Unstructured to Structured Content

A Two-Pronged Approach

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Healthwise, Inc.

Healthwise, Inc.

- Nonprofit established 1975
- Mission: *Help people make better health decisions*
- Produces evidence-based consumer health information
  - Web-based health topics
  - Patient instruction handouts
  - Symptom checker
  - Decision aids
  - Shared decision making campaigns

Who I Am

- Content Technical Manager
- Former content developer
- Conduct training
- Work with engineering to:
  - Develop and implement new tools
  - Establish best practices
  - Troubleshoot problems
  - Improve process efficiency

The Challenge

Convert ~40,000 “pages” of digital consumer health information to structured content

The Conversion

- Large documents → Small, focused chunks of content
- Repeated language → Language reuse across products
- Multiple voices → Consistent voice across products
- Relatively “loose” formats → “Tighter” format options
- Some metadata → Additional metadata
- Well-defined roles → Overlapping roles

The Tool

- DITA – Darwin Information-Typing Architecture
- XML standard
- Allows specialization of topic type and tagging elements
- Allows constraints on tagging element choices
- Facilitates multiple reuse mechanisms
- Accommodates accessibility

hwActionTask title Slideshow /title

Specialized topic type

prolog Prolog: metadata othermeta/ Othermeta: readingLevel=7.92 /metadata /prolog

Metadata

hwActionTaskBody prereq Pre-requisites:

Specialized element – allows constraining

p *Slideshow prerequisites here (optional)* /p /prereq

context p *Slideshow context here (optional)* /p /context

steps

1. step cmd *1st slide title here (required)* /cmd
   info image /image
   p *Replace camera image here with 1st slide image here (required) AND add additional infc* /p /info /step
2. step cmd Second slide title /cmd
   info image /image
   p Additional information is placed here. In this location, we can emphasize a hwEmphasis **word** /hwEmphasis or a hwEmphasis **long long phrase** /hwEmphasis, or we can indicate a genus/species of an organism, such as hwGenusSpecies *Eschiveria coli* /hwGenusSpecies, or we can hwTouchup highlight a change /hwTouchup. /p

   Specialized elements – provide semantic meaning

   p We can add: /p

   ul
   - li A bulleted list. /li
   - li A bulleted list. /li /ul

   note **Note:** Or a note. /note

   p But we can also constrain out element tags we hwEmphasis **don't** /hwEmphasis want content developers to use, such as <fig>, <filepath>, <hazardstatement>, <msgblock>, <table>, etc. — all of which are allowed in a nonspecialized topic in this location. /p /info /step
3. step cmd *3rd slide title here (required)* /cmd
   info p *3rd slide image here (required) AND additional infc* /p /info /step /steps

Constraints

result Result: *Slideshow result(s) here (optional)* /result

postreq Post-requisites:

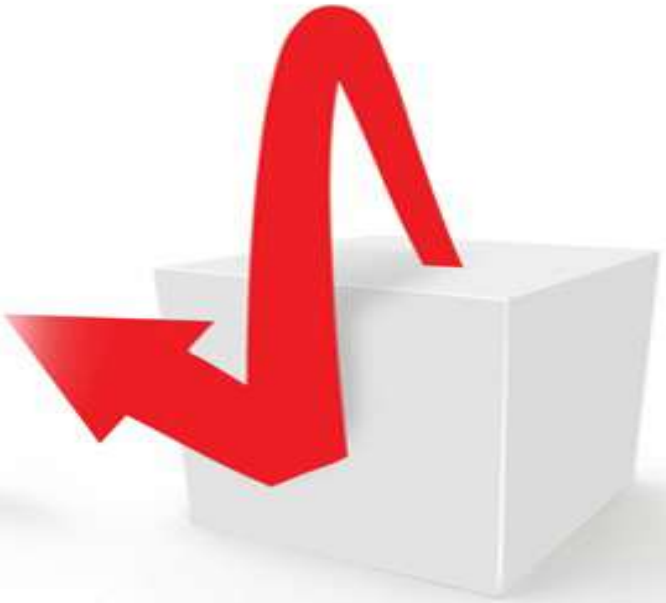
p *Slideshow postrequisites here (optional)* /p /postreq /hwActionTaskBody /hwActionTask

The Approach

Path A: Curated content

Small focused chunks of consumer health information (DITA topics)

