Assessment

- Chronic migraine without aura G43.709
- Elevated BP without diagnosis of hypertension R03.0

## Plan

- **Chronic migraine without aura:** Will Rx Imitrex to take as directed. Advised bed rest, fluids, alternate OTC Tylenol or Ibuprofen as needed for pain relief. Discussed patient education regarding migraine headaches. Consider brain MRI if sx's worsen. ER precautions discussed with pt. I discussed the plan of care with the patient; she understands and agrees with this plan.
- **Elevated BP without diagnosis of hypertension:** Elevated BP in office, symptomatic. Will start Lisinopril 10 mg. Advised patient to check BP daily at home. Recommended healthy diet and exercise.

## Review & Assessment

### Review

As you read through the provider note above, you may encounter many acronyms or terms you are unfamiliar with. Many of these terms will become very familiar to you as you proceed to the following chapters of this manual, and as you begin your work as scribe. Identifying these terms now will enhance your scribe efficiency as you progress through this manual and through your CSAT training.

### Assessment

1. The preceding chapter identifies several elements that are important to document in the HPI relative to the patient's chief complaint. Identify and underline these elements in the HPI or by re-writing them on a separate sheet of paper. (Ex: the element of "location" is identified as the frontal aspect of the head).
2. Define and describe the following abbreviations and terms used in the ROS:
  - Constitutional:
  - HEENT:
  - Photophobia:
  - Tinnitus:
  - GI:
  - Incontinence
  - Vertigo:
  - Paresthesia:
  - Ataxia:
3. Define and describe the following abbreviations and terms used in the PE:
  - Normocephalic:
  - Atraumatic:

- Meningismus:
  - Nuchal Rigidity
  - Kernig's Sign:
  - EOMs intact:
  - PERRL:
  - Nystagmus:
  - ENT:
  - TMs normal:
  - Erythema:
  - Exudate:
  - Edema:
  - A&O x 3:
4. Define and describe the following abbreviations and terms used to document "Diagnostic Studies:"
- CBC:
  - CMP:
5. Appendices III – IV. provide basic information on:
- The "How To's" of medical documentation in the family practice setting (Appendix A.III)
  - Medical documentation (including orders) for chief complaints that are common to the family practice setting (Appendix A.IV)
  - These topics are also addressed more thoroughly in Module III.

A man in a blue shirt is standing in front of a whiteboard, writing with a green marker. He is holding a piece of paper in his left hand. In the foreground, two students are seated at a table, looking towards the whiteboard. The student on the left is wearing a teal t-shirt with a graphic that says "TRAMP CAMP 2011". The student on the right is wearing a white lace top. There is a coffee cup on the table. The whiteboard has some faint writing on it, including "DUB" and "LLS".

8

## General Medical Terminology and Pathology



## General Medical Terminology & Pathology

You now know that as a scribe, you will be responsible for documenting the **HPI**, **PFSH**, **ROS**, **PE** and differential diagnoses (**DD**), diagnostic findings, definitive diagnosis, and other portions of the chart presented in the preceding “Example Chart” Application.

We will begin by walking you through the pertinent Anatomy & Physiology terminology that you will need to know as a medical scribe.

We will cover terminology by body system, in accordance with the systems presented in the ROS and PE of a patient’s chart.

As we walk through this important terminology, we will highlight important symptoms, signs, differential diagnoses, diagnostic tools, and findings associated with each of the various systems. We will begin with directional and constitutional terminology, then address terminology by body system, starting with the head and working posteriorly.

Except for directional terminology, **blue banners indicate body systems** as they would appear on a PE. **Orange banners indicate common disorders** associated with a given body system.

### SuperScribe Tip: The Importance of Medical Terminology

By definition, medical terminology is “the language used to precisely describe the human body, including its components, processes, [affecting conditions], and procedures performed upon it”<sup>27</sup>.

This common language enables medical providers to communicate accurately and precisely

- With one another, to maintain high-quality continuity of care
- With other healthcare professionals, to ensure accurate medical coding, billing and reimbursement, and convey regulatory compliance.

Strong command of medical terminology is not only important for clinical scribes; it is also necessary.

- The Joint Commission (TJC), an independent health care accreditation and certification organization<sup>28</sup> identifies **medical terminology as a minimum core competency for clinical scribes**<sup>29</sup>.
- Academic research and industry experience indicate that **provider satisfaction with clinical scribe services relies upon a scribe's ability to successfully use medical terminology in documentation**<sup>8,30</sup>.
  - ▶ In a study conducted to identify “best practices” and “barriers” of successfully implementing new scribe programs into Family Practice clinics, providers who were unsatisfied with scribe services often cited medical terminology as an area of dissatisfaction in scribe charting<sup>8</sup>.
  - ▶ In the study, providers gave the example that they may report “swollen glands” on physical examination in the room, and the scribe would document “swollen glands” rather than “adenopathy.”

Below, we provide an in-depth overview of medical terminology used in the family practice setting. We provide this overview as an introduction to medical terminology and highly recommend that all clinical scribes pursue additional supplemental training and certification in this area.

- Clinical scribes are highly encouraged to take a course in Medical Terminology; numerous courses are available online and nation-wide, both for free or for fee.
  - ▶ A list of free online medical terminology courses can be found at: [https://study.com/articles/List\\_of\\_Free\\_Online\\_Medical\\_Terminology\\_Courses\\_and\\_Classes.html](https://study.com/articles/List_of_Free_Online_Medical_Terminology_Courses_and_Classes.html)
- The Medical Terminology Resources are also available on the CSAT website under the Resources tab.
- Research also suggest that utilizing a “call back” system can be beneficial to scribes and providers alike, and can help providers ensure satisfactory documentation in real time. When utilizing a “call back” system, a provider dictates physical examination findings to the scribe, and the scribe repeats the findings back to the provider while documenting them into the patient chart<sup>8,12</sup>.
  - ▶ It is suggested that a scribe supervisor discuss the option of using a “call back” system with each individual provider prior to implementing a new clinical scribe program. Each provider’s individual preferences regarding “call back” system use can then be identified in the provider’s provider preference documents.

**Note:** A variety of sources have been used to develop and fact-check the definitions provided below. These sources include (in order):

- Pease RW, *Merriam-Webster's Medical Dictionary*. Merriam-Webster Inc.; 2006<sup>21</sup>.
- Runge MS, Greganti MA. *Netter's Internal Medicine, 2nd edition*. Illustrated by Frank H. Netter. Philadelphia, PA: Saunders Elsevier; 2009<sup>14</sup>.
- Wikipedia, The Free Online Encyclopedia. <https://www.wikipedia.org/><sup>15</sup>.
- Industry experience. ScribeConnect, LLC<sup>1,30,31</sup>.

In general, *Netter's Internal medicine, 2/e*<sup>14</sup> text and industry experience<sup>1,31</sup> were used to identify the “common disorders, diseases, and problems” listed under each orange banner; *Merriam-Webster's Medical Dictionary*<sup>21</sup> and industry experience<sup>1,31</sup> were used to provide definitions.

## Directional Terminology<sup>21,32</sup>

- **Distal:** Situated away from the point of attachment, origin, or midline.
- **Proximal:** Situated next to or near the point of attachment, origin, or midline.
- **Medial:** Situated toward or at the midline or median axis of the body.
- **Lateral:** Situated away from the midline or median axis of the body.
- **Superior:** Situated toward the head and further away from the feet.
- **Inferior:** Situated below or closer to the feet than another point.
- **Anterior (Caudal):** Situated near or toward the head or front part of the human body.
- **Posterior (Dorsal):** Situated behind, at, or toward the hind part of the human body.

## Routine Examinations<sup>1</sup>

Patients commonly present to the Family Practice setting for routine Physical Examinations, and may not have any specific complaints associated with these visits. Terminology associated with these visits may vary depending on the patient's insurance (addressed further in Module III) and on the facility. Here, we have provided some basic terminology related to these types of visits; consult your facility for any further specific terminology.

- **Annual Health Assessment (AHA):** Similar to an annual checkup but pertains to individuals 65 y/o or older, or to individuals on disability who present to fulfill certain insurance criteria<sup>1</sup>.

- **Annual Physical Examination (APE) / Physical Examination (PX):** As name implies. The ICD-10 code for this type of examination is Z00.00; therefore, these may be referred to by health care providers as “ZOO-Codes<sup>1</sup>.”
- **Annual Wellness Visit (AWV):** Annual physical examination that is used for Medicare patients (similar to the AHA for other types of insurance)<sup>1</sup>.
- **Well Child Check (WCC):** Regularly scheduled checkup for children under the age of 18<sup>1</sup>.
- **Wellness Woman Examination (WWE):** Routine check-up for females which includes breast and pelvic examination<sup>1</sup>.
- **Routine Laboratory Studies (Routine Labs):** Common blood tests, which often include the following (as defined further below in this chapter and in chapter 9).
  - ▶ **Basic- or Complete Metabolic Panel (BMP or CMP):** Tests blood levels of electrolytes, blood urea nitrogen (BUN), creatinine, and glucose (BMP), and liver enzymes (CMP only) to assess heart, kidney, and liver function, electrolyte and metabolite balances<sup>1</sup>.
  - ▶ **A1c testing:** Blood test used to identify glucose attachment to hemoglobin in the blood; used to diagnose Type 2 Diabetes and prediabetes<sup>33</sup>.
  - ▶ **Complete Blood Count (CBC):** Tests levels of red blood cells (RBCs), white blood cells (WBCs), hemoglobin (HGB), hematocrit (HCT) and platelets to identify a variety of infections and diseases<sup>1</sup>.
  - ▶ **Lipid Panel:** Tests levels of total cholesterol, low density lipoprotein (“bad cholesterol”), high density lipoprotein (HDL, “good cholesterol”), and triglycerides in the blood to assess fat and cholesterol abnormalities (dyslipidemias) as well as heart disease risk<sup>1</sup>.
  - ▶ **Urinalysis:** A basic analysis of the urine for appearance, concentration, and content. Abnormal findings may indicate a variety of diseases or illnesses<sup>1</sup>.

## Preventative Care<sup>1</sup>

Preventive care constitutes “routine health care that includes screenings, check-ups, and patient counseling to prevent illnesses, disease, or other health problems<sup>34</sup>.” Under the Affordable Care Act (ACA), many individuals have access to a variety of preventive health services<sup>35</sup>. Moreover, CMS’ Quality Payment Program (QPP) provides 26 different preventive health measures that MIPS and APP participants can choose to report on to receive MACRA provisions<sup>2</sup>. See Module III (Chapters 12-13) for information on ACA, MACRA, and CMS’ QPP.

Common preventive health services that are likely to be performed in the family practice setting (and are often covered for Medicare patients) are outlined below, and are presented here (rather than in Chapter 9), as they may also be listed as a patient's "chief complaint"<sup>1,35-37</sup>.

**Appendix A.V of this Module provides additional information for documenting Preventive Measures.**

## "Welcome to Medicare" Preventive Visits (Initial Annual Wellness Visits, I-AWVs)

Initial **"Welcome to Medicare" Preventive Visits (Initial Annual Wellness Visit, I-AWV)**: Preventive visits covered for Medicare Part B (Medical Insurance) patients (typically  $\geq 65$  y/o) once within the first 12 months of Medicare Part B enrollment<sup>1,35-38</sup>. These visits include<sup>38</sup>:

- A review of the patient's medical record, including PFSH
- An **initial preventive physical examination (IPPE)**
- A **Personalized Prevention Plan of Service (PPPS)**: provides a written screening schedule. A PPPS provided in **the Initial AWV is coded as G0438**.
- Vaccinations for influenza and pneumococcal disease; height, weight and blood pressure measurements; body mass index calculation; vision test; depression screening; counseling on advance directives; and other screenings, counseling, vaccinations, and treatments as warranted.

## Annual "Wellness" Visits (AWVs)

**Annual "wellness" visits (AWVs)**: Annual visits covered for Medicare Part B patients which are similar to the Initial AWV (above) with the following modifications<sup>38</sup>:

- The AWV does not include an initial preventive physical examination (IPPE)
- The patient's medical record, including PFSH is *updated*
- A **Personalized Prevention Plan of Service (PPPS)**: is provided, but coded differently. **The AWV PPPS is coded as G0439**.

## Regular Well-Baby- and Well-Child Checks (WCCs)

**Regular Well-Baby- and Well-Child Checks (WCC)**: Annual visits for individuals under the age of 21 that are grouped and coded in age-appropriate categories and covered by most health

insurance plans under the affordable care act (ACA)<sup>35</sup>. These visits may include a variety of age-appropriate services, such as<sup>39</sup>:

- For newborns:
  - ▶ Gonorrhea prevention medication; hearing screening; hemoglobinopathies or sickle cell screening; hypothyroidism screening;
- For children 0 – 4 years:
  - ▶ Autism screenings; developmental screenings; hematocrit or hemoglobin screenings; iron supplements (for at-risk infants 6-12 mo.); lead screening; oral health risk assessment; tuberculin testing (for higher risk children); vision screening
- For adolescents (up to 17-21 years):
  - ▶ Alcohol and drug use assessments; cervical dysplasia screening (for sexually active females); depression screenings; HIV screenings (for high-risk adolescents); sexually transmitted infections (STI) prevention counseling and screening (for higher risk adolescents)
- For all children (0 – 17-21 years):
  - ▶ Behavioral assessments; blood pressure screenings; dyslipidemia screenings (for high risk children); fluoride chemoprevention supplements; height, weight, and body mass index (BMI) measurements; age-appropriate immunization vaccines; age-appropriate medical history; obesity screening and counseling; phenylketonuria (PKU) screening

## Immunizations and Vaccinations

**Immunizations and Vaccinations:** Pertinent preventative care immunizations vary according to patient age. As a Clinical Scribe, you may be asked to verify whether a patient's immunizations are up to date (UTD)<sup>1</sup>. You may also be asked to pend or place orders for needed immunizations or vaccinations, depending on your facility's policies<sup>1</sup>. Immunizations and vaccinations that are common in the family practice setting include:

- **Hepatitis B Vaccinations:** Series of 2 – 4 Intramuscular (IM) injections administered over 6 mo. starting in infancy and recommended for all age groups to prevent Hepatitis B Virus (HBV)<sup>40</sup>.

- **Human Papillomavirus (HPV):** Series of 2 – 3 intramuscular (IM) injections administered in 1 – 6 mo. intervals in males and females ages 9 – 26 y/o to vaccinate for a variety of cancers (cervical, vaginal/vulvar, anal, throat, penile) and genital warts<sup>40</sup>.
- **Influenza (Flu shot):** Seasonal flu vaccine administered subcutaneously (SC) and recommended once per flu season for adults ages 19 – 49 y/o; children ages 12mo – 12 y/o may require two doses per flu season<sup>40</sup>.
- **Measles, Mumps, and Rubella (MMR):** Typically administered subcutaneously (SC) to children ages 12 mo. – 12 y/o in two doses; the first dose is administered between 12 – 15 m/o and the second dose is administered between 4 – 6 y/o<sup>40</sup>. A third dose may be warranted in some cases.
- **Measles, Mumps, Rubella, and Varicella (MMRV):** MMR including Varicella (chicken pox) vaccination<sup>40</sup>. Typically administered subcutaneously (SC) to children ages 12 mo. – 12 y/o in two doses; the first dose is administered between 12 – 15 m/o and the second dose is administered between 4 – 6 y/o. A third dose may be warranted in some cases.
- **Pneumococcal Diseases (“Pneumonia Series”):** Series of injections given intramuscularly or subcutaneously to prevent pneumococcal infections: pneumonia (lungs), bacteremia (blood), and meningitis (cerebrospinal fluid)<sup>40</sup>. Vaccines vary by type, duration, location, and route according to age<sup>40</sup>, so these elements are important to attend to if assisting in order entry and in documentation.
  - ▶ **For individuals ≤ 2 y/o:** The pneumococcal conjugate vaccination (**PCV13**, “**Prevnar13®**”) are given in 3 routine doses at 2, 4, and 6 mo. starting at ≥ 6 wks. old<sup>40</sup>. A 4<sup>th</sup> booster may be recommended at 12 – 15 mo./old. For infants and young children, injections are given in the vastus lateralis muscle or anterolateral thigh. For older children and adults, injections are given in the deltoid muscle (IM).
  - ▶ **For adults ≥ 65 y/o without confirmed hx of PCV13:** PCV13 is recommended followed by the pneumococcal polysaccharide vaccination (**PPSV23**, “**Pneumovax23®**”) 8 – 12 wks. later in the deltoid muscle (IM)<sup>40</sup>.
- **Shingles (Zoster) vaccination:** Vaccination for Herpes Zoster (“Shingles”), which is caused by Varicella Zoster (“Chicken Pox”)<sup>40</sup>. Live and recombinant forms of the vaccine may be administered subcutaneously (SC).
  - ▶ “**Zostavax**” (Live Zoster Vaccine, LZV) is given to individuals ≥ 60 y/o as a one-time dose (SC)<sup>40</sup>

- ▶ **“Shingrix”** (Recombinant Zoster Vaccine, RZV) is given to individuals  $\geq 50$  y/o in two SC doses that are 2 – 6 mo. apart<sup>40</sup>
- **Tetanus, Diphtheria, and Pertussis (Tdap):** Vaccination for bacterial diseases of tetanus (“lock jaw”), diphtheria, and pertussis (“whooping cough”) administered intramuscularly (IM) at 11 – 12 y/o and updated once every 10 years<sup>40</sup>.

## Screenings and Tests

**Screenings and tests** for a variety of chronic, emergent, and mental health illnesses:

- **Abdominal Aortic Aneurysm (AAA) Ultrasound:** The most common screening method for an AAA is an ultrasound (US) of the abdomen, which is recommended for all males ages 65 – 75 y/o with a history of tobacco use (smoking), and is covered by all insurance plans for these individuals under the Affordable Care Act<sup>33</sup>.
- **Alcohol Misuse Screening:** Adults who use alcohol but do not meet medical criteria for alcohol dependency may be screened by a primary care practitioner for alcohol misuse (at the practitioner’s discretion)<sup>33</sup>. Screening is covered by Medicare Part B (Medical Insurance) and may qualify the individual for up to 4 brief face-to-face counseling sessions per year if the patient is competent and alert during counseling<sup>33</sup>.
- **Blood Pressure Screening for Hypertension (HTN):** Recommended routinely for individuals  $\geq 18$  y/o, and are typically obtained at each patient visit as part of patient vital signs<sup>33</sup>.
- **Cardiovascular Disease Screening: (Lipid Profile):** Blood panel screening for cholesterol and other dyslipidemias after 4 – 6 hours of fasting<sup>33</sup>. Screens are covered by Medicare B once every 5 years and test blood levels of:<sup>33</sup>
  - ▶ **Total cholesterol:** A measure of total cholesterol in the blood<sup>33</sup>.
  - ▶ **LDL (“bad”) cholesterol:** Low density lipoprotein (LDL, “bad cholesterol”) can block arteries; elevated levels indicate hypercholesterolemia<sup>33</sup>.
  - ▶ **HDL (“good”) cholesterol:** High density lipoprotein (HDL, “good cholesterol”) can help clear LDL from arteries; low levels can increase risk for heart disease<sup>33</sup>.
  - ▶ **Triglycerides:** A type of fat in the blood that can increase risk for heart attack and stroke<sup>33</sup>.
- **Cholesterol Screening (Lipid Profile):** Blood panel screening for cholesterol and other dyslipidemias after 4 – 6 hours of fasting, as identified above<sup>33</sup>. Screens are recommended every 4 – 6 years on average<sup>33</sup>.



- **Depression Screening:** Covered for all individuals by all health insurance companies under the Affordable Care Act, and recommended for “most adult patients” by the United States Preventive Services Task Force (USPSTF) in 2016. Depression screens may differ according to facility and patient age<sup>33</sup>. A variety of clinical screening tools exist and although there are currently no regulations or recommendations regarding which screening tools to use, the **Patient Health Questionnaire (PHQ)** is the most common<sup>41</sup>.
  - ▶ Many practices use a 2-step screening process in which the first 2 questions of the full PHQ (**PHQ-2**) provide an initial assessment which – if positive – is followed by the next 7 questions of the PHQ (**PHQ-9**), in which a positive response warrants full PHQ screening<sup>1,41</sup>.
  - ▶ **Patient Health Questionnaire – 2 (PHQ-2):** First 2 questions of the Patient Health Questionnaire (PHQ) which is not billable, but is often used to determine whether further depression screening is required<sup>1,41</sup>.
  - ▶ **Patient Health Questionnaire – 9 (PHQ-9):** First 9 questions of the PHQ which is often used after a positive PHQ-2. Unlike the PHQ-2, the PHQ-9 is billable under CPT code 96127, and a positive PHQ-9 warrants a full PHQ assessment for depression<sup>1,41</sup>.
- **Diabetes Screening & A1C Testing:** Individuals who have high- or additional diabetic risk factors qualify for up to 2 screenings per year for diabetes testing<sup>33</sup>.
  - ▶ Diabetes testing involves an **A1C blood test** (also called a **Hemoglobin A1c, HbA1c, Glycated hemoglobin, or glycohemoglobin**), which tests for glucose attachment to hemoglobin in the blood and is used to diagnose Type 2 Diabetes and prediabetes<sup>33</sup>. **Blood glucose tests** may also be performed, but are less confident, as blood glucose levels fluctuate throughout the day whereas A1C levels provide indications of blood glucose levels over a 3-month period<sup>33</sup>.
  - ▶ **High risk factors for Diabetes** include  $\geq 1$  of the following: Pre-diabetes; high blood pressure (hypertension, HTN), hx of abnormal cholesterol or triglyceride levels (dyslipidemia); obesity; hx of high blood sugar (hyperglycemia)<sup>33</sup>.
  - ▶ **Additional risk factors for diabetes include**  $\geq 2$  of the following: Age > 65 y/o; Overweight; FHx of diabetes (parents or siblings); Hx of gestational diabetes (during pregnancy) or delivery of a baby weighing > 9lb<sup>33</sup>.
  - ▶ As a clinical scribe, it is important to document the presence and absence of all diabetic risk factors (as obtained by the physician) for all patients who receive diabetic screening and tests<sup>1</sup>.

