THE UNIVERSITY OF KANSAS HEALTH SYSTEM

Kansas Association of Osteopathic Medicine

Axel Thors, DO, FACS, RPVI

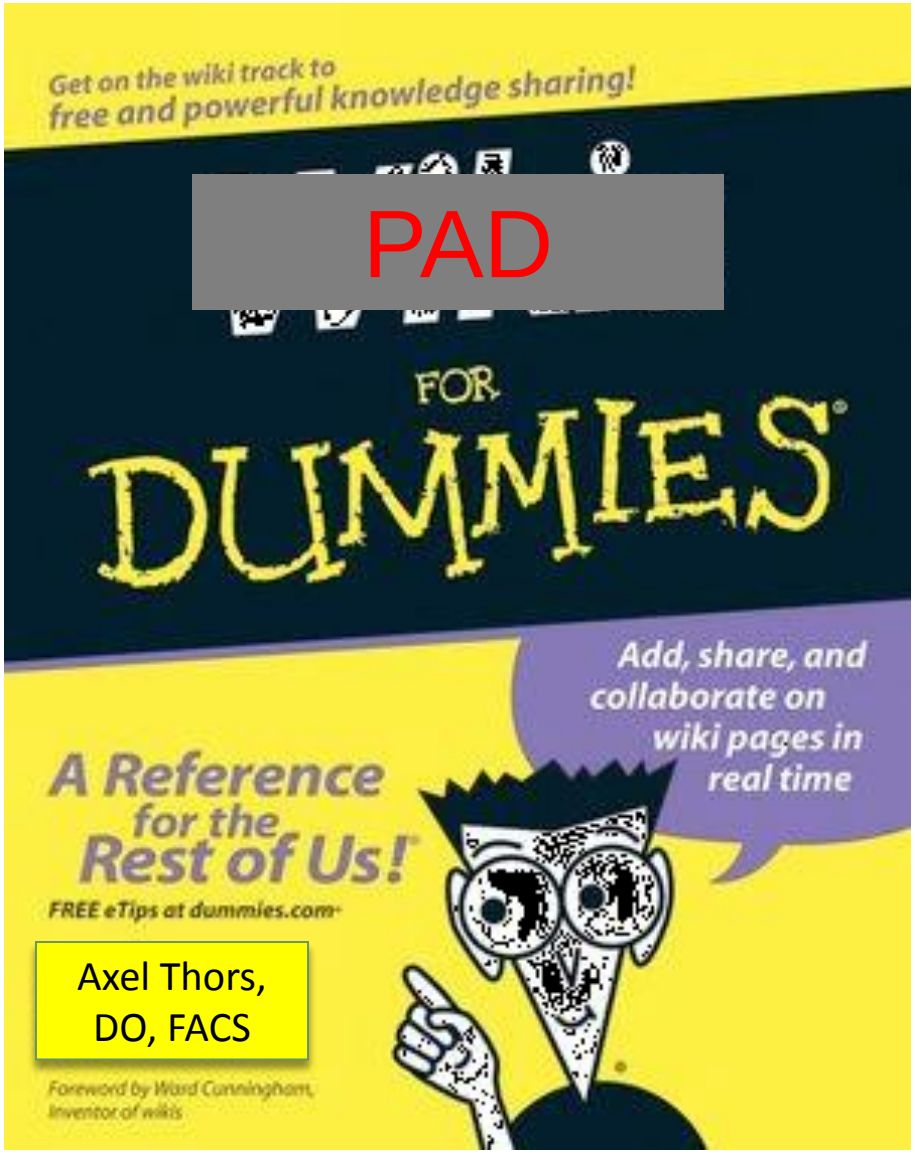
Assistant Professor of Vascular Surgery

Department of Surgery

University of Kansas Health System

Management of Peripheral Artery Disease: A Primary Care Focus

- Goals
- Understand Cardiovascular morbidity in this patient population
- Understanding value of Non-invasive Testing (ABI)
- Risk factor management and importance of hard conversations with our patients