Path B: “Bursted” content



Path A: Curated Content

- Find best content
- Manually convert into XML standard markup (DITA)
- Identify reuse opportunities
- Manually enter metadata
- Follow guidelines established by Editorial Guidelines Group (EGG) and the technical team
- Provide feedback about what works and what doesn’t

Curated Content Example

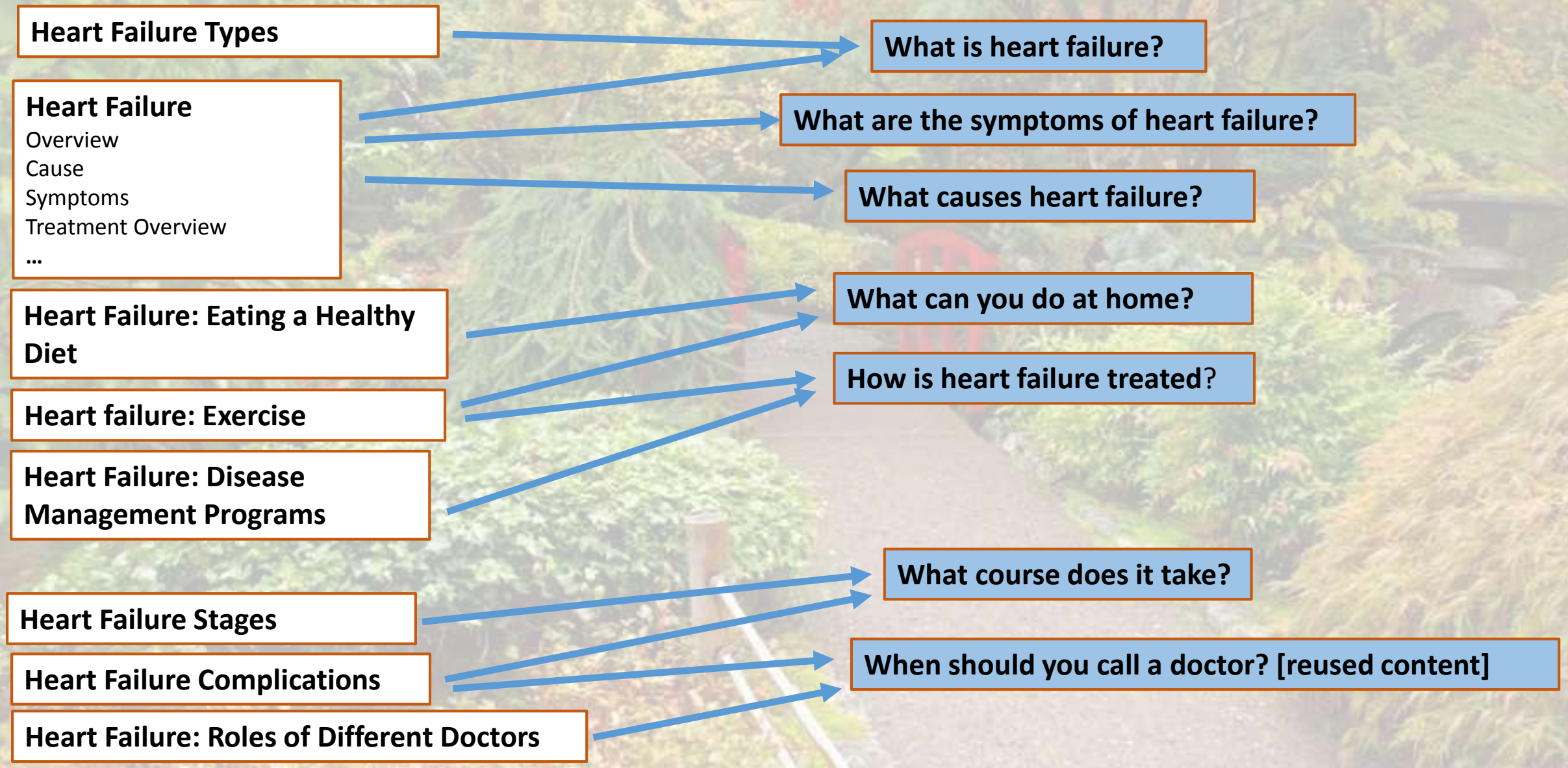
Selected essential “aspects” of a condition

- What is heart failure?
- What course does it take?
- How is heart failure treated?
- What can you do at home?
- What causes heart failure?
- How is heart failure diagnosed?
- What are the symptoms of heart failure?
- When should you call a doctor?