- **Dual Energy X-Ray Absorptiometry (DEXA) Scan for Bone Density Screening:** Recommended for females in menopause or  $\geq 85$  y/o to screen for osteoporosis<sup>33</sup>.
- **Glaucoma Screening:** Patients with  $\geq 1$  risk factor for glaucoma are suggested to have glaucoma testing performed by an eye doctor (optometrist) once/year. A primary care provider may provide a referral for at-risk patients, which should be documented in the patient note, along with patient risk factors<sup>1</sup>. Glaucoma risk factors include: diabetes, FHx of glaucoma; African Americans  $\geq 50$  y/o; Hispanic individuals  $\geq 65$  y/o<sup>33</sup>.
- **Hepatitis B Virus (HBV) & Hepatitis C Screening:** Blood tests recommended for high-risk and pregnant individuals; covered by Medicare B.
- **Human Immunodeficiency Virus (HIV) Screening:** Blood test that screens for Human Immunodeficiency Virus; recommended once/year for individuals 15 – 65 y/o or high-risk younger individuals<sup>33</sup>.
- **Medical Nutrition Therapy (MNT) Screening and Services** are provided and covered under Medicare Part B for patients with PMHx of Diabetes, Kidney Disease, or Kidney transplant within the last 3 yrs. Services may include: nutrition and lifestyle assessment; patient education on diabetes, kidney disease, dialysis and kidney transplants; lifestyle and diabetes management; dialysis coverage; and referrals for individual and/or group nutritional therapy services with a registered dietitian or qualified nutrition professional. All discussions, screening, risk factors, patient information, and counseling that are addressed during the patient encounter should be clearly and thoroughly documented<sup>1,35-37</sup>.
- **Obesity Screening:** Patients with a body mass index (BMI)  $\geq 30$  are eligible for obesity screening and behavioral counseling on diet, exercise, and weight loss at the discretion of the primary care provider<sup>33</sup>. BMI must be documented during screening.
- **Sexually Transmitted Infection Screenings:** Screenings for sexually transmitted infections (STIs), including: chlamydia, gonorrhea, syphilis, and/or Hepatitis B are recommended once every year or at certain times during pregnancy. These screens are covered for all Medicare B patients and may warrant two “20 – 30 min face-to-face, high intensity behavioral counseling sessions” for sexually active adolescents or adults at “high risk for STIs<sup>33</sup>.” Patient social- and sexual histories will likely be reviewed and should be documented, along with any referrals or patient information provided.

## Cancer Screenings

- **Cervical Cancer:** Two different screens may be used depending on patient age. Both screens involve obtaining cervical tissue during a pelvic examination. The tissue is then screened for cancer cells and other abnormalities<sup>33,42</sup>.
  - ▶ **Papanicolaou Test (PAP Smear):** Recommended every 3 years for females 21 – 29 y/o and every 3 years for females 30 – 65 y/o who do not receive HPV testing<sup>33,42</sup>.
  - ▶ **Human Papillomavirus (HPV) Test:** Recommended every 5 years for females 30 – 65 y/o with- or without Pap Smear testing<sup>33,42</sup>.
- **Colorectal Cancer:** Recommended for males 45 – 70 y/o or earlier if FHx of colorectal cancer is present. Six different testing options exist, which may be stool-based or visual (structural) examinations. These include<sup>33,42</sup>:
  - ▶ **Stool-based tests**<sup>33,42</sup>:
    - **Guaiac-based Fecal Occult Blood Test (gFOBT):** Highly sensitive stool-based examination in which a patient uses a take-home stool kit to test for occult (hidden) blood in the stool through a chemical reaction. Hemoccult- or GUAIC- positive findings (with blood present in the stool) warrant the need for follow-up with a visual examination such as a colonoscopy. To avoid false-positive results, this test requires a special diet prior to testing<sup>33,42</sup>. Patient examination information and compliance will be important for scribes to document in the patient note<sup>1</sup>.
    - **Fecal Immunochemical Test (FIT):** Highly sensitive stool-based test, similar to the gFOBT, but that does not require any special dietary preparation<sup>33,42</sup>.
    - **Stool DNA Testing (“cologuard”):** Similar to a FIT test; however, the patient uses a home stool *DNA* kit (“cologuard”) to collect a stool sample that is mailed in to a laboratory<sup>33,42</sup>.
  - ▶ **Visual (structural) examinations:**
    - **Colonoscopy:** Entails a scheduled in-office procedure in which the patient is often instructed to follow a liquid or non-per oral (**NPO**) diet with laxatives or enemas to cleanse the colon (termed a “**Bowel Prep**”) in preparation for a procedure in which the patient is sedated and a flexible lighted tube (scope) and camera are used to examine the entire length of the colon and rectum<sup>33,42</sup>. Polyps may be removed during the procedure. Suggested once every 10 years; often performed in the outpatient setting. “Bowel prep” instructions and compliance will be important to document<sup>1</sup>.

- **CT Colonography (Virtual Colonoscopy):** Advanced computerized tomography (CT) scan of the colon and rectum<sup>33,42</sup>. This test is less invasive than a colonoscopy but entails a risk for radiation exposure and does require “**Bowel Preparation.**” Therefore the **risks and benefits** will be discussed with the patient, and this discussion should be documented in the patient’s chart<sup>1</sup>.
- **Flexible Sigmoidoscopy:** Similar to a colonoscopy; however only the distal part of the colon is visualized/examined<sup>33,42</sup>. This test does not require sedation, but does require “bowel prep,” and is less commonly used in the U.S.
- **Lung Cancer Screening with Low Dose Computed Tomography (LDCT):** CT Scan of the lungs with low-dose contrast are warranted and covered by Medicare Part B for individuals 55 – 77 y/o who have a current or PHx of tobacco smoking within the last 15 years or an average of 30 “pack years” (1 ppd x 30 yrs) and receive a written order from a primary care provider<sup>4,36</sup>. The LDCT is not likely to be performed in the family practice setting; however, the primary care provider will likely schedule a lung cancer screening counseling and shared decision-making visit with the patient, in which the benefits and risks of lung cancer screening will be discussed<sup>4,36</sup>. This discussion – along with the patient smoking history and risk factors identified above – should be clearly documented in the patient medical record<sup>1</sup>.
- **Mammogram:** Breast X-ray obtained to screen for breast cancer, recommended for women ages  $\geq 40$  y/o and once every 2 yrs for women 50 – 74 y/o<sup>33,42</sup>.
- **Prostate Screening with Prostate Specific Antigen (PSA) Testing:** Prostate Specific Antigen (PSA) is a substance produced by the prostate that is measured in the blood to screen for prostate cancer in high-risk males 50 - 65 y/o<sup>33,42</sup>. Prostate cancer progresses slowly and is often not life-threatening; therefore, the risks associated with “false positive” test results and prostate cancer treatments often outweigh the benefits of testing<sup>33</sup>. Therefore, the provider will always discuss the risks and benefits of prostate cancer screening with the patient before proceeding<sup>33,42</sup> and it is important for the clinical scribe document this in the patient chart<sup>1</sup>. Prostate cancer screenings are currently not recommended for any males  $\geq 70$  y/o (even high-risk individuals) because the risks are thought to outweigh the benefits<sup>33,42</sup>.

## Counseling

**Counseling Topics that are reimbursed by CMS include<sup>1,35-37</sup>:**

- Alcohol misuse, cardiovascular disease management, diabetes management, nutrition therapy, obesity, sexually transmitted infections, and tobacco use cessation. Counseling and documentation criteria on these topics are similar to those identified above for screening. Also, see section on documenting counseling services in Chapter 15 of Module III.

## Pregnancy-Specific Counseling, Screening, and Vaccinations

An extensive and structured workup set is advised for pregnant or expecting women<sup>43</sup>. Most of these **pregnancy-specific counseling, screening, and vaccination services** are reimbursed by CMS including:

- Assessment of: patient BMI; environmental exposure; PFSHx; medications; psychiatric illnesses and substance use
- Counseling on: reproductive intentions; contraceptives or hormone therapies if warranted; folic acid supplementation; weight and diabetes management as applicable
- Medication management if warranted (especially for teratogenic medications)
- Screening and immunizations/vaccinations for: alcohol, tobacco, and substance use; HBV; HIV; Influenza; MMRV; STIs; Tdap; tuberculosis; and other diseases and ailments.

## General/Constitutional<sup>1,4,14</sup>

The general or constitutional portion of the examination includes the provider's impression of the patient. This can include the patient's general appearance and overall state(s) of health.

Normal constitutional examination findings include:

- No Acute Distress (**NAD**).
- Well nourished, in good health.
- Afebrile (without fever).

## Common Constitutional or General Disorders<sup>14,21</sup>

- **Fever:** A fever is officially classified as an internal body temperature of  $\geq 100.4^{\circ}\text{F}$ . In an adult, a fever becomes concerning at  $103^{\circ}\text{F}$  or above. A fever is indicative of infection, as it is one of the body's defensive mechanisms for stimulating the immune system to kill offenses such as virus' and bacteria. Associated symptoms may include **diaphoresis (sweating)**, generalized aching and chills. Commonly treated with Acetaminophen or Ibuprofen.
- **Malaise:** A generalized feeling of illness or discomfort.
- **Weight Changes:** Sudden weight loss or gain can indicate a variety of underlying endocrine, gastroenteric, immunologic, or psychologic conditions.

## Head, Eyes, Ears, Nose, and Throat (HEENT)<sup>1,4,14</sup>

The HEENT body system and examination encompass all findings above the neck, excluding the brain, which is covered in the neurological organ system. The HEENT examination includes examination of the bones of the skull, skin of the face and scalp, eye appearance and functionality, tympanic membranes, ear canals, external ears, nasal turbinates, sinus passages, and the oral cavity and its contents.

Examples of normal HEENT exam findings include:

- Normocephalic (normal head) /Atraumatic (without trauma) **(NC/AT)**.
- Pupils Equal, Round, Reactive to Light, and Accommodating **(PERRL/PERRLA)** bilaterally.
- Extraocular Movements Intact **(EOMI)** bilaterally.
- Tympanic Membranes **(TMs)** intact bilaterally. No **bulging** (indicative of otitis media) or erythema (redness).
- **Turbinates (nasal concha)** pink, no swelling, no obstructions.
- Moist Mucus Membranes **(MMM)**, normal condition for the membranes rich in mucous glands that line body passages and cavities that communicate directly with the exterior, such as the mucosae of the mouth).
- Normal Pharynx (part of the digestive and respiratory tracts situated between the oral cavity and esophagus): no erythema (redness), no exudates (exuded matter or material composed of serum, fibrin, and white blood cells **(WBCs)** indicative of infection).

## Common HEENT Disorders<sup>14,21</sup>

- **Allergic Rhinitis:** Commonly known as allergies or hay fever; group of symptoms affecting the nose. May be seasonal or perennial (year-round). Typically results from inhaling an allergen, such as dust mites, mold, animal dander, or pollen. Symptoms can include fatigue, nasal congestion, swollen eyelids, sneezing and coughing.
- **Cerumen Impaction:** Ear wax buildup. Patients presenting with this problem may complain of ear pain, blocked ear, and decreased hearing. This is diagnosed via ear exam and treatment typically includes an **ear lavage**, in which the auditory canal is flushed with fluid.
- **Conjunctivitis:** Commonly known as “pink eye,” conjunctivitis is characterized by inflammation of the conjunctiva (the inner eyelid lining) that is often accompanied by pain and drainage from the affected eye. The condition is caused by infection that may be either viral or bacterial.
- **Corneal abrasions:** Scrapes or scratches to the cornea or surface of the eye. **Foreign bodies (FBs)** in the eye commonly cause this type of injury, but exposure to ultraviolet radiation, which can occur in tanning beds or welding arcs, can damage the cornea in a manner that resembles corneal abrasion. Patients complain of redness and pain to the affected eye. To diagnose this, providers may use a dye (called **fluorescein**) that is detectable under ultraviolet light to locate the abrasion. This process is called a **fluorescein exam**, and positive or negative “**fluorescein uptake**” in the region of the abrasion will be an important finding your provider will instruct you to document. Treatment for corneal abrasion involves protecting the eye with an eye patch and administering ophthalmic (eye) drops for pain. Anti-inflammatory and antibiotic eye drops may also be prescribed if severe inflammation or concern for infection exists.
- **Epistaxis:** Nosebleed; may be bilateral or singular.
- **Headache (HA, Cephalgia):** Can originate from – and indicate the occurrence of – a variety of pathologies, including brain aneurysm, **cerebrovascular accident (CVA)**, dehydration, **hypertension (HTN)**, infectious processes, migraine episode, muscular tension, neurologic disorder, trauma, or vision changes. A headache may be **generalized or diffuse** (experienced throughout the entire head with no specific localization), or may be localized to a specific region of the head such as the frontal or occipital aspect, or right- or left side. Patients often use terms such as “pounding,” “throbbing,” “sharp,” “dull,” or “aching” to describe headache pain. Pertinent positive or negative associated symptoms may include fever, nausea or

vomiting, neck pain or stiffness, vision changes including **diplopia** (double vision) or blurred vision, auditory changes including **tinnitus** (ear ringing), **paresthesia** (changes in sensation of the skin such as pricking or tingling), **presyncope** (lightheadedness), **vertigo** (sensation of room-spinning), **aura** (subjective sensation experienced before a type of attack, such as a migraine headache), and **sudden-onset** (indicative of brain aneurysm).

- **Otitis:** The general term for **ear inflammation and infection**. Depending on the location of the infection, an otitis may be further classified as **externa** (located in the external auditory canal, also called **swimmer's ear**), **media** (located in the middle ear), or **interna** (located in the inner ear, also called **labyrinthitis**).
- **Pharyngitis:** Inflammation of the pharynx. Pharyngitis is usually caused by infection, though may also result from **Gastroesophageal Reflux Disease (GERD)** or allergic reactions.
- **Sinusitis:** Inflammation and infection of the sinus passages. Sinusitis may occur in the maxillary, frontal, ethmoidal, or sphenoidal sinuses.
- **Tonsillitis:** Inflammation or infection of the lymphatic glands at the back of the **oropharynx** (called the tonsils). Symptoms and presentation are similar to pharyngitis. On exam, the provider may note erythema and edema of the tonsils. **Exudates** may be present. Excessive swelling can restrict airflow, and tonsillar asymmetry may indicate **peritonsillar abscess** (collection of fluid or puss around the tonsil). Tonsillitis is usually treated with antibiotics and resolves much like pharyngitis. Frequent or persistent tonsillitis is treated with **tonsillectomy** (removal of the tonsils).
- **Tinnitus:** Subjective sensation of noise (such as ringing) that is only audible to the affected individual, usually caused by a bodily condition such as a disturbance of the auditory nerve or **cerumen (ear wax)** buildup. Tinnitus also occurs secondary to hearing loss or trauma to the ears. Treatment for chronic tinnitus is often limited, though in acute cases the symptom often resolves on its own when the underlying cause is treated.
- **Upper Respiratory Infection (URI):** Often referred to as the **common cold**, URIs may be viral or bacterial in nature, but affect only the upper airways. Symptoms include cough, green or yellow **sputum (phlegm)** production (indicative of infection), headache, **rhinorrhea** (runny nose), fever, congestion, and sore throat. Treatment consists of rest and fluid administration; antibiotics may be warranted.



## Chest: Heart and Lungs<sup>1,4,14</sup>

Chest examinations inspect the heart and lungs, and usually include heart and lung **auscultation** (the act of listening to sounds arising within organs) with a **stethoscope** (an instrument designed to facilitate auscultation).

### Cardiac:

Normal cardiac exam findings include:

- Regular rate and rhythm (**RRR**).
- No **murmurs**, **rubs**, or **gallops (m/r/g)**.
- No extremity **edema (swelling)**.
- No carotid **bruit (abnormal heart sound)**.
- No **jugular venous distention (JVD)**, neck jugular vein enlargement, indicative of **CHF**.
- 2+ pedal pulses (normal pulse strength in the feet).

### Respiratory:

Normal respiratory exam findings include:

- Equal lung sounds bilaterally.
- No **wheezes**, **rales**, or **rhonchi** (abnormal breath sounds).
- No accessory muscle use (indicative of labored breathing).
- No obvious respiratory distress.

## Common Cardiovascular Disorders<sup>14,21</sup>

- **Atrial Fibrillation (A-Fib)**: This condition is characterized by the atria (upper chambers) of the heart contracting rapidly and irregularly, producing a quivering motion rather than a regular heartbeat. The quivering motion is unable to move blood from the atria to the ventricles with maximum efficiency. This quivering is likely to be described as “palpitations” or a fluttering sensation in the chest. “**Irregularly irregular rhythm**,” with or without tachycardia may be noted on exam. A-Fib is not typically dangerous; however, a patient may experience Rapid Ventricular Rate (**RVR**), when the ventricles of the heart beat over 100 beats per minute for a prolonged period. This rapid rate will eventually exhaust the heart if not calmed and can lead to permanent damage. A-Fib with RVR

that does not resolve on its own is treated to restore regular rate and rhythm (**RRR**) through the administration of medication such as **Cardizem**, **Digoxin**, or **Undivert**, or with **defibrillation** or **cardioversion**. Long-term management of A-Fib involves prescription of medications including blood thinners (Coumadin, Xarelto, or Eliquis) to prevent clotting, and possible Automatic Implantable Cardioverter Defibrillator (**AICD**) consideration.

- **Cardiomegaly (CMG):** Cardiomegaly (enlargement of the heart) most commonly results from hypertension (**HTN**) or prolonged stress on the heart (as may occur through prolonged physical exertion or other cardiac etiologies). CMG is generally non-life threatening, though severe cases can cause shortness of breath, chest pain, and lower extremity edema. CMG is diagnosed by chest X-ray (**CXR**), and treatment typically focuses on treating underlying causes such as HTN or cardiac stressors.
- **Carditis:** Just like any other tissue in the body the heart tissues can become infected either by viruses or bacteria. Depending on location, infections can be classified as **myocarditis**, **pericarditis**, or **endocarditis**. Due to the nature of inflammation these infections can be very serious leading to permanent heart damage or death. Carditis is treated with non-steroidal anti-inflammatory drugs (**NSAIDs**) and antibiotics.
- **Congestive Heart Failure (CHF):** CHF entails a condition in which the heart's ability to pump blood decreases, causing fluid to build up in either the tissue of the lungs or extremities. This fluid buildup is called edema. **Pulmonary edema** (edema of the lungs) competes with air for space in the lungs, causing shortness of breath that may be worsened when lying flat (termed **orthopnea**). Associated symptoms may include malaise, **nocturia** (urination at night), and cough. **Lower extremity edema** may be identified as “**pitting**” on physical exam when the application of pressure onto the skin leaves an indentation in the area after the pressure has been removed. **Jugular venous distension (JVD)** may also be noted on physical exam; this entails enlargement of the jugular vein(s) of the neck that carry blood from the head to the main vein of the upper body that empties into the heart, indicative of atrial pressure buildup. CHF produces permanent damage to the heart, so treatment is symptomatic rather than pathologic (treating the symptoms rather than the pathology or process). Patients may be given **diuretics** to promote excretion of excess fluid in attempt to decrease edema. A patient with CHF may also be placed on **Digoxin**, a medication that helps strengthen the contractions of the heart. **Beta-blocker** and **anticoagulant** medications may also be prescribed.
- **Coronary Artery Disease (CAD)/Angina:** Coronary artery disease entails the narrowing or calcification of the coronary arteries. Narrowing is typically caused by **atherosclerosis**, the

build-up of plaque in the arteries, which constricts blood flow. Decrease in blood flow leads to a decrease in blood flow to the cardiac muscle. If a blockage becomes severe enough, it can lead to a myocardial infarction. Decreased blood flow to cardiac tissue may cause **angina** (heart pain). The pain can be persistent or intermittent. Often, shortness of breath is associated with the chest pain. Coronary artery disease is diagnosed by **cardiac catheterization** and is treated with blood thinners and vasodilators such as Nitroglycerin (**NTG**), as needed.