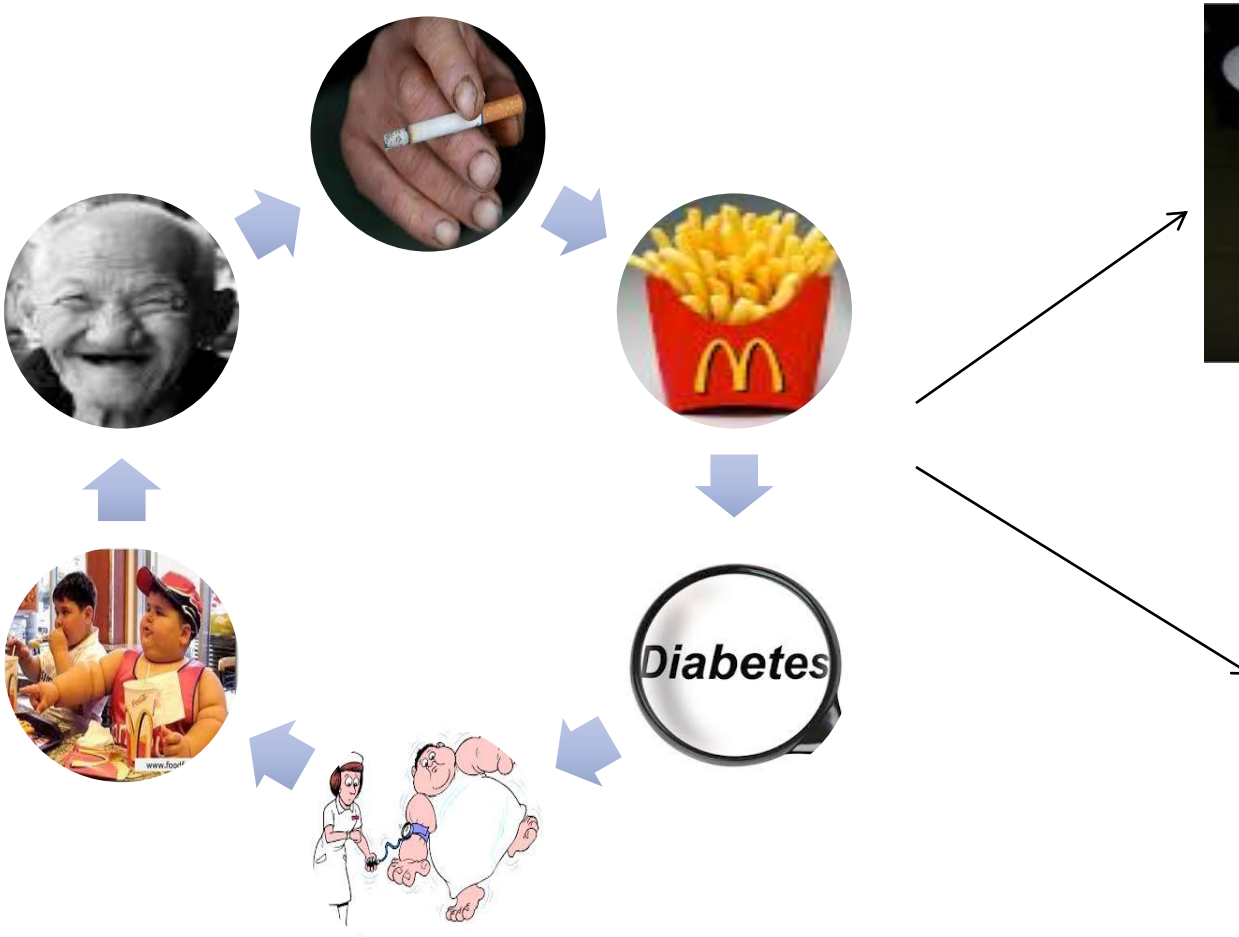

Get on the wiki track to
free and powerful knowledge sharing!
PAD
FOR
DUMMIES
Add, share, and
collaborate on
wiki pages in
real time
A Reference
for the
Rest of Us!
FREE eTips at dummies.com
Axel Thors,
DO, FACS
Foreword by Ward Cunningham,
Inventor of wikis