Pulled content from many documents

- Heart Failure
- Heart Failure Stages
- Heart Failure Types
- Heart Failure Complications
- Heart Failure: Easier Breathing
- Heart Failure: Roles of Different Doctors
- Heart Failure: Eating a Healthy Diet
- Heart Failure: Disease Management Programs
- Heart failure: Exercise

Curated Content



Curated Content

When to Call a Doctor
[tp17540] Platforms: mobile

Call 911 or other emergency services right away if you have:

- Symptoms of sudden heart failure, such as:
  - Severe shortness of breath (trouble getting a breath even when resting).
  - Suddenly getting an irregular heartbeat that lasts for a while, or getting a very fast heartbeat along with dizziness, nausea, or fainting.
  - Foamy, pink mucus with a cough and shortness of breath.
- Symptoms of a heart attack, such as:

Heart Failure

[hw44415] Special <en-us>

Consumer Abstract

Describes heart failure (congestive heart failure). Discusses common causes like hypertension and coronary artery disease. Has info on symptoms. Covers diagnostic tests and treatments. Discusses heart failure classification system and stages of CHF.

Topic Definition

Definition

Topic Overview
[tp17534]

Topic Overview
Frequently Asked Questions
Cause
Symptoms
What Increases Your Risk
When to Call a Doctor
Exams and Tests
Treatment Overview
Prevention
Living With Heart Failure
Coping With Your Feelings
Medications
Surgery
Other Treatment

or upper belly, or in one or

face, arm, or leg, especially

its.

daches.

d think you have an

What is heart failure?

Heart failure means that your heart muscle doesn't pump as much blood as your body needs. Failure doesn't mean that your heart has stopped. It means that your heart is not pumping as well as it should.

Because your heart cannot pump well, your body tries to make up for it. To do this:

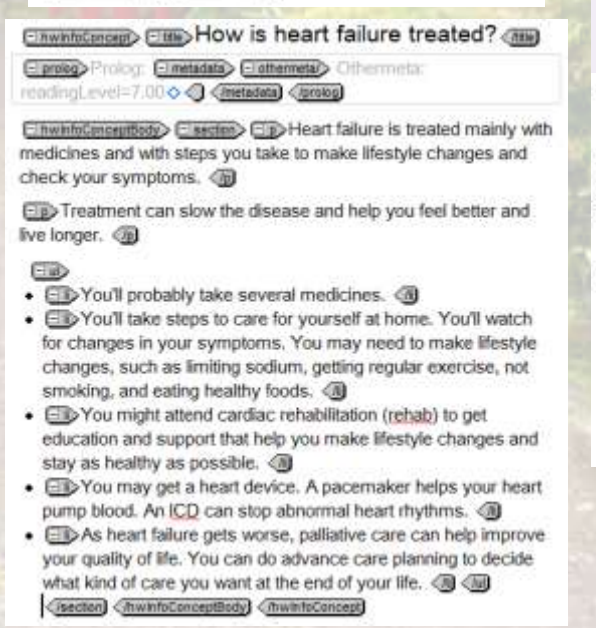
- Your body holds on to salt and water. This increases the amount of blood in your bloodstream.
- Your heart beats faster.
- Your heart may get bigger.