### SuperScribe Tip: A Note on Chest Pain (CP)

Chest pain that is cardiac in nature tends to be experienced as “left-sided” chest pain that may radiate to the left shoulder, neck, or back. This is because of the slight left-sided location of the heart within the thoracic cavity. Furthermore, of the bilateral (left and right) common carotid arteries that supply oxygenated blood to the head and neck, the left common carotid artery originates from the aortic arch and has a thoracic presence (that can be felt as chest pain if blocked). The right common carotid artery originates from the neck and does not have a thoracic presence. However, chest pain is not always cardiac in nature. For example, acid reflux and muscular tension can both cause non-cardiac chest pain.

- **Myocardial Infarction (MI, “Heart attack”)**: This occurs when a coronary artery that supplies oxygenated blood to the heart tissue becomes blocked, leading to death of the cardiac muscle tissue. Death of cardiac muscle can lead to long-term changes in the heart functioning, including death of heart tissue, other tissue, and of the individual. Symptoms of an MI often include left-sided chest pain described as a “heavy or pressure-like” sensation with shortness of breath (**SOB**), nausea, and **diaphoresis** (sweating). MIs are typically diagnosed by electrocardiogram (**EKG**) tracings and treated with **vasodilators** (medications that dilate or widen blood vessels to increase blood flow) and **blood thinners** (which also aim to increase blood flow by reducing blood viscosity), to reduce long-term damage to the heart tissue.

## Common Respiratory Disorders<sup>14,21</sup>

- **Asthma:** This chronic disease is characterized by constriction of the bronchi. Symptoms of asthma include shortness of breath, wheezing, and cough. Common treatments for asthma include bronchodilators such as Albuterol, and steroid inhalers.
- **Bronchitis:** Inflammation of the bronchi in the lungs that can be viral or bacterial. Associated symptoms include persistent cough, which may be productive of green or yellow sputum, fatigue, throat pain, and fever. **Course breath sounds** or **rhonchi** may be found on physical exam. Mild cases of bronchitis involve home care or over the counter (OTC) cough suppressants; antibiotics may be prescribed.
- **Chronic Obstructive Pulmonary Disease (COPD):** COPD refers to a variety of pulmonary diseases characterized by irreparable lung tissue damage and irreversible chronic airway obstruction. The most common forms of COPD are emphysema and chronic lung infections (such as chronic bronchitis). **Tobacco use is a major contributor.** Symptoms of COPD include shortness of breath that may be worsened by **exertion, wheezing, hypoxia,** and **cough.** On physical exam, abnormal lung sounds may be heard; these may include crackles, rales or coarse breath. Treatments include bronchodilators such as Albuterol, steroids, rescue inhalers, and often oxygen supplementation.
- **Pneumonia:** Pneumonia constitutes a bacterial or viral infection of the lungs often characterized by productive cough and fever. Pneumonia may be classified as **aspiration pneumonia**, in which a foreign substance such as water has been inspired into the lungs, causing the infection. Pneumonia is diagnosed by chest x-ray (**CXR**). Treatment varies depending on the type of pneumonia. Bacterial pneumonia can become highly contagious in small communities such as assisted living facilities (**ALF**); such forms of pneumonia are termed Community Acquired Pneumonia (**CAP**) and have specific treatment protocols.

## Abdomen, Gastrointestinal System<sup>1,4,14</sup>

Abdominal exams are performed through palpation, visualization, and auscultation. The abdomen is broken up into seven sections labeled as the epigastric region, the right upper, left upper, right lower, and left lower quadrants, the periumbilical region, and the suprapubic region. Rectal checks are also included in the abdominal exam.

Normal abdominal exam findings include:

- Abdomen is soft and nontender.

- No **guarding** (voluntary or involuntary reaction to protect an area in pain, as through voluntary hand blocking or involuntary muscle contraction on palpation of the abdomen over a painful lesion) or **rebound tenderness** (sensation of pain felt when pressure applied to the abdomen is suddenly removed).
- No **organomegaly** (abnormal enlargement of the internal organs).
- No masses or hernias palpated.
- Normal bowel sounds (**NL BS**).
- No abdominal **distension** (enlargement).
- Good rectal tone, no hemorrhoids, no tenderness, no blood in the stool (**hematochezia**).
  - ▶ For male patients: No prostate enlargement.

### Common Gastrointestinal Disorders<sup>14,21</sup>

- **Cholelithiasis:** Is the presence of gallstones in the gallbladder. Gallstones may be caused by a build-up of bile in the gallbladder. Cholelithiasis is characterized by sharp, intermittent pain in the right upper quadrant of the abdomen. The most common method of diagnosis is CT scan. Treatment for cholelithiasis is **cholecystectomy** (removal of the gallbladder).
- **Cirrhosis:** Scarring of the liver in response to accumulative damage of the liver. The two most prevalent causes of cirrhosis are hepatitis and chronic alcohol abuse. Associated symptoms of cirrhosis are fatigue, nausea, and **jaundice** (yellowing of the skin and whites of the eyes). Diagnoses may be made using hepatic function tests, CT scans, MRIs, ultrasounds, and liver biopsies. Cirrhosis is an irreversible condition and most treatment focuses on slowing progression. In severe cases, liver transplants are required.
- **Constipation:** Difficult and infrequent bowel movements. This often causes abdominal pain due to buildup of stool in the intestines. Constipation may have a wide variety of causes including dehydration, poor diet, bowel obstructions, medications, and anal stenosis.
- **Diverticulitis:** Inflammation or infection of pouches (**diverticula**) of the large intestine; can result from bacterial **diverticulosis** (see definition below). Symptoms of *diverticulitis* include abdominal pain, nausea, altered bowel movements, and fever. Diagnoses are made with the aid of an abdominal CT scan. Treatment typically includes rest, dietary changes, and antibiotics.

- **Diverticulosis:** Formation of pouches (**diverticula**) of the large intestine. Diverticulosis on its own is not dangerous. However, digested material can become lodged in the diverticula and allow for opportunistic bacteria to grow unchecked, leading to infection and inflammation, called **diverticulitis**. Treatment usually starts with dietary changes and may warrant surgery. The condition is more common in the elderly.
- **Gastritis:** Inflammation of the lining of the stomach caused by over production of acid, infection, or certain medications. Symptoms of gastritis include abdominal pain in the epigastric region often described as burning and vomiting. **Anti-emetics** are frequently used to counter-act nausea and vomiting. If the gastritis is caused by a bacterial infection such as **H. Pylori**, antibiotics may be part of treatment.
- **Gastroenteritis:** Commonly known as the “stomach flu”, gastroenteritis is typically the result of a viral infection, though can also be caused by bacteria. It is characterized by generalized abdominal pain, nausea and vomiting. If symptoms do not resolve on their own the patient may receive anti-emetics and antibiotics. Persistent symptoms may also cause dehydration and electrolyte imbalance, which can be treated with IV fluids.
- **Gastroesophageal Reflux Disease (GERD):** Commonly referred to as acid reflux, GERD is characterized by overproduction of acid in the stomach, which irritates the stomach lining and bottom of the esophagus. Long term and untreated GERD can lead to erosion of the stomach lining or esophageal sphincter. Complaints include burning abdominal pain, nausea, vomiting, malodorous breath, and foul taste in the patient’s mouth. GERD can be diagnosed by x-ray or endoscopy. Treatments include anti-acids and diet control.
- **Hemorrhoids:** Dilated veins around the rectum and anus. Hemorrhoids are common causes of pain and bleeding with bowel movements. Hemorrhoids are diagnosed during rectal exams. Treatment varies from over-the-counter topical creams to surgical removal depending on severity.
- **Hernia:** A hernia occurs when a portion of the small bowel protrudes through a weak portion of the fascia of the abdominal wall. A history of surgery, injury or prior hernias puts a patient at higher risk for hernia. The two most common types of hernia are periumbilical hernias which occur close to the umbilicus often protruding through the linea alba and inguinal hernias which are protrusions of small intestine into the inguinal canal. If the hernia is small, it may be reduced by placing pressure over the area pushing the bowel back underneath the fascia. In more severe cases, the hernia is surgically repaired by reinforcement of the abdominal wall often using surgical mesh. This surgical procedure is referred to as a **herniorrhaphy**.

- **Peritonitis:** Inflammation of the lining of the abdominal cavity (**peritoneum**). There are two main types of peritonitis, primary and spontaneous. Primary peritonitis is caused by infection due to **ascites**. Spontaneous peritonitis is caused by trauma or organ rupture in the abdominal cavity. Symptoms include generalized abdominal pain and distension, nausea, vomiting, diarrhea, and fatigue. Diagnosis may be through blood work, CT, or x-ray. Treatment often requires antibiotics and surgery.

## Genitourinary (GU) System: Kidneys, Ureter, Bladder (KUB) and Genitals<sup>1,4,14</sup>

The genitourinary section of the exam covers the kidneys, ureter, bladder, and genitalia.

### Normal male GU examination findings include:

- No **torsion** (twisting of an organ).
- No swelling.
- No masses or abnormalities.
- No tenderness.

### Normal female GU examination findings include:

- No **chandelier sign** or **cervical motion tenderness (CMT)**, hypersensitivity with palpation of the cervix on internal pelvic exam, indicative of pelvic inflammatory disease).
- No **adnexal masses** (mass in the adnexa of the uterus, indicative of cancer).
- No blood in the vaginal vault (blood in the **vaginal vault** may indicate uterine or cervical lesion, or complication of pregnancy).

## Common Male Genitourinary Disorders<sup>14,21</sup>

- **Balanitis:** Infection of the glans of the penis is called balanitis. Described by patients as painful, itching redness. **Balanoposthitis** is when the infection includes both the glans and the foreskin. It can be caused by poor hygiene and infection. If the infection is determined to be bacterial or fungal topical treatments are administered.
- **Epididymitis:** Inflammation of the epididymis (region of the testes that stores and allows for sperm maturation). The condition is often caused by bacterial infection or sexually transmitted disease and can be treated with antibiotics.

- **Phimosis and Paraphimosis:** When the foreskin becomes swollen or irritated and cannot be retracted the condition is called phimosis. If the foreskin is already retracted and cannot move forward over the glans of the penis it is referred to as paraphimosis. Treatment is based on severity and can range from gentle, daily movement of the foreskin, topical corticosteroids to removal of the foreskin (circumcision).
- **Testicular Torsion:** Twisting of the spermatic cord compromising the flood of blood to the testicle ultimately resulting in ischemia. Patients present with a complaint of focal testicular pain. Associated symptoms may include testicular swelling, nausea and vomiting. If torsion goes untreated for over 6 hours, the patient may have loss of the testicle.

### Common Female Genitourinary Disorders<sup>14,21</sup>

- **Ectopic pregnancy:** An ectopic pregnancy is a pregnancy that occurs outside the uterus. Most ectopic pregnancies occur within the fallopian tube. Due to the narrow space of the fallopian tube and lack of elasticity, ectopic pregnancies are at high risk for rupture if not caught early. Patients typically present with focal, unilateral pelvic pain. If the fallopian tube has already ruptured patients may also be weak, pale and hypotensive. Patients may be treated with a medication to break down the fetal tissue or surgical removal.
- **Fibroids:** Benign, firm, rubbery masses that grow from the myometrium of the uterus. Growth can be slow or rapid. Some women are asymptomatic and never know they have fibroids. Others develop large fibroids and have mild to severe pain. The pain is usually localized to the pelvis and is treated with pain medication. In severe cases of large fibroids, a hysterectomy (removal of the uterus) may be performed.
- **Ovarian Cysts:** Ovarian cysts are caused by a collection of fluid around a developing ovum in the ovary. Cysts usually do not cause pain unless they reach a certain size and rupture. Rupture typically occurs during physical activity such as exercise or intercourse. Treatment typically includes pain medication and ultrasound of the area to ensure there is no sign of an ectopic pregnancy. Patients with a history of ovarian cysts may also have a diagnosis of Polycystic Ovarian Syndrome (**PCOS**).
- **Ovarian Torsion (OT):** Twisting of an ovary in such a manner that the blood supply to that ovary is limited or blocked, if left untreated, the tissue of the ovary may become necrotic. Patients experiencing ovarian torsion complain of severe one-sided pelvic pain. They may also experience nausea and vomiting. Diagnosis is acquired using ultrasound. All OT is treated surgically by either manually untwisting the ovary, or in cases of necrosis, removal of the ovary (**oophorectomy**).



- **Pelvic Inflammatory Disease (PID):** Inflammation and infection of the uterus and fallopian tubes. Probable causes of PID include untreated STDs and other uncontrolled infections. Lower abdominal pain, fever, dysuria, and vaginal bleeding are among the symptoms. Treatment entails antibiotic therapy to cure the underlying infection.
- **Vaginitis:** Inflammation and infection of the lining of the vagina. Vaginitis can be caused by bacterial, fungal, or viral infection, or irritation from sensitivity to foreign materials such as condoms or lubricant. Symptoms often include vaginal itching, abnormal vaginal discharge, and dysuria. Pelvic exam is required for diagnosis. Treatment varies depending on type.

### Common Genitourinary Disorders (Non-Gender Specific)<sup>14,21</sup>

- **Pyelonephritis:** Inflammation of a kidney. Usually a pyelonephritis starts as a UTI or cystitis that goes untreated or progresses rapidly into a kidney infection. Symptoms are usually the same as a urinary tract infection with flank pain. Pyelonephritis can affect one or both kidneys at a time. Treatment includes pain medication and antibiotics.
- **Renal Lithiasis:** Solidified mineral deposits commonly referred to as kidney stones. Formation of kidney stones can be a result of chronic dehydration or diet. Some people have greater tendencies to developing kidney stones due to genetics or lifestyle. Diagnoses of renal lithiasis are usually reached through CT scans. Treatment varies depending on the size of the stone. Small stones tend to pass through the urinary tract on their own, while larger stones may need to be broken using ultra sound, or surgically removed.
- **Sexually Transmitted Diseases:** There are several sexually transmitted diseases. Patients usually present with complaints of pelvic pain, vaginal or penile discharge, dysuria, nausea and vomiting. On exam, the physician may note pelvic or abdominal tenderness,



#### SuperScribe Tip: STD vs STI

Diseases that spread through sexual contact are termed Sexually Transmitted Diseases (STD). The term disease refers to a clear medical problem with signs or symptoms; however, not all STDs are symptomatic. Therefore, some professionals and organizations instead use the term Sexually Transmitted Infection (STI), since infections are more commonly associated with symptoms. However, not all infections or STIs are symptomatic either.

vaginal or penile discharge and erythema or swelling to the vagina or penis. Bacterial infections such as **Syphilis**, **Chlamydia**, **Trichomoniasis** and **Gonorrhea** can be treated with antibiotics but if left untreated can lead to pelvic inflammatory disease and sepsis. Genital herpes is a viral infection localized to the nerves in the genital region that is contagious when the patient is having a flare up. Treatment includes managing symptoms and flare ups but at this time there is no cure. Human Immunodeficiency Virus (**HIV**) is a virus that targets white blood cells, as HIV infection progresses it develops into AIDS. There is currently no cure for HIV infection.

- **Urinary Tract Infection (UTI):** Any infection of the urinary tract, though predominantly occur in the bladder and urethra. Typical symptoms include **dysuria**, frequency, urgency, lower abdominal pain, and nausea. Urinalysis is used for diagnosis. Antibiotics are used for treatment. Although UTIs can affect both males and females, they are more common in females due to the arrangement of the female anatomy.

## Musculoskeletal System<sup>1,4,14</sup>

Normal musculoskeletal exam findings include:

- Normal/Active/Full Range of Motion (**NL ROM/AROM/FROM**).
- No deformities.
- Normal gait with no **antalgia** (gait abnormalities developed to avoid pain).
- No **crepitus** (grating sound or sensation, produced by rubbing of fractured bone ends).
- No midline or **bony point tenderness** (localized tenderness indicative of fx or sprain).

## Common Musculoskeletal Disorders<sup>14,21</sup>

- **Dislocations:** Dislocations can occur wherever there is a joint. Some factors such as previous history of dislocation or history of joint replacement surgery can increase the frequency of dislocation occurrence. Dislocated joints are usually reduced and the patient given pain medication for the next several days. In some cases, surgery may be indicated.
- **Fracture:** A fracture refers to breaking of a bone. This is usually caused by trauma, though certain diseases can cause the bones to be frail or brittle and fracture more easily. Types of fracture include simple, comminuted, spiral, impacted, oblique, linear, transverse, open, and avulsion.

- **Muscular Dystrophy:** Muscular dystrophy describes a group of disorders in which the muscles become progressively weaker over time. Patients usually do not experience pain, but slowly lose the strength in their muscles. At this time, there is no cure for muscular dystrophy and treatment focuses on slowing the progression of disease. Eventually most muscular dystrophy patients require a wheel chair for mobility.
- **Osteoporosis:** Bones are being continually broken down and rebuilt on the cellular level. When the rate of repair is not as fast as the rate of breakdown a person develops weak and thin bones or osteoporosis. Due to the frailty of osteoporotic bones, risk of fracture is very high. Falls or contusions that a healthy individual would walk away from could be debilitating for an individual with osteoporosis. Women who have gone through menopause are at higher risk for osteoporosis than men and premenopausal women, although the condition can occur in anyone. Treatment includes a diet high in vitamin D and Calcium to encourage bone repair, and exercise to maintain muscle and bone strength.
- **Strains/Sprains:** A strain refers to a stretched or torn muscle or tendon while sprain refers to a stretched or torn ligament. Minor sprains and strains are treated with soft splints, pain medication and rest. Large tears require surgical repair called tenoplasty.
- **Tetanus:** Tetanus is a bacterial disease that is usually acquired by receiving a penetrating wound from a contaminated object. Symptoms of tetanus infection include muscle spasms and tension, dysphagia, and fever. Tetanus is diagnosed during the physical exam. Patients may have nuchal rigidity, trismus (lockjaw), extremity stiffness and limited range of motion. There is no cure for tetanus, treatment is usually palliative.

## Integumentary System (Skin)<sup>1,4,14</sup>

Normal skin exam findings include:

- Skin is warm and dry.
- No **diaphoresis (sweating)**.
- No abscesses or lesions.
- No rashes.
- No **abrasions (tearing of the skin)** or **lacerations (cuts)**.
- No swelling or areas of **induration** (skin hardening and loss of elasticity associated with inflammation).

## Common Integumentary Disorders<sup>14,21</sup>

- **Abscesses:** An abscess is a collection of pus under the skin. Abscesses are caused by a bacterial infection to the skin that leads to a build-up of bacteria, white blood cells and extracellular fluid. Most patients present with complaints of a red, raised, painful bump to their skin and commonly believe that have been bitten by an insect or spider. Treatment includes antibiotics and incision & drainage of the abscess. It is then packed with sterile gauze or antibacterial gauze to prevent resealing and further infection of the site.
- **Cellulitis:** Cellulitis is a bacterial infection of the skin. Patients present with complaints of erythema, warmth, induration, and pain to the affected area. They also may have a fever. Treatment consists of antibiotics and keeping the area clean.
- **Contusions:** Contusions are the result of blunt trauma to the skin. Patients complain of pain or bruising to the area of injury. On exam, the area will have ecchymosis and may have accompanying by hematoma or a collection of blood under the skin cause by damage to the blood vessels. Contusions generally heal on their own as the body reabsorbs the blood that has been released into the skin.
- **Decubitus Ulcers:** Commonly referred to as bed sores, decubitus or pressure ulcers are open sores in the skin and underlying tissues caused by prolonged pressure over one area of the body as with patients that are confined to a wheelchair or bed. Patients may not be aware of their bed sores or they will complain of pain to the affected region. They are categorized as stage 1 to 4 based on severity with the least severe being no break of the skin to the most severe involving major tissue loss and exposure of muscle or bone. Pressure ulcers increase risk of infection and are treated based on severity. Stage 1 & 2 bedsores have a better healing prognosis while stage 3 & 4 ulcers require extensive treatment.
- **Dermatitis:** Dermatitis is the general term used to describe irritation of the skin. Common types of dermatitis include contact dermatitis where a foreign material or substance causes irritation or erythema to the skin, allergic dermatitis where the body has a hypersensitivity to an allergen, and stasis dermatitis where lack of venous blood flow causes appearance changes to the skin. Patients present with complaints of redness, itching and sometimes pain to the affected area. Treatment varies depending on the cause of the dermatitis.
- **Fungal infections:** The skin can also be infected by fungus. Common fungal infections include ring worm (*Tinea corporis*), athlete's foot (*Tinea pedis*), and yeast infections

(candida). Patients with fungal infections present typically complain of redness and pruritis to the affected area. These infections are treated with anti-fungal medications and keeping the area clean and dry.

- **Lacerations:** A cut in the skin is called a laceration. Treatment includes cleaning the area, debridement if needed and gluing, suturing or stapling the skin closed.
- **Petechia:** Petechia are not a true rash, but rather capillary hemorrhages just under the skin. Causes include prolonged straining, meningitis, scarlet fever and endocarditis. Patients commonly complain of small purple or red dots to their skin that are not painful or itchy. Treatment is dependent on the underlying cause.
- **Psoriasis:** Psoriasis is a chronic rash caused by an autoimmune reaction. Characteristic complaints include dry, red, itching patches of skin. Treatment focuses on the symptoms as well as trying to reduce the rate of cell growth. Mild cases are treated with sunlight exposure and topical corticosteroids and more severe cases include PO or IM medications.
- **Urticaria:** Urticaria are the red wheals typically called hives. They are commonly associated with allergic reaction. Patients will present with the complaint of itching, red, hives. Treatment involves treating the allergic reaction with antihistamines and sometimes steroids to reduce the inflammatory response in the body.