PAD

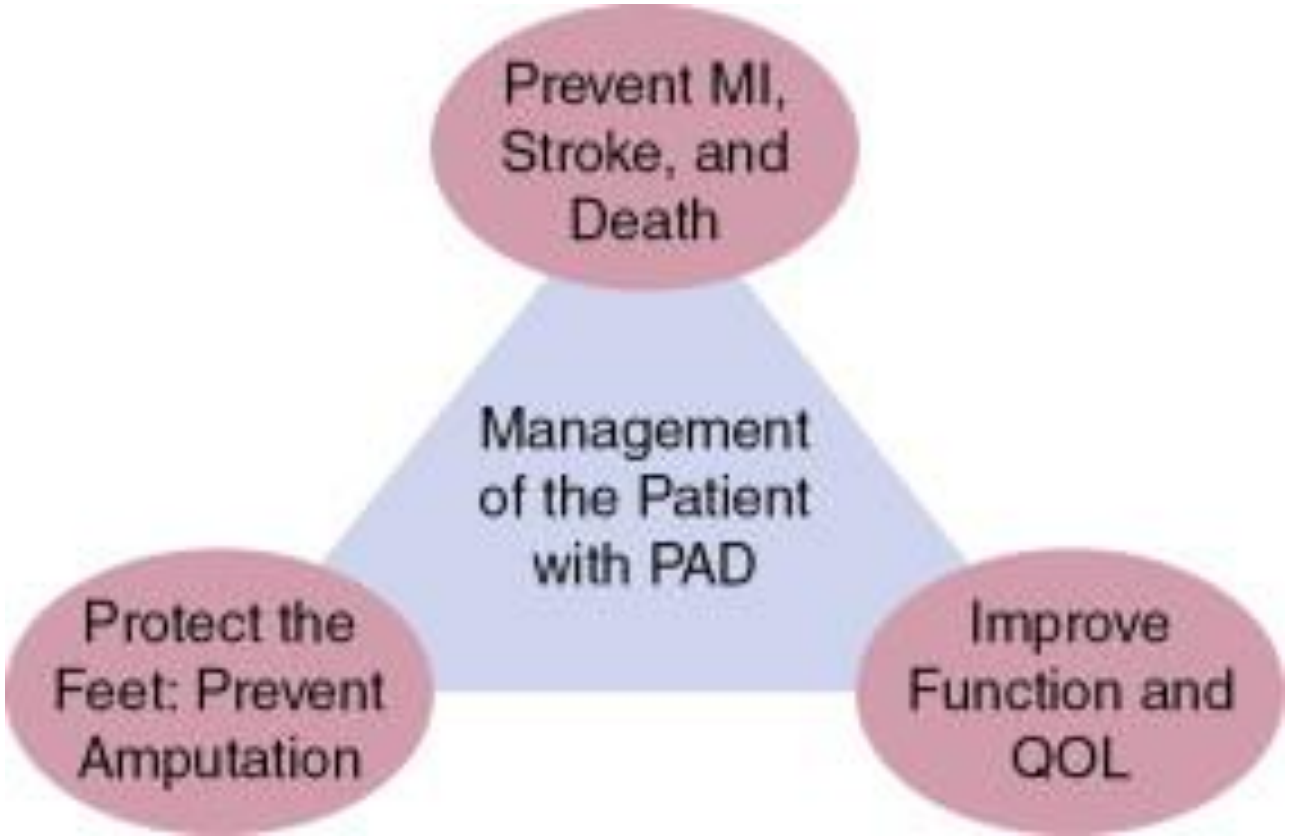
- 5 to 12 million Americans
- Diagnosed < ½ of these patients
- Prognostic implications - reduce CV morbidity & mortality.
- Last but not least – save a leg!!!!