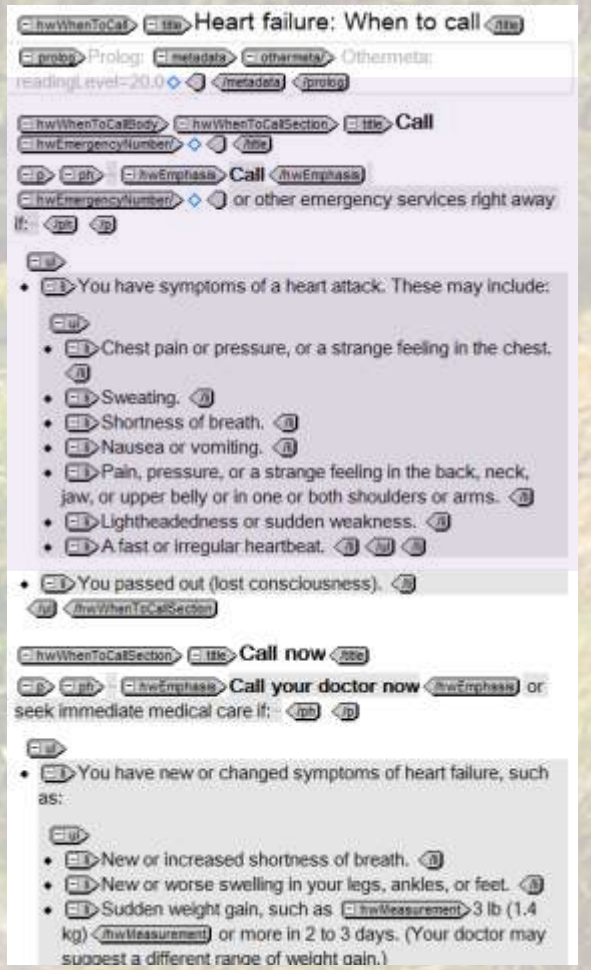
Your body has an amazing ability to make up for heart failure. It may do such a good job that you don't know you have a disease. But at some point, your heart and body will no longer be able to keep up. Then fluid starts to build up in your body, and you have symptoms like feeling weak and out of breath.

This fluid buildup is called congestion. It's why some doctors call the disease congestive heart failure.

Heart failure usually gets worse over time. But treatment can slow the disease and help you feel better and live longer.

Documents to DITA topics



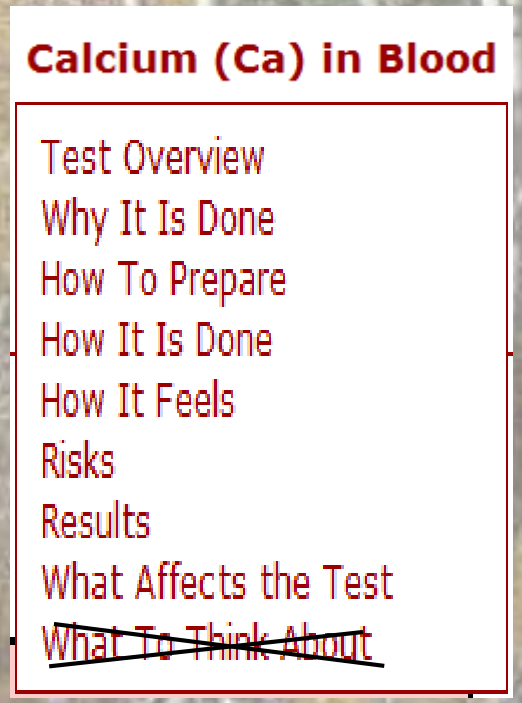


Path B: Bursted Content

- Selected existing documents with rigid outlines
- One document section = One DITA topic
- Metadata applied programmatically
  - Some metadata (medical reviewer names) obtained from the document and applied to all topics from that document
  - Some metadata applied to individual sections (= topics)
- Some prep work and cleanup required

Bursted Content Example

Existing document



Converted programmatically

Topics created by "bursting"

- Calcium (Ca) in blood test: Overview
- Why is a calcium (Ca) in blood test done?
- How do you prepare for a calcium (Ca) in blood test?
- How is blood taken from a vein? (46)
- How does having blood drawn from a vein feel? (100)
- What are the risks of a blood draw from a vein? (80)
- What results are possible from a calcium (Ca) in blood test?
- What affects calcium (Ca) in blood test results?

Bursted Content

Calcium (Ca) in Blood

[hw3833] MedicalTest <en-us>

Test Overview
[hw3836]

A test for calcium in the blood checks the calcium level in the body that is not stored in the bones. Calcium is the most common mineral in the body and one of the most important. The body needs it to build and fix bones and teeth, help nerves work, make muscles squeeze together, help blood clot, and help the heart to work. Almost all of the calcium in the body is stored in bone.

Normally the level of calcium in the blood is carefully controlled. When blood calcium levels get low (hypocalcemia), the bones release calcium to bring it back to a good blood level. When blood calcium levels get high (hypercalcemia), the extra calcium is stored in the bones or passed out of the body in urine and stool. The amount of calcium in the body depends on the amount of:

- Calcium you get in your food.
- Calcium and vitamin D your intestines absorb.
- Phosphate in the body.
- Certain hormones, including parathyroid hormone, calcitonin, and estrogen in the body.