## Neurological System<sup>1,4,14</sup>

Neurological exams are usually performed by giving the patient a series of tests. Common examples of these tests include activities such as having the patient squeeze the physician's fingers to assess strength or recall the names of objects to assess memory.

Normal neurological exam findings include:

- Alert and oriented to person, place, and time (**A&Ox3**).
- Cranial nerves II-XII intact (**CNII-XII intact**).
- 2/4 Deep tendon reflexes (**DTRs 2/4 bilaterally**).
- 5/5 strength in all extremities.
- Full/active range of motion (**FROM/AROM**).
- No focal or sensory deficits.
- Finger to nose (**FNF**) and heel to shin tests are normal (these are tests for stroke or neurological deficits).
- Steady gait.

## Common Neurological Disorders<sup>14,21</sup>

- Bell's Palsy:** Bell's Palsy is an infection of the facial nerves that is typically viral in etiology. Patients with Bell's Palsy often present with a **facial droop** (palsy of the face). Other associated symptoms may include ear pain, blurred vision, facial numbness, tingling, or paresthesia, and decreased eye watering. Importantly, Bell's Palsy symptoms are localized only to the facial nerves and do not extend throughout the body. Treatment includes **non-steroidal anti-inflammatory drugs (NSAIDs)** or steroids. Bell's Palsy is typically not emergent or life-threatening. Individuals generally recover with no permanent damage, but frequent cases of Bell's Palsy may lead to permanent facial nerve damage.
- Cerebrovascular accident (CVA):** Commonly referred to as a stroke, a cerebrovascular accident refers to any incident of neuronal (brain) cell death. There are two main types of CVA: **ischemic** and **hemorrhagic**. **Ischemic CVAs** result from lack of oxygenated blood flow to the neuronal tissue (ex: from an arterial blockage). **Hemorrhagic CVAs** result from sudden, spontaneous bleeding (ex: from a blood vessel/aneurysm rupture). Symptoms associated with CVAs are typically **unilateral** (one-sided), and can include: disorientation or unresponsiveness; dizziness; unilateral facial droop; unilateral vision loss; **dysphagia** (difficulty swallowing), **aphagia** (inability to swallow); drooling; unilateral focal weakness or paralysis; **ataxia** (lack of voluntary coordination of muscle movements); **dysmetria** (lack of coordinated movement); unilateral changes in sensation, including numbness, tingling, or **paresthesia** (abnormal dermal sensation); **aphasia** (difficulty formulating or comprehending words), and slurred speech. Symptoms typically onset suddenly. Hemorrhagic strokes that result from brain aneurysm rupture may also be associated with sudden-onset, 10/10 pain, "thunder clap," headache. CVAs in which symptoms resolve after 1 – 2 hours are termed **transient ischemic attacks (TIAs)**, or "mini strokes," addressed below). Strokes in which symptoms do not resolve within 1-2 hours may result in permanent damage, in which the above-described symptoms persist permanently. Hemorrhagic CVAs are diagnosed with CT scans of the brain. Ischemic strokes do not appear on CT scans until long term damage is evident. If an ischemic stroke is caught early enough and results from blood clotting that blocks blood flow, it may be treated with a powerful **thrombolytic called TPA** that may reverse the damage to the brain.
- Dementia:** Is marked by progressive development of multiple cognitive deficits such as memory impairment, aphasia, and inability to plan or initiate complex behavior. Alzheimer's disease the most common cause of dementia. Currently there is no cure and treatments aim to slow the progression of the disease to help those affected maintain their independence for as long as possible.



### SuperScribe APPICATION:

- **Ischemia** refers to deficient supply of blood to a body part (as the heart or brain) that is due to obstruction of the inflow of arterial blood (as by the narrowing of arteries).
  - **Transient** connotes temporary or “passing in time;” a transient ischemic attack (TIA) is one in which symptoms occur temporarily, and then pass or resolve.
  - **Hemorrhaging** refers to a copious discharge of blood from a blood vessel. A hemorrhagic CVA is one caused by the rupture of a blood vessel with bleeding into the tissue of the brain. Hemorrhagic CVAs are most commonly caused by brain aneurysm, an abnormal blood-filled dilation or ballooning of a blood vessel (especially an artery) resulting from weakening or disease of the vessel wall.
- 
- **Migraine:** A migraine is clinically defined as a chronic neurological disorder or condition marked by recurrent mild to severe headache pain that is focal and unilateral, often associated with several autonomic symptoms, including nausea and vomiting, **photophobia** (sensitivity to light) and **hyperacusis** (sensitivity to sound), and followed by sleep. Migraines are of uncertain origin, though attacks often appear to be precipitated by dilation of intracranial blood vessels, which may be prompted by stress. Migraines tend to occur in more than one member of a family, and many patients report having an **aura** (a subjective sensation – as of sound, smell, taste, or colored lights – experienced before an attack). Important exam findings include photophobia and **osmophobia** (sensitivity to smells).
  - **Seizure:** Seizures are characterized by temporary unresponsiveness or episodes of uncontrolled body movements due to underlying dysfunction of electrical impulses. Absence seizures are characterized by brief lapses in consciousness followed by confusion. Grand mal seizures are characterized by violent, uncontrolled body movements. Seizures can be a chronic condition treated with anti-seizure medications or they can be induced by chemical imbalance or injury in the brain. EEGs are useful in determining the cause of recurrent or chronic seizure conditions.
  - **Transient Ischemic Attack (TIA, “mini stroke”):** connotes an ischemic **CVA** in which partial blockage of the arteries of the brain cause temporary episodes of ischemia *that resolve*. Symptoms may resolve prior to the patient’s arrival to the clinic or medical facility; for this reason, TIAs may be diagnosed initially based on patient description of the incident.

Since a TIA indicates an ischemic process, it often predicts a more serious CVA; follow-up instructions are important.

- **Vertigo:** Vertigo constitutes sudden onset of dizziness described as a sensation of “the room spinning” that is worsened with head movement and positional changes. Vertigo can be an independent condition caused by a dysfunction of the inner ear, but is presented here, as it is often treated by a neurologist in the outpatient setting. The most common type of vertigo is **benign paroxysmal vertigo**, which is not dangerous and can be treated with medication. Stroke, infections, and diseases can also cause vertigo. Associated symptoms of vertigo include nausea and vomiting.
- ▶ On exam **Nystagmus**, a ticking movement of the eye, may be noted. Patients may also have a buildup of earwax, called **cerumen**. Treatment often involves use of the medication meclizine (which is also used to treat motion sickness) or other antiemetics (medications prescribed to treat nausea and vomiting).

## Psychological<sup>1,4,14</sup>

Psychological exams assess the patient’s mood, behavior, and environmental interactions. Usually this is performed during discussions between the physician and the patient.

Normal psychological exam findings include:

- Stable mood and affect (demeanor).
- Denies **suicidal ideation (SI)** or **homicidal ideation (HI)**.
- No sign of self-injury.
- Appropriate behavior.

## Common Psychiatric or Behavioral Disorders<sup>14,21</sup>

- **Anxiety:** Extreme worry, anxiousness and panic are all characteristic of anxiety. Patients usually present with complaints of having a panic attack, including hyperventilation, heart racing and paresthesia of the hands and around the mouth. Some may complain of shortness of breath and chest tightness. Some anxiety reactions may mimic cardiac complaints so proper documentation and diagnostic investigation is important. Treatment is usually anti-anxiety medication.



- **Depression:** Depression is a mood disorder that causes frequent or persistent sadness. Severity of depression is evaluated by a specialist and treatment is determined based on evaluation.
- **Psychosis and psychotic disorders** – Psychosis is defined by a break with reality. A patient may have an episode of psychosis or have a condition that causes frequent or persistent psychosis. Presentation may include hallucinations, paracusias, abnormal behavior including violence against themselves or others, depression, anxiety, confusion, introversion and mania. Diagnosis and treatment is usually performed by a specialist.
- **Substance abuse:** Alcohol and drug use can affect many parts of the body, but it directly affects the functioning of the brain. Alcohol decreases inhibitions, reaction time and motor function. Drugs alter the brain's function by changing the chemical signals in the brain creating altered perceptions. These perceptions can be euphoric or depressant. Those under the influence of drugs or alcohol may complain of hallucinations, **paracusia** (auditory hallucinations), depression, change in behavior and altered mental status.

## Immune System<sup>1,4,14</sup>

Immunology is not typically part of the physical exam, though aftermath from an immunological disorder may be found in any section of the body. Immunological disorders may include immunodeficiency diseases, autoimmune diseases, or typical immune responses that may cause additional harm. Immune responses are generally assessed through varying blood and skin tests.

## Common Immune Disorders<sup>14,21</sup>

- **Allergies:** Hypersensitivities to allergens, due to immune over-reactions, are referred to as allergies. Allergies can be as nonthreatening as reactions to pollen each spring, pet dander and allergic rhinitis. They can also become life threatening as with cases of peanut and shellfish allergies. In the more severe reactions the patient may have an anaphylactic or whole body reaction to an allergen. Symptoms of anaphylaxis include hives, wheezes, shortness of breath secondary to swelling of the airways, palpitations, nausea, vomiting, dizziness and loss of consciousness. Treatment of allergic reactions includes antihistamines. More severe reactions may be treated with steroids and epinephrine.
- **Autoimmune Disorders:** An autoimmune condition is one where the immune system attacks some part of the body as if it were a foreign molecule or cell. The results of

attack are usually inflammation, which, while effective in the cases of infection, can be damaging in chronic scenarios. This compromise in the immune system can also leave the body more open to outside infection. Common autoimmune disorders include rheumatoid arthritis where the joints of the body are affected destroying the cartilage (commonly the hands and feet) and lupus which is a condition that affects the entire body. Other autoimmune diseases include multiple sclerosis, a degeneration or loss of the protective sheath around nerves, ankylosing spondylitis, an arthritic disease that causes swelling of the spine and nerve damage and celiac disease, a condition where the ingestion of gluten leads to inflammation and damage to the digestive tract. Most common symptoms of autoimmune diseases are pain secondary to inflammation. Treatment includes pain management and steroids.

- **Sepsis:** Sepsis is defined as systemic infection, meaning that bacteria have entered the blood stream. A local infection such as a pneumonia or urinary tract infection can be the originating source of sepsis. In addition to whatever source specific symptoms the patient may have, sepsis can present with fever, chills, palpitations, shortness of breath, altered mental status and confusion. Treatment of sepsis includes hospital admission for IV fluid replenishment and antibiotics.

## Endocrine System<sup>1,4,14</sup>

The endocrine system is composed of glands and the hormones they produce. Through these hormones, function, metabolism, and development are regulated. Endocrine function is monitored with blood tests.

### Common Endocrine Disorders<sup>14,21</sup>

- **Diabetes Mellitus (DM)** – DM constitutes a group of metabolic disorders characterized by elevated blood glucose levels (**hyperglycemia**) over a prolonged period that result from insensitivity to- or lack of pancreatic production of the hormone insulin. Symptoms include excessive thirst (**polydipsia**), increased urinary output (**polyuria**), **urinary urgency and frequency**, increased hunger (hyperphagia), and weight changes. These primary symptoms may additionally be accompanied by blurred vision, fatigue, and poor wound healing.
  - ▶ Diabetes may be diagnosed in one of four ways: **fasting plasma glucose** levels  $\geq 7.0$  mmol/L (126 mg/dl); **glucose tolerance test** – in which plasma glucose increases to  $\geq 11.1$  mmol/L (200 mg/dl) 2 hrs after 75 g oral glucose challenge; **symptoms** of

hyperglycemia with causal plasma glucose of  $\geq 11.1$  mmol/L (200 mg/dL); **glycated hemoglobin (HgA1C)**  $\geq 48$  mmol/L ( $\geq 6.5$  DCCT%). Glycated hemoglobin (HgA1C) measures glucose attachment to hemoglobin in the blood and provides an indication of blood glucose levels over a 3-mo period. For this reason, HgA1C testing provides the most reliable diagnosis of DM, and is the method recommended by the American Diabetes Associates.

- ▶ Three types of DM exist. **Type I DM (DMI, “insulin-dependent DM,” IDDM, “juvenile DM”)** refers to a congenital disorder in which the  $\beta$ cells of the pancreas fail to produce insulin. DMI is typically diagnosed in childhood. Treatment includes **counseling** (a billable service) on blood glucose management through diet and **insulin therapy**. **Type II DM (DMII, “non-insulin-dependent DM,” NIDDM, “adult-onset DM”)** refers to an acquired disease in which cells throughout the body fail to properly respond to insulin. DMII is often diagnosed in adulthood, and treatment includes **counseling** (a billable service) on glucose management through diet and exercise as well as medications such as **Metformin** (in patients with proper kidney function). **Gestational Diabetes** represents a third type of DM that occurs when pregnant women without a previous history of DM develop elevated blood sugar levels. Gestational DM is diagnosed during pregnancy, often during **pregnancy screenings (a billable medical service)**. Gestational DM increases risk pregnancy complications. Treatment includes counseling on blood glucose management through diet and exercise, and may warrant oral blood glucose control medications or insulin therapy.



### SuperScribe Tip:

Treatment for all forms of Diabetes often includes counseling on blood glucose management through diet, exercise, and medication or insulin therapy. **Diabetes Management Counseling** constitutes a billable service that requires structured documentation (as addressed above and in Module III). As a Clinical Scribe, it is important to document Diabetes Management Counseling thoroughly and accurately to demonstrate the quality of care provided to the patient and ensure the counseling service meets documentation criteria to qualify for reimbursement by CMS and private insurance companies.

- ▶ Insulin is the hormone that regulates glucose uptake from the blood stream into cells. In diabetes, the lack of insulin production or effect results in a lack of glucose uptake from the blood into the cells. The result is that glucose is not taken up by cells,

but stays in the blood. Over time, the elevated blood glucose levels increase blood viscosity and prevent the flow of oxygenated blood to tissues throughout the body. This reduced blood flow can result in tissue ischemia and necrosis (cell death due to lack of oxygen, which is carried by the blood). The elevated levels of glucose in the blood can also cause vessel and nerve damage directly.

- **Hypogonadism:** Male hypogonadism is a condition in which the testes fail to produce an adequate amount of testosterone. In female hypogonadism, the amount of estrogen produced by the ovaries is insufficient. These conditions can result in the underdevelopment of gender specific characteristic and infertility. Patients are usually treated with hormone replacement therapy.
- **Hypothyroidism:** In hypothyroidism, the thyroid gland fails to produce enough hormone. This can result in fatigue, weight gain, weakness, and depression. Treatment is usually thyroid hormone replacement medications.

## Pediatrics<sup>1,4,14</sup>

Physical exams for children are addressed similarly to adults, though with some differences due to lack of bone fusion, differences in proportions, and varying susceptibility to certain conditions. Conditions related to head injuries, choking, and fever, are more prevalent in children than adults. In cases of child trauma, child abuse may need to be ruled out.

## Common Pediatric Disorders<sup>14,21</sup>

- **Airway Obstruction<sup>44</sup>:** Airway obstruction in children can derive from a variety of etiologies and can be acute, chronic, and even fatal. Common causes include: infection (of the epiglottitis, trachea, tonsils, mucous membranes, or systemically); foreign body (FB) ingestion, airway trauma; vocal cord dysfunction or paralysis; and a variety of diseases or deformities. Symptoms can include coughing, drooling, wheezing, and choking though patients may also present unresponsive due to hypoxia. Treatment typically involves removing the obstructing item either by hand, with specialized tools, Heimlich maneuver or surgery.
- **Croup:** Croup is caused by viral infection and is characterized by tracheal (and airway) narrowing. Although croup can affect adults as well as children, the decreased tracheal/airway size in children causes different and more severe symptoms. Children with croup develop a “barking” cough often described as “sounding like a seal.” Croup can be treated with cool mist breathing treatments, bronchodilators and steroids.

- **Drowning/ Near Drowning:** Drowning and near drowning occur most commonly in areas and temperatures that favor access to water (such as swimming pools, lakes, and bathing tubs). Drowning impairs respiration; as fluid fills the lungs hypoxia can result. Patients who present after a near drowning typically complain of chest pain, shortness of breath and sore throat. Treatment of near drowning entails observation and treatment of symptoms.
- **Febrile seizures:** Febrile seizures result from rapid increases in body temperature and are typically treated with acetaminophen and ibuprofen to decrease core body temperature and prevent future rapid body temperature spikes.
- **Foreign Body Ingestion**<sup>44-46</sup>: Most cases of foreign body (FB) ingestion occur in children < 5 y/o; 40% of cases are not witnessed and 50% are not symptomatic. Risks include airway obstruction, perforation (tearing) of GI tract, and poisoning. Associated symptoms may include coughing or gagging, drooling, wheezing, respiratory distress, dyspnea, fever, nausea, vomiting, and pain in neck, throat, chest, or stomach. When warranted, X-ray imaging may be used to identify the FB type and location and determine whether it may pass on its own or require endoscopic procedure. Coins are the most commonly ingested FB; ingestion of button batteries can be caustic and fatal.
- **Poisoning**<sup>47</sup>: Most poisonings in children are unintentional and occur in the home before the age of 5. Poisoning can occur through a variety of routes; however, ingestion, inhalation, and skin absorption are most common. Substances that commonly cause poisoning in children include: medications; household products and pesticides; carbon monoxide; plants; alcohol, nicotine, and illicit substances; hydrocarbons; batteries; and personal care products. Symptoms can range from rash, coughing, drooling, oral swelling, dyspnea, altered mental status (AMS), seizure, and unresponsiveness. Treatment often depends on the poison source but typically involves contacting the poison control center for recommendations. The patient may be observed for standard amounts of time; interventions may also be warranted.
- **Sudden Infant Death Syndrome (SIDS):** SIDS entails the unexplained death of seemingly healthy infants < 1 y/o. These unexplained deaths usually occur overnight; for this reason, SIDS is often referred to as “crib death.” Infants who have stopped breathing may be brought to the Emergency Department for resuscitation. On exam, the infant may appear pale or cyanotic and may have absent breath sounds. Cardiopulmonary resuscitation (CPR) will be utilized until the child is either resuscitated or until it is determined that no further action can be made.

## Review & Assessment

### Recommended Resources

1. Chowdhry SM, Mishuris RG, Mann D. Problem-oriented charting: A review. *Int J Med Inform.* 2017;103:95-102<sup>1</sup>.
2. Free Online Courses:
  - [https://study.com/articles/List\\_of\\_Free\\_Online\\_Medical\\_Terminology\\_Courses\\_and\\_Classes.html](https://study.com/articles/List_of_Free_Online_Medical_Terminology_Courses_and_Classes.html)
3. Resource Tab of the CSAT Website ([www.scribeACCELERATOR.com](http://www.scribeACCELERATOR.com))
4. Pease RW, *Merriam-Webster's Medical Dictionary*. Merriam-Webster Inc.; 2006
5. Runge MS, Greganti MA. *Netter's Internal Medicine, 2<sup>nd</sup> edition*. Illustrated by Frank H. Netter. Philadelphia, PA: Saunders Elsevier; 2009
6. Wikipedia, The Free Online Encyclopedia. <https://www.wikipedia.org>

### Review

Below, we provide a “Review Outline” for all pathologies, including pertinent normal physical exam findings and terms, along with common differential diagnoses and related terminology reviewed in this chapter.

Appendices III – V provide additional information on medical documentation for chief complaints that are common to the family practice setting (Appendix A.IV)

## Assessment

As you review the outline below, take responsibility for your own assessment by writing in brief descriptions for each of the pathologies, diagnoses, or terms presented that you are not yet familiar with. Can you provide a one-sentence description for each term? If not, look up that term's definition and record this next to the term as it appears below.