THE UNIVERSITY OF KANSAS HEALTH SYSTEM

PAD: Risk Factors



Comprehensive approach



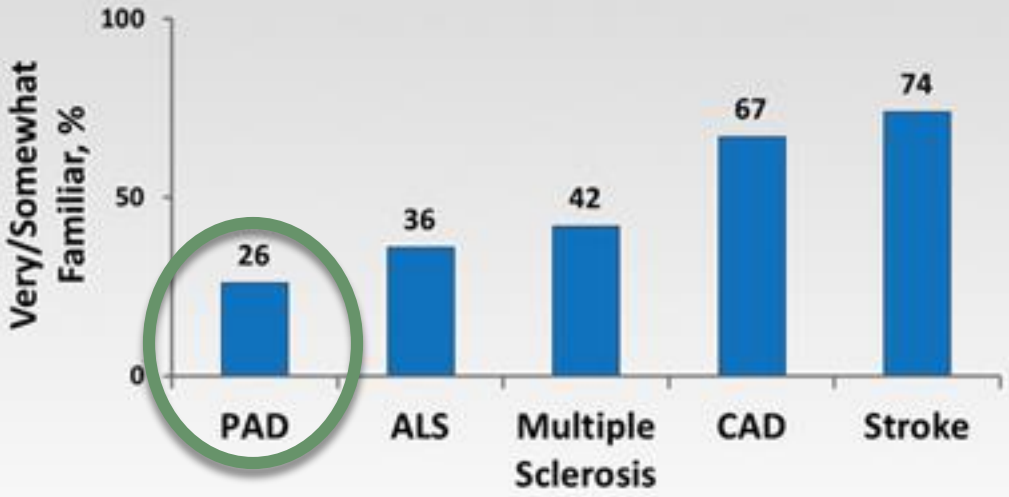
WALL STREET

Take em off !!!!!!!

You may be surprised what you find

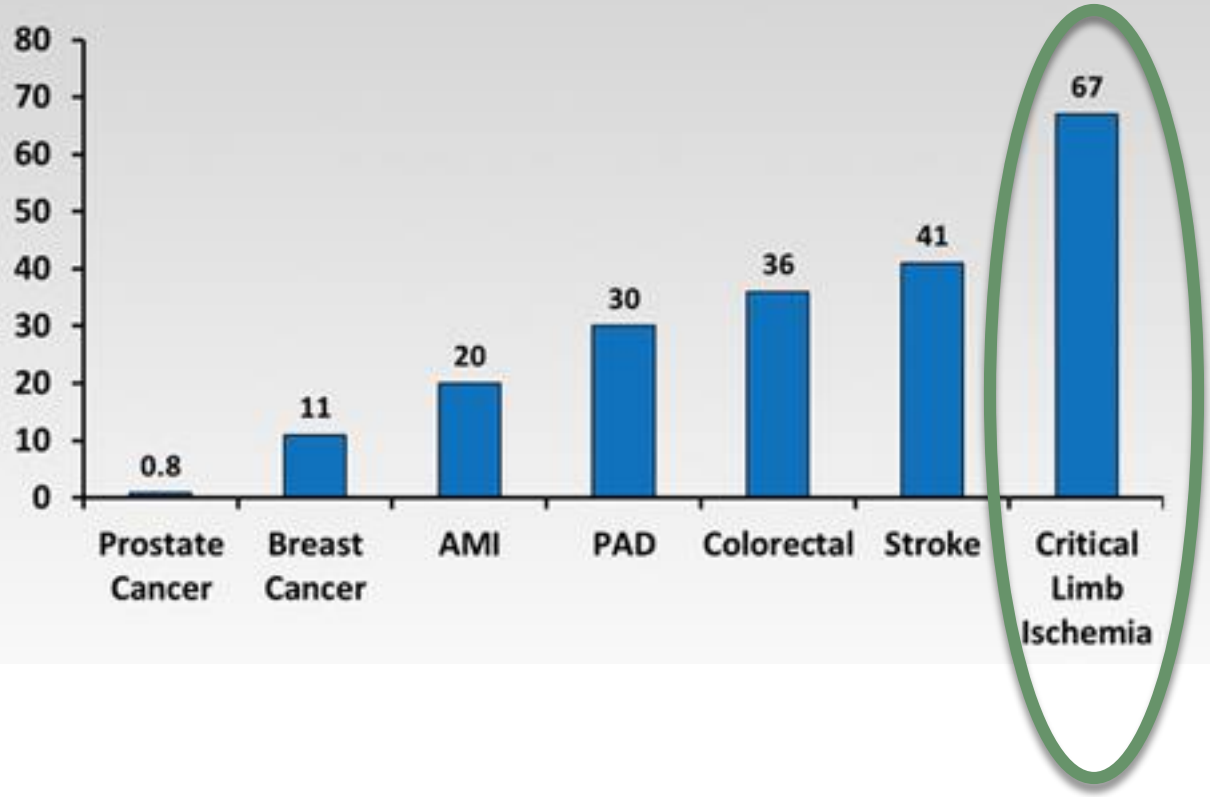
PAD Awareness Is Low

N = 2501 ≥ 50 years surveyed for awareness of PAD and other diseases



Hirsch AT, et al. Circulation. 2007;116;2086-2094.

5-Year Mortality for CLI Higher than Common Cancers



Claudication

clau·di·ca·tion

/ˌklôdəˈkāSH(ə)n/

noun MEDICINE

noun: **claudication**

limping.