Vitamin D and these hormones help control the amount of calcium in the body. They also control the amount of calcium you absorb from food and the amount passed from the body in urine. The blood levels of phosphate are closely linked to calcium levels and they work in opposite ways: As blood calcium levels get high, phosphate levels get low, and the opposite is also true.

It is important to get the right amount of calcium in your food because the body loses calcium every day. Foods rich in calcium include dairy products (milk, cheese), eggs, fish, green vegetables, and fruit. Most people who have low or high levels of calcium do not have any symptoms. Calcium levels need to be very high or low to cause symptoms.

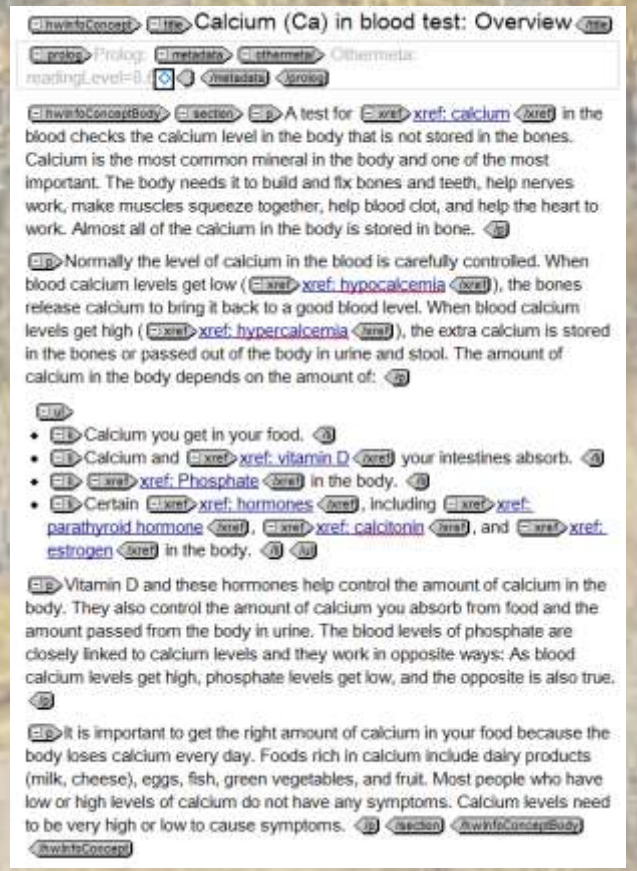
Top of Page

Why It Is Done
[hw3848]

A blood calcium test may be done:

- To check for problems with the parathyroid glands or kidneys, certain types of

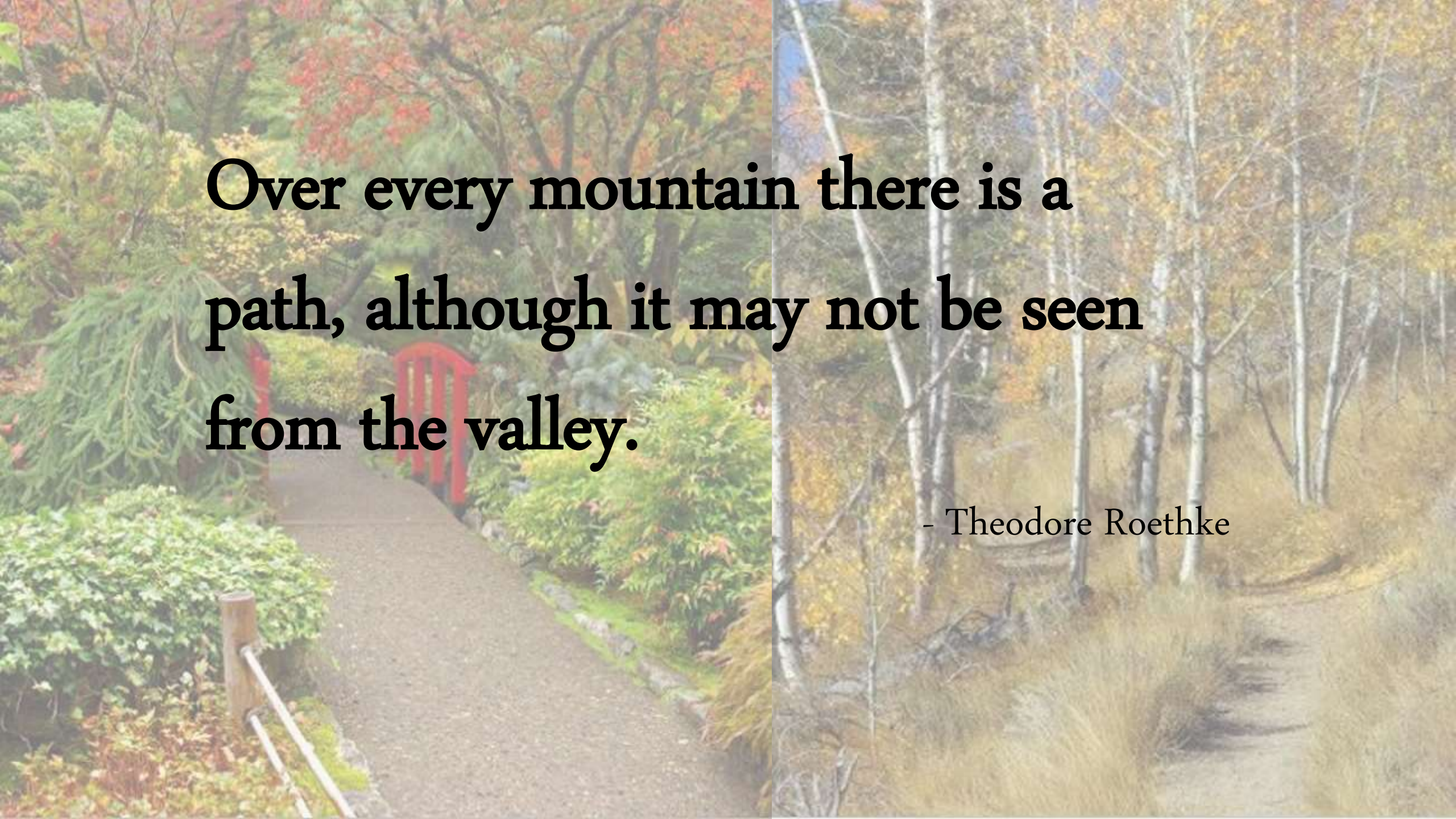
Document to DITA topics



hwInfoConcept title How is blood taken from a vein? /title
prolog Prolog: metadata othermeta/ Othermeta:
readingLevel=3.9 /metadata /prolog
hwInfoConceptBody section p The health professional drawing blood will: /p
ul
- li Wrap an elastic band around your upper arm to stop the flow of blood. This makes the veins below the band larger so it is easier to put a needle into the vein. /li
- li Clean the needle site with alcohol. /li
- li Put the needle into the vein. More than one needle stick may be needed. /li
- li Attach a tube to the needle to fill it with blood. /li
- li Remove the band from your arm when enough blood is collected. /li
- li Put a gauze pad or cotton ball over the needle site as the needle is removed. /li
- li Put pressure to the site and then a bandage. /li /ul /section /hwInfoConceptBody /hwInfoConcept

hwInfoConcept title How does having blood drawn from a vein feel? /title
prolog Prolog: metadata othermeta/ Othermeta:
readingLevel=2.5 /metadata /prolog
hwInfoConceptBody section p The blood sample is taken from a vein in your arm. An elastic band is wrapped around your upper arm. It may feel tight. You may feel nothing at all from the needle, or you may feel a quick sting or pinch. /p /section /hwInfoConceptBody /hwInfoConcept

hwInfoConcept title What can affect the results of a calcium (Ca) in blood test? /title
prolog Prolog: metadata othermeta/ Othermeta:
readingLevel=7.6 /metadata /prolog
hwInfoConceptBody section p Reasons you may not be able to have the test or why the results may not be helpful include: /p
ul
- li Taking calcium or vitamin D in any form including milk, antacids, or supplements right before the test. /li
- li Taking medicines, such as xref xref: diuretics /xref . Many medicines can affect calcium levels in the blood. /li
- li Having xref xref: dialysis /xref . /li
- li Having a high volume blood transfusion or many blood transfusions in a short period of time. /li /ul /section /hwInfoConceptBody /hwInfoConcept


Over every mountain there is a
path, although it may not be seen
from the valley.
- Theodore Roethke

Questions?