**You will be held responsible for familiarizing yourself with this critical terminology as part of your CSAT assessment.**

### Directional Terminology:

- Distal:
- Proximal:
- Medial:
- Lateral:
- Superior:
- Inferior:
- Anterior (Caudal):
- Posterior (Dorsal):

### Routine Examination:

- Annual Health Assessment (AHA):
- Annual Physical Examination (APE):
- Annual Wellness Visit (AWV):
- Well Child Check (WCC):
- Wellness Woman Examination (WWE):

### Preventative Care:

- Abdominal X-ray:
- Colonoscopy:
- Dual Energy X-Ray Absorptiometry (DEXA) Scan:
- Fecal Occult Blood Test (FOBT):

- Immunizations/Vaccinations:
  - ▶ Influenza (Flu shot):
  - ▶ Pneumonia series:
    - Pevnar 13:
    - Pneumovax 23:
  - ▶ Shingles vaccination:
    - Zostavax:
    - Shingrix:
  - ▶ Tetanus-Diphtheria (Tdap):
- Mammogram:
- Papanicolaou (PAP):
- Patient Health Questionnaire – 2 (PHQ-2):
- Patient Health Questionnaire – 9 (PHQ-9):
- Physical Examination (PX) / Annual Physical Examination (APE):
- Prostate Specific Antigen (PSA) Testing:
- Routine Laboratory Studies (Routine Labs):
- Well Child Check (WCC):
- Wellness Woman Examination (WWE):

**General/Constitutional:**

Normal Exam Findings:

- NAD:
- Afebrile:

Common Constitutional Disorders:

- Fever:
  - ▶ Internal body temperature  $\geq 100.4^{\circ}$
  - ▶ Indicative of infection
  - ▶ Diaphoresis, aches, chills



- Malaise:
- Weight Changes:

**Head, Eyes, Ears, Nose, Throat (HEENT):**

Normal HEENT Exam Findings:

- NC/AT:
- PERRL/PERRLA:
- EOMI:
- TMs intact bilaterally:
- No bulging, erythema:
- MMM:
- Normal Pharynx:

Common HEENT Disorders:

**Head:**

- Cephalgia (HA):
  - ▶ Photophobia (sensitivity to light)
  - ▶ Osmophobia (sensitivity to odors)

**Eyes:**

- Conjunctivitis (“pink eye”):
- Corneal Abrasions:
  - ▶ Foreign body (FB)
  - ▶ Fluorescein Exam

**Ears:**

- Tinnitus:
- Otitis:
  - ▶ Externa (“Swimmer’s Ear”)
  - ▶ Media

- ▶ Interna (“Labyrinthitis”)
- ▶ Tympanic Membranes (TMs)

**Nose:**

- Sinusitis:
  - ▶ Epistaxis (“nosebleed”)

**Throat:**

- Pharyngitis:
  - ▶ Strep Throat
- Tonsillitis:
  - ▶ Oropharynx
  - ▶ Peritonsillar Abscess
- Upper Respiratory Infection (URI, “common cold”):
  - ▶ Rhinorrhea (“runny nose”)
  - ▶ Post-nasal drip
  - ▶ Sputum (phlegm)

**Chest: Heart and Lungs**

**Cardiac:**

Normal Cardiac Exam Findings:

- **RRR:**
- No murmurs, rubs, or gallops:
- No extremity **edema**:
- No carotid **bruit**:
- No **JVD**:
- 3+ pedal pulses:

Common Cardiac Disorders:

- Myocardial Infarction (MI, “heart attack”):
  - ▶ Diagnosed by EKG
  - ▶ STEMI: MI with ST-wave elevation on EKG
- Congestive Heart Failure (CHF):
  - ▶ JVD:
- Coronary Artery Disease (CAD):
  - ▶ Cardiac Risk Factors:
- Atrial Fibrillation (A-Fib):
  - ▶ Diagnosed on EKG
  - ▶ A-Fib with Rapid Ventricular Rate (RVR) may require cardioversion
  - ▶ Treatments include medication administration, defibrillation, cardioversion
- Carditis:
  - ▶ Includes: myocarditis, pericarditis, endocarditis
- Cardiomegaly:
  - ▶ Risk Factors: HTN, prolonged stress
  - ▶ Diagnosed by CXR

**Respiratory:**

Normal Respiratory Exam Findings:

- Equal lung sounds bilaterally:
- No wheezes, **rales**, **rhonchi**:
- No accessory muscle use:

Common Respiratory Disorders:

- Asthma:
  - ▶ Bronchodilator Treatment
- Chronic Obstructive Pulmonary Disease (COPD):
- Pneumonia:
  - ▶ Community Acquired Pneumonia (CAP) with specific treatment protocols
- Bronchitis:

**Abdomen (Gastrointestinal System):**

Normal Gastrointestinal (GI) Exam Findings:

- Abdomen is soft and non-tender:
- No **guarding** or **rebound tenderness**:
- No **organomegaly**:
- Normal bowel sounds:
- No abdominal distension:
- Good rectal tone:

Common Abdominal/Gastrointestinal Disorders:

- Gastroesophageal Reflux Disease (GERD):
- Gastritis:
  - ▶ *H. Pylori* infection may warrant antibiotic treatment
- Peritonitis:
- Cirrhosis:
- Cholelithiasis:
  - ▶ Diagnosed by CT Scan
- Diverticulosis:
  - ▶ Diverticulosis vs. Diverticulitis (inflamed diverticula)

- Hernia:
  - ▶ May be reducible on exam
- Gastroenteritis (“stomach flu”):
- Constipation:
  - ▶ May be treated with rectal enema
- Hemorrhoids:

### Genitourinary (GU) System: Kidneys, Ureter, Bladder (KUB) and Genitals:

Normal Male GU Exam:

- No **torsion**:
- Normal external genitalia. No swelling. No masses or abnormalities. No tenderness.:

Common Male GU Disorders:

- Testicular Torsion:
  - ▶ 6-hour window for treatment before risk of necrosis (tissue death)
- Epididymitis:
- Balanitis:
- Phimosis:
  - ▶ Phimosis vs Paraphimosis:

Normal Female GU Exam:

- Normal external genitalia:
- No **chandelier sign** or **cervical motion tenderness (CMT)**:
- No adnexal masses:
- No blood in the vaginal vault:

Common Female GU Disorders:

- Pelvic Inflammatory Disease (PID):
  - ▶ CMT or Positive Chandelier Sign on exam

- Vaginitis:
  - ▶ Pelvic Exam required for diagnosis
- Ovarian Torsion:
  - ▶ Risk for tissue death
- Ovarian Cyst(s):
- Ectopic Pregnancy:
  - ▶ Unviable
  - ▶ Risk for rupture
- Fibroids:

Other GU Disorders (Non-Gender-Specific):

- Urinary Tract Infection (UTI):
  - ▶ Pertinent positive or negative symptoms: **dysuria, hematuria, urinary urgency or frequency**, fever.
  - ▶ Diagnosed by urinalysis (UA)
- Pyelonephritis:
- Renal Lithiasis:
  - ▶ Diagnosed by CT Scan
- Sexually Transmitted Diseases (STDs):
  - ▶ Bacterial: Syphilis, Chlamydia, Trichomoniasis and Gonorrhea can be treated with antibiotics
  - ▶ Viral: Genital Herpes, Human Immunodeficiency Virus (HIV) may be treated symptomatically, but not cured.

**Extremities/Musculoskeletal System:**

Normal Musculoskeletal Exam:

- **NL ROM/AROM/FROM:**
- NL gait; no **antalgia**:

- No **crepitus**:
- No midline or **bony point tenderness**:

#### Common Musculoskeletal Disorders:

- Strain/Sprain:
  - ▶ May require splint application
- Fracture:
  - ▶ May require splint application
- Dislocation:
  - ▶ May require procedural reduction
- Osteoporosis:
- Muscular Dystrophy (MD):
- Tetanus:
  - ▶ Pertinent positive or negative symptoms include: muscle spasm or tension, **dysphagia**, fever, **nuchal rigidity**, **trismus**, extremity stiffness, limited ROM.

#### Skin/Integumentary System:

##### Normal Skin Exam:

- Warm, dry, no **pallor** or **diaphoresis**:
- No **abscesses** or **lesions**:
- No **abrasions** or **lacerations**:
- No swelling or **induration**:

##### Common Skin Disorders:

- Dermatitis:
  - ▶ May be classified as contact vs. allergic dermatitis
- Urticaria:
  - ▶ Wheals ("hives").

- Petechia:
- Psoriasis:
  - ▶ Treated with topical corticosteroids, or with PO or IM medications
- Fungal Infection:
- Abscesses:
  - ▶ May be treated with procedural Incision & Drainage (I&D)
- Cellulitis:
  - ▶ Common associated symptoms: **erythema**, warmth, **induration**, fever
  - ▶ Affected area may be demarked to track progression during treatment
- Decubitus Ulcers (“Bed Sores”):
  - ▶ Categorized as stage 1-4 based on severity
- Contusion:
- Laceration:
  - ▶ Treatment may include procedural laceration repair

### Neurology: Nervous System:

Normal Neurological Exam:

- **A&Ox3:**
- **CNII-XII intact:**
- **DTRs 2/4 bilaterally:**
- 5/5 strength in all extremities:
- **FROM/AROM:**
- No focal or sensory deficits.:
- **NL FNF** and **heel-to-shin tests:**
- Steady gait:



Common Neurological Disorders:

- Seizure:
  - ▶ May be secondary to seizure disorders such as epilepsy, medication non-compliance, or withdrawal syndrome from substance abuse
  - ▶ May be preceded by aura, followed by postictal period
  - ▶ Concern for bitten tongue
- Cerebrovascular Accident (CVA, “stroke”):
  - ▶ Pertinent positive or negative associated symptoms include: **facial droop, unilateral focal weakness** or paralysis, **gaze preference**, slurred speech, **aphasia, dysphagia, ataxia, dysmetria**, vision changes, unresponsiveness.
  - ▶ Hemorrhagic CVAs diagnosed by CT Scan; Ischemic CVAs do not appear on CT
  - ▶ Treatment includes TPA administration
- Dementia:
  - ▶ Most common form is Alzheimer’s Disease (AD)

**Psychology: Behavioral Health**

Normal Psychological Exam:

- Stable mood and affect:
- Denies **SI** or **HI**:
- No sign of self-injury:
- Appropriate behavior:

Common Psychological Disorders:

- Depression:
- Anxiety:
  - ▶ Pertinent positive or negative associated symptoms: shortness of breath, hyperventilation, paresthesia, heart racing, chest tightness.

- Substance Abuse:
  - ▶ Pertinent positive or negative findings: **delirium tremens**, withdrawal seizures, hallucinations, **paracusia**, altered mental status.
- Psychosis, psychotic disorders:
  - ▶ Pertinent positive or negative findings: hallucinations, **paracusia**, confusion, altered mental status, depression, mania, introversion.

### Immunology – The Immune System:

Common Immunological Disorders:

- Sepsis:
  - ▶ Requires hospitalization, IV antibiotics
- Allergies:
  - ▶ Anaphylactic
  - ▶ Anaphylactic Shock
  - ▶ Antihistamine treatment
- Autoimmune Disorders:
  - ▶ Includes: Rheumatoid Arthritis (RA), Lupus, Multiple Sclerosis (MS), Ankylosing Spondylitis, Arthritis, Celiac Disease.

### Endocrinology – The Endocrine System:

Common Endocrine Disorders:

- Diabetes Mellitus (DM):
  - ▶ Type I: Insulin-Dependent Diabetes (IDDM, DM Type I)
  - ▶ Type II: Non-Insulin Dependent diabetes (NIDDM, DM Type II)
  - ▶ Diabetes Insipidus
- Hypothyroidism:
- Hypogonadism:

## Pediatrics:

### Common Pediatric Diagnoses:

- Poisoning:
  - ▶ Poison Control Center will be contacted for treatment recommendations
- Airway Obstruction:
  - ▶ May require Heimlich maneuver to remove FB
- Febrile Seizures:
  - ▶ Caused by rapid increase in body temperature (speed of increase, not amount of increase)
- Sudden Infant Death Syndrome (SIDS):
  - ▶ Pertinent exam finding may include cyanosis
  - ▶ May require cardiopulmonary resuscitation (CPR)
- Croup:
  - ▶ Viral infection; children are affected due to small airway size
  - ▶ Pertinent finding: barking “croupy” cough, consistent with croup
- Drowning / Near Drowning / Dry Drowning:

A person wearing a blue lab coat and white gloves is holding a test tube containing a red liquid. The person is also holding a small vial or pipette tip near the test tube. The background is a blurred laboratory setting with various equipment and containers.

9

## Diagnostic Laboratory Studies

# Laboratory Studies

Laboratory studies such as tests performed on blood or other bodily fluids or tissues provide important **objective information** that aid the provider's **medical decision making** process, often enabling the provider to rule out unlikely diagnoses from the **differential diagnosis** to arrive at a **definitive diagnosis**.

Many electronic health record (EHR) systems automatically import laboratory findings into a patient's electronic medical record (EMR); however, as a medical scribe, you will be responsible for ensuring laboratory findings are accurately imported into each patient's EMR in a timely manner (the importance of this function may vary according to clinical setting and specialty). Depending on the EHR your facility uses, you may additionally be required to manually enter abnormal laboratory findings into the provider note. You will also be responsible for alerting your provider upon the return of important laboratory studies.

By familiarizing yourself with the various laboratory studies your provider may order – and by familiarizing yourself with the different indications of abnormal values for particular studies – you can greatly assist your provider in providing timely patient care.



## SuperScribe Tip: Normal Range Values for Laboratory Studies Vary by Facility

For the diagnostic studies outlined below, we have provided normal ranges for the different components in each of the different studies. These “normal range” parameters are based on those identified by the National Board of Medical Examiners (NBME)<sup>13</sup>, as well as other sources<sup>14-16</sup>. However, each facility and institution typically provides its own individual guidelines on the range parameters that are considered normal.

- Check with your Scribe Supervisor or provider to identify the normal ranges that your provider(s) or facility use.

## Blood Tests

### Complete Blood Count (CBC)<sup>14-16,21</sup>

A **blood count** is used to determine the number of differentiated blood cell types in a definite volume of blood. A **Complete Blood Count (CBC)** includes separate counts for red and white blood cells in a definite volume of blood. The cell types determined in a complete blood count are identified briefly below, along with their normal ranges and pathological indications.

Item	Normal Range <sup>13-16</sup>	Indications <sup>14-16</sup>
<b>Red Blood Cells (RBCs)</b>	4.5 - 5.5 ( $\times 10^6$ /mL)	Low RBCs can indicate blood loss or internal bleeding.
<b>Hemoglobin (HGB)</b>	12.0 - 16.5 (g/dL)	Low levels of <b>HGB &amp; HCT (H&amp;H)</b> can indicate anemia.
<b>Hematocrit (HCT)</b>	36 - 50 (%)	
<b>Platelets</b>	10 - 45 ( $\times 10^4$ )	Low levels indicate thrombocytopenia and risk for hemorrhage.
<b>White Blood Cells (WBCs)</b>	4,500 - 10,000 (cells/mL)	Elevation indicates infection.

### Differential Blood Count (“CBC with Diff”)<sup>14-16,21</sup>

When a **differential blood count** is added to the CBC, the study is termed a “**CBC with diff**,” and includes separate counts for each type of white blood cell<sup>21</sup>. The cell types and indications associated with a differential blood count are identified briefly below.

Item	Normal Range <sup>13-16</sup>	Indications <sup>14-16</sup>
<b>Segmented Neutrophils</b>	54 - 62%	Elevation indicates inflammatory processes that are often <b>bacterial</b> in nature.
<b>Band Form Neutrophils</b>	3 - 5%	Band neutrophils are young developing WBCs that indicate WBC production and infection. This is termed a “ <b>left shift</b> .”
<b>Basophils</b>	0 - 1 (0 - 0.75%)	Elevation can indicate inflammatory and <b>allergic responses</b> .
<b>Eosinophils</b>	0 - 3 (1 - 3%)	Elevation can indicate <b>parasitic infection</b> .
<b>Lymphocytes</b>	24 - 44 (25 - 33%)	Elevation can indicate <b>chronic infection or inflammation</b> .
<b>Monocytes</b>	3 - 6 (3 - 7%)	Elevation can indicate various inflammatory or disease states, including <b>mononucleosis (“mono”)</b> .



## Basic Metabolic Panel (BMP)<sup>14-16,21</sup>

A **Basic Metabolic Panel (BMP)** includes basic electrolyte or metabolite levels in the blood.

Item	Normal Range <sup>13-16</sup>	Abnormal indications <sup>14-16</sup>
<b>Sodium</b>	137-147 mmol/L	<b>Hyponatremia</b> (low sodium) can indicate fluid loss (as occurs in excessive vomiting or diarrhea), or dehydration.
<b>Potassium</b>	3.4-5.3 mmol/L	<b>Hypokalemia</b> (low potassium) can indicate fluid loss (as occurs in excessive vomiting or diarrhea), and can cause <b>seizures</b> and <b>arrhythmias</b> .
<b>Chloride</b>	99-108 mmol/L	<b>Hypochloremia</b> can indicate fluid loss secondary to excessive vomiting or diarrhea, and dehydration.
<b>CO<sub>2</sub></b>	22-29 mmol/L	CO <sub>2</sub> provides a pH buffer in the blood. Elevated levels can indicate blood pH abnormalities that can occur from: breathing problems such as hyperventilation or COPD; prolonged vomiting; hypokalemia; excessive diuretic or antacid intake; various hormone conditions.
<b>Calcium</b>	8.7-10.7 mmol/L	<b>Hypocalcaemia</b> can indicate fluid loss and can affect neurological functioning.
<b>Glucose</b>	60-100 mmol/L	Elevation is termed <b>hyperglycemia</b> and occurs naturally after food intake but can also occur in <b>diabetes</b> onset or complications. Decline is termed <b>hypoglycemia</b> .
<b>Blood Urea Nitrogen (BUN)</b>	8-21 mmol/L	BUN and Creatinine levels tend to coincide; elevation indicates renal insufficiency.
<b>Creatinine</b>	0.65-1.2 mmol/L	

## Comprehensive Metabolic Panel (CMP)<sup>14-16,21</sup>

A **Comprehensive Metabolic Panel (CMP)** includes all of the results of a BMP, along with **Liver Function Tests (LFTs)**. Elevation of these tests indicates **hepatic stress** or **liver failure**.

Item	Normal Range <sup>13-16</sup>	Item	Normal Range <sup>13-16</sup>
<b>Albumin</b>	3.5 - 5.0 g/dL	<b>AST</b>	3-44 units/L
<b>Alkaline Phosphatase</b>	30 - 125 units/L	<b>Bilirubin</b>	0.2-1.3 mg/dL
<b>ALT</b>	0 - 40 units/L	<b>eGFR</b>	> 60 ml/min/1.73 m <sup>2</sup>

## Estimated Glomerular Filtration Rate (eGFR)<sup>14-16,21</sup>

The estimated **glomerular filtration rate (eGFR)** measure the level of kidney function and determines the stage of kidney disease (I-V). The eGFR differs for African-Americans so be attentive to the proper GFR value. Below lists the stages of **Chronic Kidney Disease (CKD)** which would be properly determined based on eGFR, creatinine and **urinalysis (UA)** results.

- Stage I: > 90 ml/min/1.73 m<sup>2</sup>
- Stage II: 60 – 89 ml/min/1.73 m<sup>2</sup>
- Stage III: 30 – 59 ml/min/1.73 m<sup>2</sup>
- Stage IV: 15 – 29 ml/min/1.73 m<sup>2</sup>
- Stage V: < 15 ml/min/1.73 m<sup>2</sup> (aka **End Stage Renal Disease (ESRD)**/Kidney Failure)

## Lipid Panel<sup>14-16,21</sup>

A **lipid panel** assesses levels of lipids in the blood, including **cholesterol**, **high-density lipoprotein (HDL, “healthy cholesterol”)**, **low-density lipoprotein (LDL, “unhealthy cholesterol”)**, and **triglycerides**. Elevation in any of these lipid levels is termed “**hyperlipidemia**,” and can place a patient at risk for a variety of other diseases, such as **hypertension (HTN)** and **coronary artery disease (CAD)**. In patients found to have elevated lipid levels on a lipid panel, a provider may choose to provide a general diagnosis of hyperlipidemia, or the provider may choose to provide a more specific diagnosis, indicating which lipid levels were outside of the normal range.

Item	Normal Range <sup>13-16</sup>	Item	Normal Range <sup>13-16</sup>
<b>HDL</b>	< 40 mg/dL	<b>Cholesterol</b>	<200 mg/dL
<b>LDL</b>	<130 mg/dL	<b>Triglyceride</b>	30-149 mg/dL

Diagnoses that specify which lipids are elevated in the blood include:

- **Dyslipidemia:** Elevated LDL, Decreased HDL
- **Hypercholesterolemia:** Elevated cholesterol only
- **Hypertriglyceridemia:** Elevated triglyceride only
- **Mixed Hyperlipidemia:** Elevated triglyceride and cholesterol levels



## Coagulation Tests<sup>14-16,21</sup>

**Coagulation tests** consist of the **xProthrombin Time (PT)**, **activated partial thromboplastin time** and **International Normalized Ratio (INR)**. The INR is a standardized test used to monitor the levels of a blood thinner called **Coumadin**. Elevations in these laboratory studies indicated risk for hemorrhage. An individual not taking Coumadin usually has an INR of 1<sup>13-16</sup>.

Item		Item	Normal Range <sup>13-16</sup>
PT	9.5 –	eGFR	> 60 mL/min/1.73 m <sup>2</sup>
PTT	23 – 3		
INR	0.83 -1.20		

## Pancreatic Enzymes: Lipase & Amylase<sup>14-16,21</sup>

**Lipase & Amylase** are two enzymes secreted by the pancreas; elevation can indicate **pancreatitis**. Lipase is a more accurate indication of pancreatitis, and is more widely accepted.

Item	Normal Range <sup>13-16</sup>
Amylase	25 - 100 units/L
Lipase	10 - 52 units/L

## C-Reactive Protein (CRP) and Sedimentation Rate (Sed Rate)<sup>14-16,21</sup>

**C-Reactive Protein (CRP)** is a protein synthesized by the liver and secreted into the bloodstream to initiate an inflammatory response. An elevated CRP indicates inflammatory and infectious processes.

The **Sedimentation Rate (Sed Rate)** measures the rate at which red blood cells (RBCs) **sediment (settle)** into the bottom of a tube within one hour; this rate is assessed by measuring the percentage of RBC sedimentation, and indicates inflammation. When the body initiates an inflammatory response, proteins in the blood – such as CRP – cause RBCs to coagulate and sediment more quickly.

Item	Abnormal Indications <sup>14-16</sup>
C-reactive Protein (CRP)	Elevation indicates inflammation and infection.
Sedimentation Rate (Sed Rate)	Elevated Sed Rate typically accompanies an elevated CRP level, and indicates inflammation and infection.

## Stress Hormone Levels<sup>14-16,21</sup>

The endocrine/hormone section in Chapter 8 of this module discusses various hormonal processes and pathologies that can present in the Family Practice setting. Specific stress hormone levels can be assessed in blood studies, and are most usually ordered to diagnose stress hormone disorders such as hyperthyroidism (elevated T4 TSH), hypothyroidism (decreased T4 and TSH), or chronic fatigue syndrome.

Item	Normal Range <sup>13-16</sup>	Abnormal Indications <sup>14-16</sup>
<b>Thyroid Stimulating Hormone (TSH)</b>	0.350 - 4.0 $\mu$ IU/ml	Elevated levels indicate hypothyroidism; low TSH levels can indicate hyperthyroidism or elevated intake of thyroid medications.
<b>Serum Triiodothyronine (Total T3)</b>	80 – 180 ng/dl	Elevated thyroid hormones (T3, T4) indicate hyperthyroid; low levels indicate hypothyroid.
<b>Free Thyroxine (Total T4)</b>	0.7 – 1.9 ng/dl	
<b>Thyroid peroxidase antibodies (TPO)</b>	<35 IU/mL	Autoimmune disorders, such as Hashimoto's disease or Grave's disease
<b>Cortisol</b>	10 – 20 ug/dl in am; 3 – 10 ug/dl in pm	Abnormalities can indicate stress disorders such as chronic fatigue syndrome, Cushing syndrome, or Addison's disease.

## Sex Hormone Levels<sup>14-16,21</sup>

A provider may choose to evaluate sex hormone levels, either individually or in a panel. These may include: **human chorionic gonadotropin (HCG)**, which may be assessed in the urine or blood to diagnose pregnancy); **estrogen**; **progesterone**; **testosterone**; **prolactin**; **luteinizing hormone (LH)**, and/or **follicle stimulating hormone (FSH)**.

Item	Normal Range <sup>13-16</sup>	Indications <sup>14-16</sup>
<b>Qualitative HCG</b> <b>(Urine Pregnancy Test)</b>	Negative or <0	Human Chorionic Gonadotropin ( <b>HCG</b> ) is associated with pregnancy. It's presence in the urine can assess pregnancy.
<b>Quantitative β-HCG</b> <b>(Serum HCG)</b>		A <b>Quantitative HCG</b> provides the exact level of HCG present in the blood and can be used to track progress of pregnancy.
<b>Estradiol/Estrogen</b>	Varies by gender and according to menstrual phase for females	Abnormalities may indicate menopause, dysmenorrhea, or hormone disorders.
<b>Progesterone</b>		
<b>Testosterone</b>	270–1070 ng/dl (males) 15 – 70 ng/dl (females)	Abnormalities may indicate congenital adrenal hyperplasia (CAH).
<b>Prolactin</b>	2 – 18 ng/mL (males) 2 – 29 ng/mL (nonpregnant) 10 – 209 (pregnant females)	Increased levels associated with recent pregnancy or birth. Abnormalities can also indicate hormone disorders.
<b>Luteinizing Hormone (LH)</b>	Varies by gender and according to menstrual phase for females	Abnormalities can indicate disrupted hormone regulation.
<b>Follicle Stimulating Hormone</b>	Varies by age and gender	

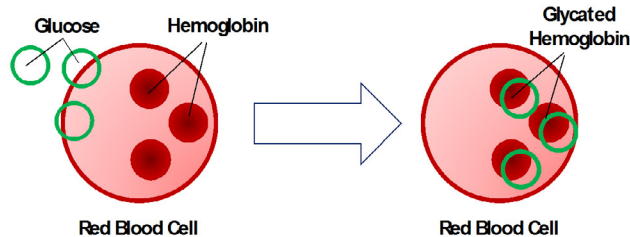
## Hemoglobin A1C (HGB A1C)<sup>14-16,21</sup>

The **HGB A1C** study examines blood glucose level fluctuations over a 3-month period. This test can be useful in determining if a patient has well-controlled or uncontrolled blood glucose levels, especially in conditions such as diabetes. **The normal range for HGB A1C is 3.9-6.4%.**

Item	A1c Ranges <sup>13-16</sup>
Normal	3.9 – 5.6 %
Prediabetes	5.7 – 6.4 %
Diabetes	> 6.5 %
Controlled DM for <65 y/o	< 7.0 %
Controlled DM for >65 y/o	< 9.0 %

## Glycated Hemoglobin (Hgb A1C) & Diabetes

- 1 RBC lives ~120 days
- HGB: contained in the RBC
- Glucose (sugar) enters bloodstream and the RBC



- HGB naturally binds glucose
- Binding creates **glycated HGB (Hb A1C)**

Fig adapted from: <https://goo.gl/images/VzQxMU>

## Uric Acid<sup>14-16,21</sup>

**Uric acid** is produced by the breakdown of purines from food. An elevated uric acid level with clinical presentation of painful, swollen joints may indicate **gout** (a metabolic disease marked by painful inflammation of the joints and elevated uric acid levels). **The normal range for uric acid is 3.5-7.7 mg/dL in males and 2.6-6.8 mg/dL in females.**

## Urine Studies

### Urinalysis (UA)<sup>14-16,21</sup>

A **urinalysis (UA)** provides a quantitative assessment of various cells and molecules that may be present in the urine. A urine sample may be obtained for urinalysis in one of two ways: by “**clean catch**” methodology (in which the patient pro-

vides a sample of urine by urinating into a cup), or through **catheterization** (in which a catheter is inserted into the ureter to obtain a pure sample of urine from the bladder. Although clean catch methodology is the less invasive and the preferred method for providing a urine sample, it poses risk for contamination through epithelial skin cells, or external bacteria; for this reason, the method of obtaining a urine sample for urinalysis should always be documented and noted.

The presence of **white blood cells (WBCs)** in the urine typically indicates a urinary tract infection (UTI). The presence of **red blood cells (RBCs)** in the urine may confirm **hematuria** (blood in the urine), and may indicate infection or kidney stone; hematuria may also indicate menses in a menstruating female patient. The presence of **glucose and ketones** in the urine may indicate **ketoacidosis**. **Protein** in the urine may indicate renal failure or muscle breakdown.



#### SuperScribe Tip:

A “**urine dip**” is a **point of care (POC)** urinalysis performed to determine the qualitative presence or absence of certain molecules in the urine.

Urinalysis Finding	Indication <sup>13-16</sup>
<b>White Blood Cells (WBCs)</b>	Infection: <ul style="list-style-type: none"> <li>• Urinary Tract Infection (UTI)</li> <li>• Bladder Infection (cystitis)</li> <li>• Kidney Infection (Pyelonephritis)</li> </ul>
<b>Red Blood Cells (RBCs)</b>	Hematuria (blood in the urine) Infection, Cancer Enlarged Prostate (males) Kidney or Bladder Stone Menstruation (females)
<b>Ketones</b>	Ketoacidosis Diabetic Ketoacidosis (DKA)
<b>Protein</b>	Proteinuria Kidney Disease/Renal Failure Muscle Breakdown

## Urine Drug Screen (UDS)<sup>14-16,21</sup>

A **urine drug screen** may be obtained to rule out pharmacological causes such as drug abuse or medication noncompliance.

## Urine Pregnancy Test (UPT)<sup>14-16,21</sup>

**Qualitative Beta HCG:** As indicated previously, a qualitative (positive or negative) Beta-type Human Chorionic Gonadotropin (HCG) assessment – also called a **Urine Pregnancy Test (UPT)** – provides a qualitative assessment of the hormone B-HCG in the urine, indicative of pregnancy.

# Additional Laboratory Studies

## ACCU-Check<sup>14-16,21</sup>

An **ACCU-Check** measures the blood glucose level to test for diabetes and hyper/hypoglycemia.

## Hemocue<sup>14-16,21</sup>

A **hemocue** machine measures the hemoglobin level to test for anemia.

## Influenza A/B Antigen (“Flu Swab”)<sup>14-16,21</sup>

An **Influenza swab**, also called a **flu swab** tests for the presence of the Influenza A or B antigen; antigen presence indicates viral infection of influenza A or B respectively. A swab with a sample of either nasal or oropharyngeal mucus is tested for antigen presence.

## Rapid Strep Swap<sup>14-16,21</sup>

A **rapid strep assessment** is used to determine the presence of Streptococcal bacteria in the oropharynx. A swab is used to collect a sputum sample from the oropharynx.

## Wet Mount<sup>14-16,21</sup>

A **wet mount** provides an assessment of vaginal discharge or mucus obtained during a pelvic examination. This laboratory study identifies the presence of yeast, bacteria, trichomonas, and clue cells that can indicate infection. A normal examination is negative, showing none of these microorganisms.

## Cultures<sup>14-16,21</sup>

A “**culture**” refers to a sample (of blood, urine, sputum, or other bodily substances) that is placed or incubated in a petri dish to observe microorganism growth and sensitivity to certain antibiotic interventions in order determine a pharmacotherapeutic treatment plan.

Cultures may be ordered on a variety of body fluid types, as shown below. Two to three sets of cultures may be ordered per specimen; some indications that various cultures may provide are identified below.



### SuperScribe Tip:

If a UA or CBC returns positive for bacteria, the sample (of urine or blood, respectively) may be cultured to identify the type of bacteria present in the urine or blood; this will enable the provider to determine the type of antibiotic to prescribe for treating the infection.

Sample	Indications <sup>14-16</sup>
<b>Stool Cultures</b>	Infectious process of the intestines
<b>Urine Cultures (UC)</b>	UTI
<b>Sputum Cultures</b>	Pneumonia
<b>Blood Culture (BC)</b>	Sepsis
<b>Incision &amp; Drainage (I&amp;D) Cultures</b>	Bacterial infection/Abscess
<b>Wound Cultures (WC)</b>	Suspected Infection

## Review & Assessment

### Recommended Resources

1. National Board of Medical Examiners (NBME). Laboratory Values<sup>15</sup>.
  - <https://www.nbme.org/pdf/subjectexams/labreferencevalues.pdf>

### Review

1. For the diagnostic studies outlined in this chapter, we have provided normal ranges for the different components in each of the different studies. These “normal range” parameters are based on those identified by the **National Board of Medical Examiners (NBME)**<sup>15</sup>, as well as other sources<sup>16-18</sup>.
  - Each facility and institution typically provides its own individual guidelines on the range parameters that are considered normal. Check with your Scribe Supervisor or provider to identify the normal ranges that your provider(s) or facility use.
  - Most electronic health record systems (EHRs) automatically identify laboratory values that are outside of the normal range.
  - It may be helpful to review the NBME guidelines for normal laboratory values: <https://www.nbme.org/pdf/subjectexams/labreferencevalues.pdf>.
2. Laboratory studies reviewed in this chapter include<sup>6,16-18</sup>:
  - **Complete Blood Count (CBC)**: used to determine the number of different blood cell types in a definite volume of blood. Includes separate counts for red and white blood cells in a definite volume of blood.
  - **Differential Blood Count (“CBC with Differentials/Diff”)**: CBC that includes separate counts for each type of white blood cell.
  - **Basic Metabolic Panel (BMP)**: Includes basic electrolyte or metabolite levels in the blood.
  - **Comprehensive Metabolic Panel (CMP)**: BMP that includes **Liver Function Tests (LFTs)**.
  - **Estimated glomerular filtration rate (eGFR)**: Measures the level of kidney function and determines the stage of kidney disease (I-V).
  - **Lipid panel**: Assesses levels of lipids in the blood, including: **cholesterol**; **high-density lipoprotein (HDL**, “healthy cholesterol”); **low-density lipoprotein (LDL**, “unhealthy



cholesterol”); **triglycerides**. Elevation in any lipid levels is termed “**hyperlipidemia**,” and can place a patient at risk for a variety of other diseases, such as **hypertension (HTN)** and **coronary artery disease (CAD)**. Diagnoses that specify which lipids are elevated in the blood include:

- i. **Dyslipidemia:** Elevated LDL, Decreased HDL
  - ii. **Hypercholesterolemia:** Elevated cholesterol only
  - iii. **Hypertriglyceridemia:** Elevated triglyceride only
  - iv. **Mixed Hyperlipidemia:** Elevated triglyceride and cholesterol levels
- **Coagulation tests:** Consist of the **Prothrombin Time (PT)**, **activated partial thromboplastin time** and **International Normalized Ratio (INR)**. The INR is a standardized test used to monitor the levels of a blood thinner called **Coumadin**. Elevations in these laboratory studies indicated risk for hemorrhage. An individual not taking Coumadin usually has an INR of 1<sup>15-18</sup>.
  - **Pancreatic Enzyme Testing – Lipase & Amylase:** Lipase and amylase are two enzymes secreted by the pancreas; elevation can indicate **pancreatitis**. Lipase is a more accurate indication of pancreatitis, and is more widely accepted.
  - **C-Reactive Protein (CRP):** Protein synthesized by the liver and secreted into the bloodstream to initiate an inflammatory response. An elevated CRP indicates inflammatory and infectious processes.
  - **Erythrocyte Sedimentation Rate (ESR / Sed Rate):** Measures the rate at which red blood cells (erythrocytes, RBCs) **sediment (settle)** into the bottom of a tube within one hour; this rate is assessed by measuring the percentage of RBC sedimentation, and indicates inflammation. When the body initiates an inflammatory response, proteins in the blood – such as CRP – cause RBCs to coagulate and sediment more quickly.
  - **Stress hormone levels:** Specific stress hormone levels can be assessed in blood studies, and are most usually ordered to diagnose stress hormone disorders such as hyperthyroidism (elevated T4 TSH), hypothyroidism (decreased T4 and TSH), or chronic fatigue syndrome (often involves cortisol testing).
  - **Sex hormone levels:** A provider may choose to evaluate sex hormone levels, either individually or in a panel. These may include: **human chorionic gonadotropin (HCG)**, which may be assessed in the urine or blood to diagnose pregnancy); **estrogen**; **progesterone**, **testosterone**; **prolactin**; **luteinizing hormone (LH)**, and/or **follicle stimulating hormone (FSH)**.

- **Hemoglobin A1C (HGB A1C):** Examines blood glucose level fluctuations over a 3-month period. This test can be useful in determining if a patient has well-controlled or uncontrolled blood glucose levels, especially in conditions such as diabetes. **The normal range for HGB A1C is 3.9-6.4%.**
- **Uric Acid:** Produced by the breakdown of purines from food. An elevated uric acid level with clinical presentation of painful, swollen joints may indicate **gout** (a metabolic disease marked by painful inflammation of the joints and elevated uric acid levels). **The normal range for uric acid is 3.5-7.7 mg/dL in males and 2.6-6.8 mg/dL in females.**

### 3. Urine studies reviewed in this chapter include:

- **Urinalysis (UA)**<sup>6,16-18</sup>: Quantitative assessment of various cells and molecules that may be present in the urine.
- A urine sample may be obtained for urinalysis in one of two ways:
  - ▶ **“Clean catch” methodology:** Patient provides a sample of urine by urinating into a cup).
  - ▶ **Catheterization:** Catheter is inserted into the ureter to obtain a pure sample of urine from the bladder.
  - ▶ Clean catch methodology is the preferred method for providing a urine sample, but poses risk for contamination through epithelial skin cells, or external bacteria. Therefore, the method of obtaining a urine sample for urinalysis should always be documented and noted.
- UA findings can suggest different diagnoses:
  - ▶ **White blood cells (WBCs)** in the urine typically indicates a **urinary tract infection (UTI)**
  - ▶ **Red blood cells (RBCs)** in the urine may confirm **hematuria** (blood in the urine), and may indicate **infection** or **kidney stone**; hematuria may also indicate **menses** in a menstruating female patient.
  - ▶ **Glucose and ketones** in the urine may indicate **ketoacidosis**.
  - ▶ **Protein** in the urine may indicate **renal failure or muscle breakdown**.
- **“Urine Dip:”** Point of care (POC) urinalysis performed to determine the qualitative presence or absence of certain molecules in the urine<sup>6,16-18</sup>.

- **Urine Drug Screen:** Obtained to rule out pharmacological causes such as drug abuse or medication noncompliance<sup>6,16-18</sup>.
- **Urine Pregnancy Test (UPT)/Qualitative Beta HCG:** Qualitative (positive or negative) assessment of B-HCG hormone presence in the urine, indicative of pregnancy<sup>6,16-18</sup>.

4. Urine studies reviewed in this chapter include:

- **ACCU-Check:** Measures blood glucose level to test for diabetes and hyper/hypoglycemia.
- **Hemocue:** Measures hemoglobin levels in the blood using a Hemocue machine; tests for anemia.
- **Influenza A/B Antigen (“Flu Swab”):** Tests for the presence of the Influenza A or B antigen; antigen presence indicates viral infection of Influenza A or B respectively. A swab with a sample of either nasal or oropharyngeal mucus is tested for antigen presence.
- **Rapid Strep Swab:** Used to determine the presence of Streptococcal bacteria in the oropharynx. A swab is used to collect a sputum sample from the oropharynx.
- **Wet mount:** Provides assessment of vaginal discharge or mucus obtained during a pelvic examination. This laboratory study identifies the presence of yeast, bacteria, trichomonas, and clue cells that can indicate infection. A normal examination is negative, showing none of these microorganisms.
- **“Cultures”** refer to samples (of blood, urine, sputum, or other bodily substances) that are placed or incubated in a petri dish to observe microorganism growth and sensitivity to certain antibiotic interventions in order to determine a pharmacotherapeutic treatment plan.
- Cultures may be ordered on a variety of body fluid types, as shown below. Two to three sets of cultures may be ordered per specimen; some indications that various cultures may provide are identified below.

## Assessment

1. Create a Review Outline for the various laboratory studies identified in this chapter. You may want to create this Review Outline on a notecard that you can keep in your pocket to refer to during your clinical training and probationary period.
2. Review the outlines you created in chapter 8. As you review the different complaints and diagnoses try to identify what types of laboratory studies may commonly be associated with various chief complaints and differential diagnoses. **You will be held responsible for familiarizing yourself with these lab studies and their indications as part of your CSAT assessment.**
3. What blood test is helpful in determining if a patient has a blood clot? What does a positive finding on this test imply?
4. What tests would be ordered for a patient with a suspected urinary tract infection?
5. What tests would a provider order if a pediatric patient presents with only the complaint of fever, and the physical exam does not indicate a source? (Include blood tests and imaging studies you feel these may be pertinent).

A person with dark hair, seen from the back, is wearing a white lab coat. They are pointing their right index finger at a chest X-ray displayed on a large screen. The X-ray shows the lungs and ribcage. In the top right corner of the X-ray, there is a small white box with the number '2'. In the bottom right corner of the X-ray, there is some faint text that appears to be '18-Mar-200' and '09:21:1'.

10

## Diagnostic Imaging Studies

# Imaging Studies

Imaging studies are used to view the interior of the body to diagnose conditions that are not visible to the naked eye. There are several types of imaging studies used diagnostically that you are likely to encounter as a medical scribe; each type of imaging study has its own benefits, limitations,

and medical risks, and requires specific documentation discussed in Module III.

Some types of imaging studies are consistently used as diagnostic tools for specific conditions; for example, an **ultrasound (US)** is almost always used to diagnose cholelithiasis (gallstones). This section will cover the main types of imaging studies used in the Family Practice, along with their benefits, limitations and risks, and how they can be utilized diagnostically in the Family Practice.

An **ultrasound (US)**<sup>15,21,48</sup> provides an image of a part of the body that is obtained with sound waves. A wand that emits sound waves is coated with a jelly-like medium and then pressed against the skin. Ultrasounds can provide images of organ walls, free fluid in body cavities, and solid formations. Sound waves do not pose risk for radiation, and for this reason ultrasounds are safer, less invasive, and often preferred to use of computerized tomography (CT) scans and X-ray imaging studies in cases in which radiation can or should be avoided.

**US Abdomen**<sup>14,15,48</sup>: Abdominal ultrasounds can be performed on each of the four quadrants of the abdomen. Commonly, ultrasounds are used to diagnose cholelithiasis (gallstones) and cholecystitis (cysts of the gallbladder). An abdominal ultrasound may be able to provide imaging of a stone or stones within the gallbladder, along with imaging of any associated thickening of the gallbladder wall caused by inflammation. Other uses of abdominal ultrasounds include visualization of free fluid in the abdomen and peritoneal fluid, which occurs during **ascites** (fluid buildup in the peritoneal cavity).



## SuperScribe Tip: Abdominal Ultrasound

An ultrasound of the abdomen may be used by a provider to view any of the organs contained within the abdominal cavity, including the gallbladder, intestines, liver, and pancreas. If your provider asks you to pend or place orders for a “liver ultrasound,” s/he probably is referring an abdominal US. We suggest you confirm this before pending or placing an order<sup>1</sup>.

**US Chest**<sup>14,15,48</sup>: Ultrasounds of the chest are useful for detecting motion of the heart, and for detecting free fluid present in the chest cavity, as occurs in cases of trauma. Chest ultrasounds are often performed at the bedside and may be used to determine whether a CT scan is warranted, or if a patient has expired. More formal ultrasound studies of the chest are useful for patients with suspicion for pulmonary emboli (blood clotting in the lungs) who are not suitable for CT scanning.

**US Extremities**<sup>14,15,48</sup>: In addition to viewing the tissues of organs, ultrasounds can be useful in analyzing blood flow. For this reason, ultrasounds can be used to detect blood clots or deep venous thromboses (DVTs) in an extremity. Ultrasound studies used to detect blood flow are called **Doppler studies**.

**Pelvic/OB US**<sup>14,15,48</sup>: Pelvic and obstetric (OB) ultrasounds are used to visualize the bladder and the female reproductive organs. Since radiation can be damaging to the reproductive system, ultrasounds are almost always used to visualize the uterus and ovaries. Ovarian cysts, torsion, fibroids, pregnancies, and free fluids can all be visualized through ultrasound imaging.

**Testicular US**<sup>14,15,48</sup>: Similar to female reproductive organs, male reproductive organs can be damaged by radiation. When using imaging to look for testicular torsion, hydrocele, or infection, ultrasounds are always utilized.

**X-radiography (X-ray imaging)**<sup>15,21,48</sup> uses X-radiation – electromagnetic radiation of the same nature as visible radiation but of an extremely short wavelength that has properties of penetrating various thicknesses of all solids and of acting on photographic films and plates as light does – to produce negative exposure images of various parts of the body.

The X-radiation travels through different types of tissue at different speeds that ultimately produce lighter- and darker- images on photographic film. Areas that X-rays flow through easily (like lung tissue) appear black, while more solid tissues (like bone) appear white.

**Chest X-ray (CXR)**<sup>14,15,48</sup>: CXRs are used to view the lungs, heart, mediastinum, and ribs. Infections or fluid collections in the lungs are visible as “fluffy” white **infiltrates**. Scarring to the lungs from COPD (chronic obstructive pulmonary disease) is referred to as **atelectasis**. Additionally, **pneumothorax** (collapse of the lung) may be visible. In viewing the heart and mediastinum, X-rays enable visualization of **cardiomegaly** (enlargement of the heart), **tortuous aorta** (twisting and turning of the aorta), and **aortic dissection**. Rib fractures can also be diagnosed by CXR.



### SuperScribe Tip: CXR (Portable vs. PA & Lat)

In cases of great urgency, a portable X-Radiograph may be brought into the patient's room to obtain imaging at the bedside; this is specified as a Portable CXR. Alternatively, a patient may be brought to the radiograph for imaging; when Posterior-Anterior and Lateral views of the chest are obtained, the CXR is accordingly documented to specify the views obtained, as such: "CXR (PA & Lat)."

**XR Abdomen<sup>14,15,48</sup>:** In the abdomen, X-rays can help identify bowel gas patterns, which may be indicative of blockages or **obstructions**. Increased stool or foreign bodies may also be visualized.

**XR Head<sup>14,15,48</sup>:** X-ray images of the head mostly show the bones of the head and face. These can be useful in cases of trauma where facial or skull fracture may be suspected.

**XR Pelvis<sup>14,15,48</sup>:** X-rays of the pelvis are useful in visualizing fractures and foreign bodies, but are not commonly employed, due to the **risk for radiation exposure** to reproductive organs.

**XR Spine<sup>14,15,48</sup>:** X-rays of the spine are used to visualize fractures and the spacing between vertebrae. Decreased intervertebral space can indicate a **herniated or slipped disc or nerve impingement**.

**XR Extremities<sup>14,15,48</sup>:** X-rays are commonly used to visualize fractures in the extremities; however, it is possible for a hairline or stress fracture to be present without showing up on X-ray.

**Computed Tomography (CT) imaging or scanning<sup>14,15,21,48</sup>** uses computerized systems to construct three-dimensional images of the body – or of a part of the body – from a series of plane cross-sectional radiograph images made along an axis. CT Scanning essentially compiles a “flip book” of X-ray images to form detailed pictures of parts of the body that enable a provider to visualize organs, bones, soft tissues, and foreign bodies. **Oral or IV radiopaque contrast** may be administered prior to CT Scanning to better visualize a specific region or tissue.





### SuperScribe Tip:

CT Scanning requires the use of multiple X-Ray imaging studies and poses high risk for radiation exposure<sup>17</sup>. This medical risk influences a provider's medical decision-making (MDM) and requires appropriate documentation in the provider note.

**CT Abdomen & Pelvis<sup>14,15,48</sup>:** An abdominal CT scan can be obtained without contrast or with oral or IV contrast. A non-Contrast CT of the abdomen/pelvis may be used to visualize free fluid in the abdomen or pelvis, kidney stones, foreign bodies, or pelvic bones. Studies of the soft tissues are usually limited. Abdominal and Pelvic CTs that use IV contrast enable visualization of vasculature and walls of the organs; these may be used to diagnose abdominal aortic aneurysms (AAAs) and inflammatory processes. Oral contrast may be administered to enable visualization of the gastrointestinal tract to diagnose appendicitis, diverticulitis, or bowel blockages and obstructions.

**CT Chest<sup>14,15,48</sup>:** A Chest CT is often used with IV contrast to visualize vasculature. A CT scan obtained to rule in- or out pulmonary emboli is often termed a **CT Chest (PE Study)**, and documented as such. A CT Chest may also be used to visualize a pneumothorax, aortic dissection, or thoracic aortic aneurysm. A CT used to analyze blood flow is termed a **CT Angiogram (CTA)**.

**CT Extremity<sup>14,15,48</sup>:** A CT Scan of an extremity may be used to better identify complex fractures.

**CT Head<sup>14,15,48</sup>:** A CT scan of the head can be used to visualize the brain and bones of the head and face. A head CT without contrast can be used to visualize small fractures and fluid collections. IV contrast can enable visualization of a hemorrhagic cerebrovascular accident (CVA), intracranial or subarachnoid hemorrhaging (bleeding), or location of prior ischemia or infarction.

**CT Spine<sup>14,15,48</sup>:** A CT scan of the spine can be used to visualize the spinal column, which can be useful in diagnosing or ruling out spinal column damage in injured patients.

**Magnetic Resonance Imaging (MRI)<sup>14,15,21,48</sup>** uses the magnetic resonance of atoms in the body to create images of bone and organ tissues. MRIs use radio waves and so do not pose risk for radiation. Magnetic Resonance Angiography (MRA) entails a type of MRI that focuses on the blood vessels within the body.

**MRI Head**<sup>14,15,48</sup>: Commonly ordered as an MRI/MRA brain, this study produces a detailed picture of the gray and white matter of the brain, enabling visualization of prior infarctions, deterioration of brain matter, ischemic disease, and hemorrhages.

**MRI Spine**<sup>14,15,48</sup>: An MRI of the Spine may be used to fully visualize the nerves, discs, and bones of the spine, identifying nerve impingement and inflammation.

**Electrical Impulse Studies**<sup>14,15,21</sup> use an electrode or a series of electrodes to measure (and provide tracing images of) the electrical impulses conducted in body parts such as the heart, brain, and muscle/nervous tissues. Impulse studies can be used to assess tissue function and better understand the signaling patterns that occur in the organ(s) or tissues being studied. These studies can be used to visualize and diagnose functional signaling abnormalities – often as they occur, in the case of arrhythmias and palpitations (incidence, experience, or sensation of irregular heartbeat), which can prevent progressive tissue damage.

**EEG (Electroencephalography)**<sup>14,15,49</sup>: Formally referred to as an **electroencephalogram**, an EEG provides a tracing of the electrical impulses occurring in specific regions of the brain. EEGs are typically performed by a neurologist in the outpatient setting to identify the source of neurological conditions, such as seizures.

**EKG (Electrocardiography)**<sup>14,15,49</sup>:

Formally referred to as an **Electrocardiograph** or **Electrocardiogram**, an EKG produces a tracing of the activity of the heart, based on electrical impulses. EKG tracings can be used to visualize, identify, and diagnose disease processes that arise from functional signaling abnormalities and abnormal cardiac functioning – in real time (as an event of abnormal cardiac signaling occurs) – with can prevent progressive tissue damage. For example, EKGs can be used to visualize and diagnose **arrhythmias** (irregular cardiac signaling and beating) such as **atrial fibrillation (A-Fib)**, condition in which the heart's upper chambers (atria) beat out of coordination with the lower chambers (ventricles), causing an irregular and often rapid heart rate that impairs blood flow and increases the risk for blood clots, stroke, and heart failure). EKGs are also commonly used to diagnose **myocardial infarctions (MIs)**, blockage of oxygenated blood flow to the heart muscle in which the subsequent ischemia (lack of oxygen to heart tissue) causes tissue death and subsequently irregular electrical conduction and heart beating).

**EMG/NCV (Electromyography and Nerve Conduction Velocity Tests/Studies)**<sup>14,15,49</sup>: These two tests are often ordered and conducted together by neurologists or physiatrists in the outpatient setting to assess motor neuron (muscle) function and nerve conduction respectively. Together, these tests are used to reveal muscle or nerve dysfunction, or nerve-to-muscle signal transmission problems.

- **EMG** is used to measure muscle response to nerve stimulation. A thin needle electrode is inserted through the skin into a specific muscle. The electrode measures electrical impulses that are conducted during muscle contraction and relaxation. An oscilloscope is then used to display the electrical impulses in wave-like tracings that can be used to differentiate between muscle- and nerve disorders.
- **NCV** (also termed **electroneurography, EneG**) measures the speed at which an electrical impulse is conducted along a nerve. Patch-like electrodes are applied to the skin at several locations over a single isolated nerve. Low-level electricity is conducted through one electrode to stimulate the nerve, and the velocity at which the electrical signal flows through the nerve is measured and displayed on a screen. NVC Tests/Studies can be used to assess nerve damage and destruction.
- **SuperScribe Tip:** In general, EMG measures the speed at which electrical impulses are conducted in motor neurons whereas NCV measures the speed at which electrical impulses are conducted along nerve cells. Both procedures can help detect the presence, location, and extent of processes and pathologies that damage nerves and muscles.

## Review & Assessment

### Review

1. **Ultrasound (US):** Uses sound waves to provide an image of a part of the body<sup>6,17,19</sup>. A wand that emits sound waves is coated with a jelly-like medium and then pressed against the skin. Ultrasounds can provide images of organ walls, free fluid in body cavities, and solid formations. Sound waves do not pose risk for radiation, and for this reason ultrasounds are safer, less invasive, and often preferred to use of computerized tomography (CT) scans and X-ray imaging studies in cases in which radiation can or should be avoided. Ultrasounds reviewed in this chapter include:
  - **US Abdomen<sup>16,17,19</sup>:** Used to diagnose cholelithiasis (gallstones) and cholecystitis (cysts of the gallbladder). May provide imaging of gallbladder stone(s) and inflammatory gallbladder wall thickening. Enable visualization of free fluid in the abdomen and peritoneal fluid, which occurs during **ascites** (fluid buildup in the peritoneal cavity).
  - **US Chest<sup>16,17,19</sup>:** Detect motion of the heart and free fluid present in the chest cavity, as occurs in trauma. Often performed at the bedside. May be used to determine whether a CT scan is warranted, or if a patient has expired. More formal chest US are useful for patients with suspicion for pulmonary emboli (blood clotting in the lungs) who are not suitable for CT scanning.
  - **US Extremities<sup>16,17,19</sup>:** provide images of organ tissues and useful in analyzing blood flow. Can be used to detect blood clots or deep venous thromboses (DVTs) in an extremity. Ultrasound studies used to detect blood flow are called **Doppler studies**.
  - **Pelvic/OB US<sup>16,17,19</sup>:** Used to visualize the bladder and female reproductive organs. Since radiation can be damaging to the reproductive system, ultrasounds are almost always used to visualize the uterus and ovaries. Ovarian cysts, torsion, fibroids, pregnancies, and free fluids can all be visualized through ultrasound imaging.
  - **Testicular US<sup>16,17,19</sup>:** Used to visualize the bladder and male reproductive organs (which are sensitive to X-radiation. Used to rule in/out testicular torsion, hydrocele, or infection.
2. **X-Radiography (X-ray imaging):** Uses X-radiation, electromagnetic radiation of the same nature as visible radiation but of an extremely short wavelength that has properties of penetrating various thicknesses of all solids and of acting on photographic films and plates as light does<sup>6,17,19</sup>. Produce negative exposure images of various body parts<sup>6,17,19</sup>. The X-radiation travels through different types of tissue at different speeds that ultimately

produce lighter- and darker- images on photographic film. Areas that X-rays flow through easily (like lung tissue) appear black, while more solid tissues (like bone) appear white. X-Ray studies reviewed in this chapter include:

- **Chest X-ray (CXR)**<sup>16,17,19</sup>: Used to view the lungs, heart, mediastinum, and ribs. Infections or fluid collections in the lungs are visible as “fluffy” white **infiltrates**. Scarring to the lungs from COPD (chronic obstructive pulmonary disease) is referred to as **atelectasis**. Additionally, **pneumothorax** (collapse of the lung) may be visible. In viewing the heart and mediastinum, X-rays enable visualization of **cardiomegaly** (enlargement of the heart), **tortuous aorta** (twisting and turning of the aorta), and **aortic dissection**. Rib fractures can also be diagnosed by CXR.
  - **Portable CXR (CXR Pt) vs CXR (PA & Lat)**: In cases of great urgency, a portable X-Radiograph may be brought into the patient’s room to obtain imaging at the bedside; this is specified as a **Portable CXR**. Alternatively, a patient may be brought to the radiograph for imaging; when Posterior-Anterior and Lateral views of the chest are obtained, the CXR is accordingly documented to specify the views obtained, as such: “**CXR (PA & Lat)**.”
  - **XR Abdomen**<sup>16,17,19</sup>: In the abdomen, X-rays can help identify bowel gas patterns, which may be indicative of blockages or **obstructions**. Increased stool or foreign bodies may also be visualized.
  - **XR Head**<sup>16,17,19</sup>: X-ray images of the head mostly show the bones of the head and face. These can be useful in cases of trauma where facial or skull fracture may be suspected.
  - **XR Pelvis**<sup>16,17,19</sup>: X-rays of the pelvis are useful in visualizing fractures and foreign bodies, but are not commonly employed, due to the **risk for radiation exposure** to reproductive organs.
  - **XR Spine**<sup>16,17,19</sup>: X-rays of the spine are used to visualize fractures and the spacing between vertebrae. Decreased intervertebral space can indicate a **herniated or slipped disc or nerve impingement**.
  - **XR Extremities**<sup>16,17,19</sup>: X-rays are commonly used to visualize fractures in the extremities; however, it is possible for a hairline or stress fracture to be present without showing up on X-ray.
3. **Computed Tomography (CT) imaging or scanning**: Uses computerized systems to construct three-dimensional images of the body – or of a part of the body – from a series of plane cross-sectional radiograph images made along an axis<sup>5,17,18,20</sup>. Essentially compiles a “flip book” of X-ray images to form detailed pictures of parts of the body that enable a provider to

visualize organs, bones, soft tissues, and foreign bodies. **Oral or IV radiopaque contrast** may be administered prior to CT Scanning to better visualize a specific region or tissue. CT studies reviewed in this chapter include:

- **CT Abdomen & Pelvis<sup>16,17,19</sup>**: An abdominal CT scan can be obtained without contrast or with oral or IV contrast. A non-Contrast CT of the abdomen/pelvis may be used to visualize free fluid in the abdomen or pelvis, kidney stones, foreign bodies, or pelvic bones. Studies of the soft tissues are usually limited. Abdominal and Pelvic CTs that use IV contrast enable visualization of vasculature and walls of the organs; these may be used to diagnose abdominal aortic aneurysms (AAAs) and inflammatory processes. Oral contrast may be administered to enable visualization of the gastrointestinal tract to diagnose appendicitis, diverticulitis, or bowel blockages and obstructions.
  - **CT Chest<sup>16,17,19</sup>**: A Chest CT is often used with IV contrast to visualize vasculature. A CT scan obtained to rule in- or out pulmonary emboli is often termed a **CT Chest (PE Study)**, and documented as such. A CT Chest may also be used to visualize a pneumothorax, aortic dissection, or thoracic aortic aneurysm. A CT used to analyze blood flow is termed a **CT Angiogram (CTA)**.
  - **CT Extremity<sup>16,17,19</sup>**: A CT Scan of an extremity may be used to better identify complex fractures.
  - **CT Head<sup>16,17,19</sup>**: A CT scan of the head can be used to visualize the brain and bones of the head and face. A head CT without contrast can be used to visualize small fractures and fluid collections. IV contrast can enable visualization of a hemorrhagic cerebrovascular accident (CVA), intracranial or subarachnoid hemorrhaging (bleeding), or location of prior ischemia or infarction.
  - **CT Spine<sup>16,17,19</sup>**: A CT scan of the spine can be used to visualize the spinal column, which can be useful in diagnosing or ruling out spinal column damage in injured patients.
4. **Magnetic Resonance Imaging (MRI)**: Uses magnetic resonance of atoms in the body to create images of bone and organ tissues<sup>6,16,17,19</sup>. MRIs use radio waves and so do not pose risk for radiation. Magnetic Resonance Angiography (MRA) entails a type of MRI that focuses on the blood vessels within the body. MRI studies reviewed in this chapter include:
- **MRI Head<sup>16,17,19</sup>**: Commonly ordered as an MRI/MRA brain, this study produces a detailed picture of the gray and white matter of the brain, enabling visualization of prior infarctions, deterioration of brain matter, ischemic disease, and hemorrhages.

- **MRI Spine<sup>16,17,19</sup>**: An MRI of the Spine may be used to fully visualize the nerves, discs, and bones of the spine, identifying nerve impingement and inflammation.
5. **Electrical Impulse Studies**: Use an electrode or a series of electrodes to measure (and provide tracing images of) the electrical impulses conducted in body parts such as the heart, brain, and muscle/nervous tissues<sup>6,16,17</sup>. Impulse studies can be used to assess tissue function and better understand the signaling patterns that occur in the organ(s) or tissues being studied. These studies can be used to visualize and diagnose functional signaling abnormalities – often as they occur, in the case of arrhythmias and palpitations (incidence, experience, or sensation of irregular heartbeat), which can prevent progressive tissue damage. Electrical impulse studies reviewed in this chapter include:
- **EEG (Electroencephalography)<sup>16,17,20</sup>**: Formally referred to as an **electroencephalogram**, an EEG provides a tracing of the electrical impulses occurring in specific regions of the brain. EEGs are typically performed by a neurologist in the outpatient setting to identify the source of neurological conditions, such as seizures.
  - **EKG (Electrocardiography)<sup>16,17,20</sup>**: Formally referred to as an **Electrocardiograph** or **Electrocardiogram**, an EKG produces a tracing of the activity of the heart, based on electrical impulses. EKG tracings can be used to visualize, identify, and diagnose disease processes that arise from functional signaling abnormalities and abnormal cardiac functioning – in real time (as an event of abnormal cardiac signaling occurs) – with can prevent progressive tissue damage. For example, EKGs can be used to visualize and diagnose **arrhythmias** (irregular cardiac signaling and beating) such as **atrial fibrillation (A-Fib)**, condition in which the heart's upper chambers (atria) beat out of coordination with the lower chambers (ventricles), causing an irregular and often rapid heart rate that impairs blood flow and increases the risk for blood clots, stroke, and heart failure). EKGs are also commonly used to diagnose **myocardial infarctions (MIs)**, blockage of oxygenated blood flow to the heart muscle in which the subsequent ischemia (lack of oxygen to heart tissue) causes tissue death and subsequently irregular electrical conduction and heart beating).
  - **EMG/NCV (Electromyography and Nerve Conduction Velocity Tests/Studies)<sup>16,17,20</sup>**: These two tests are often ordered and conducted together by neurologists or physiatrists in the outpatient setting to assess motor neuron (muscle) function and nerve conduction respectively. Together, these tests are used to reveal muscle or nerve dysfunction, or nerve-to-muscle signal transmission problems.

- **Electromyography (EMG)** is used to measure muscle response to nerve stimulation. A thin needle electrode is inserted through the skin into a specific muscle. The electrode measures electrical impulses that are conducted during muscle contraction and relaxation. An oscilloscope is then used to display the electrical impulses in wave-like tracings that can be used to differentiate between muscle- and nerve disorders.
- **Nerve Conduction Velocity (NCV) Tests/Studies** (also termed **electroneurography, EneG**) measures the speed at which an electrical impulse is conducted along a nerve. Patch-like electrodes are applied to the skin at several locations over a single isolated nerve. Low-level electricity is conducted through one electrode to stimulate the nerve, and the velocity at which the electrical signal flows through the nerve is measured and displayed on a screen. NVC Tests/Studies can be used to assess nerve damage and destruction.



## Assessment

1. Create a Review Outline for the various imaging studies identified in this chapter. You may want to create this Review Outline on a notecard that you can keep in your pocket to refer to during your clinical training and probationary period.
2. Review the outlines you created in chapter 8. As you review the different complaints and diagnoses try to identify what types of imaging studies may commonly be associated with various chief complaints and differential diagnoses. **You will be held responsible for familiarizing yourself with these imaging studies and their indications as part of your CSAT assessment.**
3. A patient presents with the chief complaint of swelling and pain to their right calf. The pain is worse with movement and palpation. Which imaging test is your provider likely to suggest and why?
4. Why are ultrasounds preferred over other imaging studies when visualizing a testicular and ovarian torsion?



11

## Medical Procedures

# Procedures

Procedures are performed in the outpatient setting to advance patient care. Procedures are most commonly used to treat various conditions or diagnoses, but may also be used as diagnostic tools outright, helping to advance a provider's medical decision making. For example, a lumbar puncture is procedure performed to obtain cerebrospinal fluid for laboratory analysis.

This section will address procedures that you are likely to encounter in your patient's surgical histories or in your outpatient setting as a medical scribe. A description of each procedure will be accompanied by the procedure's objective and the conditions or diagnoses each procedure is commonly used to treat. Each of the procedures addressed below additionally entails its own limitations, benefits, and medical risk, and requires specific documentation, which will be discussed further in Module III.



## SuperScribe Tip: Procedural Documentation

Most of the procedures outlined below are unlikely to be performed in the Family Practice setting, with the exception of the skin procedures and some ENT procedures. Any procedure performed by a provider requires specific documentation in the provider's note. Procedure notes are used for medical coding, billing, and reimbursement (as addressed in Module III) and may also be used by other care providers.

Most electronic health record (EHR) systems have applications that guide accurate documentation for all procedures that require documentation. All procedure notes should reflect that a universal time-out was conducted, that the patient was informed of the medical risks and benefits associated with the procedure, and that patient consent was obtained. Procedure notes also document specific anatomical locations (organs or body areas), medical instruments, and techniques associated with a particular procedure, as well as the patient's ability to tolerate the procedure, any complications encountered, and discharge instructions provided.

## Cardiovascular Procedures<sup>14,15,21</sup>

**Cardiopulmonary resuscitation (CPR)** constitutes the administration of chest compressions and assisted breathing in attempt to revive an unresponsive individual who is not breathing independently, or who has no pulse<sup>14,15,21</sup>.

**Cardioversion** involves forcing an unstable or abnormal heart rate or rhythm back into a more acceptable rate or rhythm by use of medication or defibrillation. Cardioversion may be employed in events such as in atrial fibrillation (AFib) with rapid ventricular response (RVR)<sup>14,15,21</sup>.

A **central line** may be placed in the femoral or subclavian vein to gain venous access. Central lines are usually employed when peripheral access has failed, or when the patient will require long-term IV medication administration<sup>14,15,21</sup>.

## Pulmonary Procedures<sup>14,15,21</sup>

**Tracheostomy** refers to an incision made into the trachea to relieve a blockage or obstruction. Tracheostomy may be performed to treat choking on a foreign object that cannot be dislodged.

## Gastrointestinal (GI) Procedures<sup>14,15,21</sup>

**Colonoscopy** entails the evaluation of the lower gastrointestinal tract by use of a scope with a camera. Colonoscopies are useful in identifying the source of a lower GI bleed; these are also used to identify polyps and colon cancer, though are often performed in the outpatient setting<sup>14,15,21</sup>.

An **enema** is administered rectally to relieve constipation or rectal impaction by introducing a liquid substance such as barium, soapy water, or mineral oil into the rectum or colon<sup>14,15,21</sup>.

**Endoscopy** entails exploration of the upper gastrointestinal tract by use of a scope with a camera. Endoscopies are helpful in diagnosing the source of an upper GI bleed; they are likely to be performed by a surgeon or GI specialist in an inpatient setting<sup>14,15,21</sup>.

## Genitourinary (GU) Procedures<sup>14,15,21</sup>

**Hemodialysis** (also simply termed **dialysis** or **HD**) entails the process of mechanically filtering blood through a dialysis machine to remove wastes or toxins, adjust fluid and electrolyte imbalances, and add vital substances; this is a common routine procedure required by patients with **acute renal failure (ARF)**<sup>14,15,21</sup>.



### SuperScribe Tip:

A patient with Acute Renal Failure (ARF) may receive routine hemodialysis at a local dialysis clinic. If a patient receiving hemodialysis reports missing a recent dialysis appointment, this will be important to document in the provider note, and hemodialysis will be an important part of the patient's discharge instructions.

**Urinary Catheterization** is used to insert a **catheter (tubing)** through the urethra and into the bladder to assist with urination; this may be performed for a patient with urinary incontinence or other urinary problems, or to obtain an uncontaminated sample of urine for urinalysis<sup>14,15,21</sup>. A catheter may be in-dwelling (permanent) or temporary. The presence of either such catheter requires specific documentation in the provider note, though permanent catheterization is likely to be performed by a specialist or in the outpatient setting.

## Skin Procedures<sup>14,15,21</sup>

**Cauterization:** Practice or technique in which a skin lesion is removed by exposure to high heat (burning)<sup>14,15,21</sup>.

**Debridement:** Entails the surgical removal and cleaning of **necrotic (dead)** tissue and other infectious material from a wound<sup>14,15,21</sup>.

**Incision and Drainage (I&D):** Performed to allow the removal of excess **purulence (pus)** and fluid from an area, usually from an abscess of the skin or other body cavity<sup>14,15,21</sup>.

**Laceration Repair:** Entails the closure of a wound using sutures, staples, glue, or steri-strips. The method of closure used depends on the size and severity of the wound<sup>14,15,21</sup>.

**Nail Removals:** Performed to treat ingrown nails that have undergone traumatic injury, and may be partial or complete, depending on the severity of the condition<sup>14,15,21</sup>.

**Punch Biopsy:** Diagnostic test in which a small piece of skin or some other tissue is removed using a sharp cutting tool. The tissue is subsequently sent to a pathologist for microscopic examination and diagnosis<sup>14,15,21</sup>.

## Musculoskeletal procedures<sup>14,15,21</sup>

**Arthrocentesis** entails surgical puncture of a joint enabling removal of fluid to relieve joint pressure. The fluid that is removed from arthrocentesis may be collected and subsequently sent to the lab for analysis. Depending on the joint location, this may be performed by a specialist<sup>14,15,21</sup>.

**Joint Reduction** entails procedural relocation of a dislocated joint<sup>14,15,21</sup>.

**Splint Application** connotes the application of a stabilizing agent to a fractured or strained area to prevent further injury<sup>14,15,21</sup>.

A **Trigger Point Injection** entails the injection of an anti-inflammatory or analgesic agent at a site of muscular tension for symptomatic relief<sup>14,15,21</sup>.

## Review & Assessment

### Review

1. Procedures are most commonly used to treat various conditions or diagnoses, but may also be used as diagnostic tools outright, helping to advance a provider's medical decision making. For example, a lumbar puncture is procedure performed to obtain cerebrospinal fluid for laboratory analysis.
2. This chapter addresses procedures that are likely to appear in a patient's surgical history or in the outpatient setting. Most of the procedures outlined in this chapter are unlikely to be performed in the Family Practice setting, except for the skin procedures and some ENT procedures.
3. Any procedure performed by a provider requires specific documentation in the provider's note. **Procedure notes** are used for medical coding, billing, and reimbursement (as addressed in Module III) and may also be used by other care providers.
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5. Cardiovascular Procedures relative to family medicine include:
  - **Cardiopulmonary resuscitation (CPR)** constitutes the administration of chest compressions and assisted breathing in attempt to revive an unresponsive individual who is not breathing independently, or who has no pulse<sup>6,16,17</sup>.
  - **Cardioversion** involves forcing an unstable or abnormal heart rate or rhythm back into a more acceptable rate or rhythm by use of medication or defibrillation. Cardioversion may be employed in events such as in atrial fibrillation (AFib) with rapid ventricular response (RVR) <sup>6,16,17</sup>.
  - A **central line** may be placed in the femoral or subclavian vein to gain venous access. Central lines are usually employed when peripheral access has failed, or when the patient will require long-term IV medication administration<sup>6,16,17</sup>.



6. Pulmonary Procedures relative to family medicine include<sup>6,16,17</sup>:

- **Tracheostomy:** An incision made into the trachea to relieve a blockage or obstruction. Tracheostomy may be performed to treat choking on a foreign object that cannot be dislodged.

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- **Colonoscopy** entails the evaluation of the lower gastrointestinal tract by use of a scope with a camera. Colonoscopies are useful in identifying the source of a lower GI bleed; these are also used to identify polyps and colon cancer, though are often performed in the outpatient setting<sup>6,16,17</sup>.
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- **Hemodialysis** (also simply termed **dialysis or HD**) entails the process of mechanically filtering blood through a dialysis machine to remove wastes or toxins, adjust fluid and electrolyte imbalances, and add vital substances; this is a common routine procedure required by patients with **acute renal failure (ARF)**<sup>6,16,17</sup>.
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- **Punch Biopsy:** Diagnostic test in which a small piece of skin or some other tissue is removed using a sharp cutting tool. The tissue is subsequently sent to a pathologist for microscopic examination and diagnosis<sup>6,16,17</sup>.

**10.** Musculoskeletal Procedures relative to family medicine include<sup>6,16,17</sup>:

- **Arthrocentesis** entails surgical puncture of a joint enabling removal of fluid to relieve joint pressure. The fluid that is removed from arthrocentesis may be collected and subsequently sent to the lab for analysis. Depending on the joint location, this may be performed by a specialist<sup>6,16,17</sup>.
- **Joint Reduction** entails procedural relocation of a dislocated joint<sup>6,16,17</sup>.
- **Splint Application** connotes the application of a stabilizing agent to a fractured or strained area to prevent further injury<sup>6,16,17</sup>.
- A **Trigger Point Injection** entails the injection of an anti-inflammatory or analgesic agent at a site of muscular tension for symptomatic relief<sup>6,16,17</sup>.

## Assessment

1. Create a Review Outline for the various procedures identified in this chapter. You may want to create this Review Outline on a notecard that you can keep in your pocket to refer to during your clinical training and probationary period.
2. Review the outlines you created in chapter 8. As you review the different complaints and diagnoses try to identify what types of procedural studies may commonly be associated with various chief complaints and differential diagnoses. **You will be held responsible for familiarizing yourself with these procedures and their indications as part of your CSAT assessment.**
3. What procedure is used to help an abscess heal?
4. What procedure is used to collect cerebrospinal fluid for testing?
5. A patient with a dislocated shoulder would benefit from what procedure?
6. Define cardioversion and describe the two different methods used to perform a cardioversion.

**References:**

1. Park J. Electronic Medical Documentation in the Family Practice Setting. In: Bray B, ed. *ScribeConnect*. Unpublished 2019.
2. CMS CfMMS. 2019 Quality Measures. *Quality Payment Program 2019*; <https://qpp.cms.gov/mips/explore-measures/quality-measures?py=2019-measures>. Accessed Jan 30, 2019, 2019.
3. CMS CfMMS. 2019 Improvement Activities. *Quality Payment Program 2019*; <https://qpp.cms.gov/mips/explore-measures/improvement-activities?py=2019-measures>. Accessed Jan 31, 2019, 2019.
4. (CMS) CfMMS, (MLN) MLN, (DHHS) USDoHaHS. Evaluation and Management Services Guide. In: Network DoHaHSCfMMSML, ed. Vol ICN: 006764. <http://www.cms.gov/> Center for Medicare & Medicaid Services (CMS); 2017.
5. Martel ML, Imdieke BH, Holm KM, et al. Developing a Medical Scribe Program at an Academic Hospital: The Hennepin County Medical Center Experience. *Joint Commission journal on quality and patient safety / Joint Commission Resources*. 2018;44(5):238-249.
6. Chowdhry SM, Mishuris RG, Mann D. Problem-oriented charting: A review. *Int J Med Inform*. 2017;103:95-102.
7. Weed LL. Medical Records That Guide and Teach. *New England Journal of Medicine*. 1968;278(12):652-657.
8. Yan C, Rose S, Rothberg MB, Mercer MB, Goodman K, Misra-Hebert AD. Physician, Scribe, and Patient Perspectives on Clinical Scribes in Primary Care. *J Gen Intern Med*. 2016;31(9):990-995.
9. Lew V, Ghassemzadeh S. SOAP Notes. *StatPearls*. Treasure Island (FL): StatPearls Publishing LLC.; 2018.
10. Pearce PF, Ferguson LA, George GS, Langford CA. The essential SOAP note in an EHR age. *The Nurse practitioner*. 2016;41(2):29-36.
11. Weed LL. The problem oriented record as a basic tool in medical education, patient care and clinical research. *Annals of clinical research*. 1971;3(3):131-134.
12. Sinsky CA, Sinsky TA, Althaus D, Tranel J, Thiltgen M. 'Core Teams': Nurse-Physician Partnerships Provide Patient-Centered Care At An Iowa Practice. *Health Affairs*. 2010;29(5):966-968.

13. NBME NBoME. Laboratory Values. <https://www.nbme.org/pdf/subjectexams/labreferencevalues.pdf>. Accessed Feb 13, 2019, 2019.
14. Runge MS, Greganti MA. *Netter's Internal Medicine, 2nd edition*. Vol Illustrated by Frank H. Netter. 2 ed. Philadelphia, PA: Saunders Elsevier; 2009.
15. contributors W. Wikipedia: The Free Encyclopedia. In: contributors W, ed. *Wikipedia: The Free Encyclopedia*. <https://en.wikipedia.org/> Wikipedia: The Free Encyclopedia; 2019.
16. McPherson RA, Pincus MR, eds. *Henry's clinical diagnosis and management by laboratory methods*. 23 ed. St. Louis, MO: Elsevier; 2017.
17. Lin EC. Radiation risk from medical imaging. *Mayo Clinic proceedings*. 2010;85(12):1142-1146; quiz 1146.
18. Epsey EL, Erickson SS, Hammoud MM, et al. The OB-GYN Clerkship: Your Guide to Success. In: Epsey EL, Wachter DD, Johanssen PM, eds. Crofton, MD. <http://www.apgo.org/bookstore:> Association of Professors of Gynecology and Obstetrics (APGO); 2006: <http://www.jerseyshoreuniversitymedicalcenter.com/PDF/upload/Clerkship-Primer-Online-Version-1.pdf>. Accessed Feb 12, 2019.
19. CMS CfMMS. 1995 Documentation Guidelines for Evaluation and Management Services. In: (CMS) CfMMS, ed. <http://www.cms.gov/> Centers for Medicare & Medicaid Services; 1995.
20. CMS CfMMS. 1997 Documentation Guidelines for Evaluation and Management Services. In: Services CfMM, ed. <http://www.cms.gov/> Centers for Medicare & Medicaid Services; 1997.
21. Pease RW, Merriam-Webster I. *Merriam-Webster's Medical Dictionary*. Merriam-Webster, Incorporated; 2006.
22. contributors W. Past medical history. 2018; Page Version ID: 855184776: [https://en.wikipedia.org/w/index.php?title=Past\\_medical\\_history&oldid=855184776](https://en.wikipedia.org/w/index.php?title=Past_medical_history&oldid=855184776). Accessed Feb 12, 2019, 2019.
23. Fishman JM, Fishman LM. *History Taking in Medicine and Surgery*. Cheshire, UK: PasTest LTD; 2005.
24. Rouse M, Lee KC, Van Fossen B. Problem List. *Healthcare IT* 2011; <https://searchhealthit.techtarget.com/definition/problem-list>. Accessed Jan 9, 2019, 2019.
25. Nicoletti B. Is Your Diagnosis Coding Ready for Risk Adjustment? *Family practice management*. 2018;25(2):21-25.

26. AACP AAoPC. What is risk adjustment? 2018; <https://www.aapc.com/risk-adjustment/risk-adjustment.aspx>. Accessed Jan 17, 2019, 2019.
27. Contributors W. Medical terminology. 2018; Page Version ID: 860559810: [https://en.wikipedia.org/w/index.php?title=Medical\\_terminology&oldid=860559810](https://en.wikipedia.org/w/index.php?title=Medical_terminology&oldid=860559810). Accessed Feb 12, 2019, 2019.
28. Commission TJ. The Joint Commission Fact Sheet. 2018; [https://www.jointcommission.org/assets/1/18/The\\_Joint\\_Commission\\_Fact\\_Sheet\\_7\\_2\\_18.pdf](https://www.jointcommission.org/assets/1/18/The_Joint_Commission_Fact_Sheet_7_2_18.pdf). Accessed Jan 9, 2019, 2018.
29. Commission TJ. Documentation Assistance Provided by Scribes: What guidelines should be followed when physicians or other licensed independent practitioners use scribes to assist with documentation? *Perspectives® Newsletter: The Official Newsletter of The Joint Commission*. 2018;38(8).
30. Park J. Implementation and Use of ScribeConnect Scribes in the Family Practice Setting. In: Bray B, ed. *ScribeConnect Clinical Scribe Accelerator Training (CSAT) Development Program*. Unpublished 2019.
31. ScribeConnect L, Inventor. ScribeConnect, LLC.
32. Johnson R, Latterell P. *Anatomy Flashcards for Healing Massage Techniques*. 1 ed. <https://www.pearson.com/us/higher-education/program/Johnson-Anatomy-Flashcards-for-Healing-Massage-Techniques/PGM104432.html>; Pearson Education Inc.; 2008.
33. DHHS USDoHaHS. Screening Tests. *Doctor Visits* 2019; <https://healthfinder.gov/HealthTopics/Category/doctor-visits/screening-tests>. Accessed Feb 13, 2019, 2019.
34. DHHS USDoHaHS. Healthcare Glossary. 2019; <https://www.healthcare.gov/glossary/>. Accessed Feb 13, 2019, 2019.
35. ASPA ASfPA, DHHS USDoHaHS. Preventive Care. 2017; <https://www.hhs.gov/healthcare/about-the-aca/preventive-care/index.html>. Accessed Feb 13, 2019, 2019.
36. CMS CfMMS. Preventive & Screening Services. *Your Medicare Coverage* 2019; <https://www.medicare.gov/coverage/preventive-screening-services>. Accessed Feb 14, 2019, 2019.
37. MLN MLN, CMS CfMMS. Medicare Preventive Services. 2018; <https://www.cms.gov/Medicare/Prevention/PrevntionGenInfo/medicare-preventive-services/MPS-QuickReferenceChart-1.html>. Accessed Feb 14, 2019, 2019.

38. Hughes C. What You Need to Know About the Medicare Preventive Services Expansion. *Family practice management*. 2011;18(1):22-25.
39. NHIC NHICD , U.S. Department of Health and Human Services. Covered Preventive Services for Children. *Myhealthfinder* 2019; <https://healthfinder.gov/myhealthfinder/coveredservices/Children.aspx>. Accessed Feb 13, 2019, 2019.
40. CDC CfDCaP. Current Vaccine Information Statements (VISs). *CDC VIS Home* 2018; <https://www.cdc.gov/vaccines/hcp/vis-statements>. Accessed Feb 13, 2019, 2019.
41. Savoy ML, O'Gurek DT. Screening Your Adult Patients for Depression. *Family practice management*. 2016;23(2):16-20.
42. ACS ACS. Cancer A-Z. 2019; <https://www.cancer.org/cancer.html>. Accessed Feb 13, 2019, 2019.
43. Farahi N, Zolotor A. Recommendations for preconception counseling and care. *American family physician*. 2013;88(8):499-506.
44. Raman TR, Singh DJ, Jayaprakash DG, Raja LN. AIRWAY OBSTRUCTION IN CHILDREN. *Medical journal, Armed Forces India*. 1995;51(2):87-90.
45. Kurowski JA, Kay M. Caustic Ingestions and Foreign Bodies Ingestions in Pediatric Patients. *Pediatric clinics of North America*. 2017;64(3):507-524.
46. Uyemura MC. Foreign body ingestion in children. *American family physician*. 2005;72(2):287-291.
47. Types of Poisoning in Children. 2019; <https://nyulangone.org/conditions/poisoning-in-children/types>. Accessed Feb 14, 2019, 2019.
48. MedlinePlus, NLM USNLoM, DHHS USDoHaHS. Imaging and Radiology. In: NLM NLoM, DHHS USDoHaHS, NIH NHI, eds. *Medical Encyclopedia*. <https://medlineplus.gov/> MedlinePlus; National Health Institute, National Library of Medicine; U.S. Department of Health and Human Services; 2019.
49. MedlinePlus, NLM NLoM, DHHS USDoHaHS, A.D.A.M. A.D.A.M. Medical Encyclopedia. In: MedlinePlus, Medicine NLo, DHHS USDoHaHS, eds. *A.D.A.M. Medical Encyclopedia*. <https://medlineplus.gov/> A.D.A.M., Inc.; National Library of Medicine; U. S. Department of Health and Human Services; 2019.