- a condition in which cramping pain in the leg is induced by exercise, typically caused by obstruction of the arteries.
  noun: **intermittent claudication**; plural noun: **intermittent claudications**

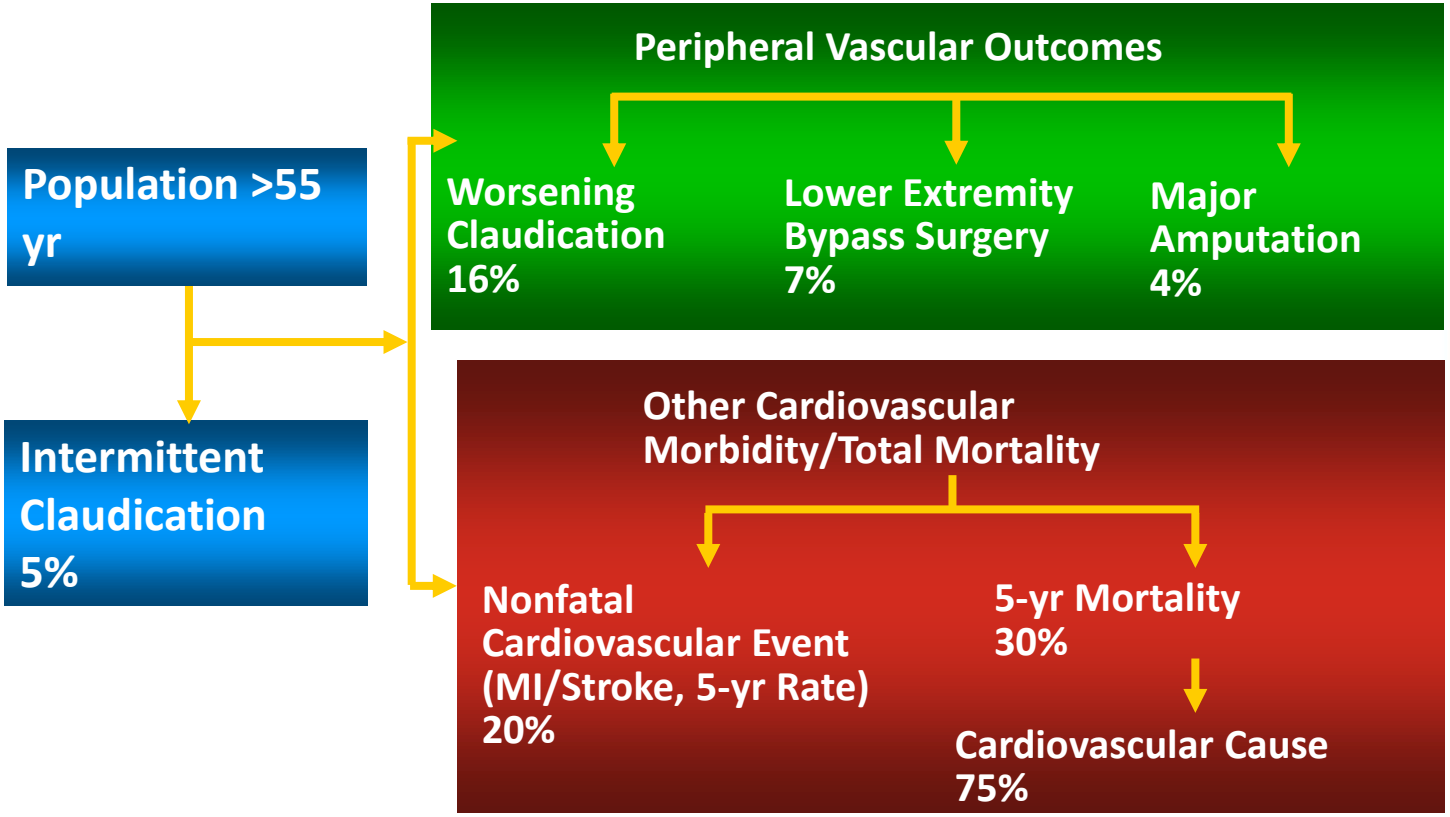
Origin

LATIN	LATIN	LATIN	
claudus →	claudicare →	claudicatio →	claudication
lame	to limp		*late Middle English*

late Middle English: from Latin *claudicatio(n-)*, from the verb *claudicare* 'to limp,' from *claudus* 'lame.'

Prevalence

Outcomes in Patients with Intermittent Claudication



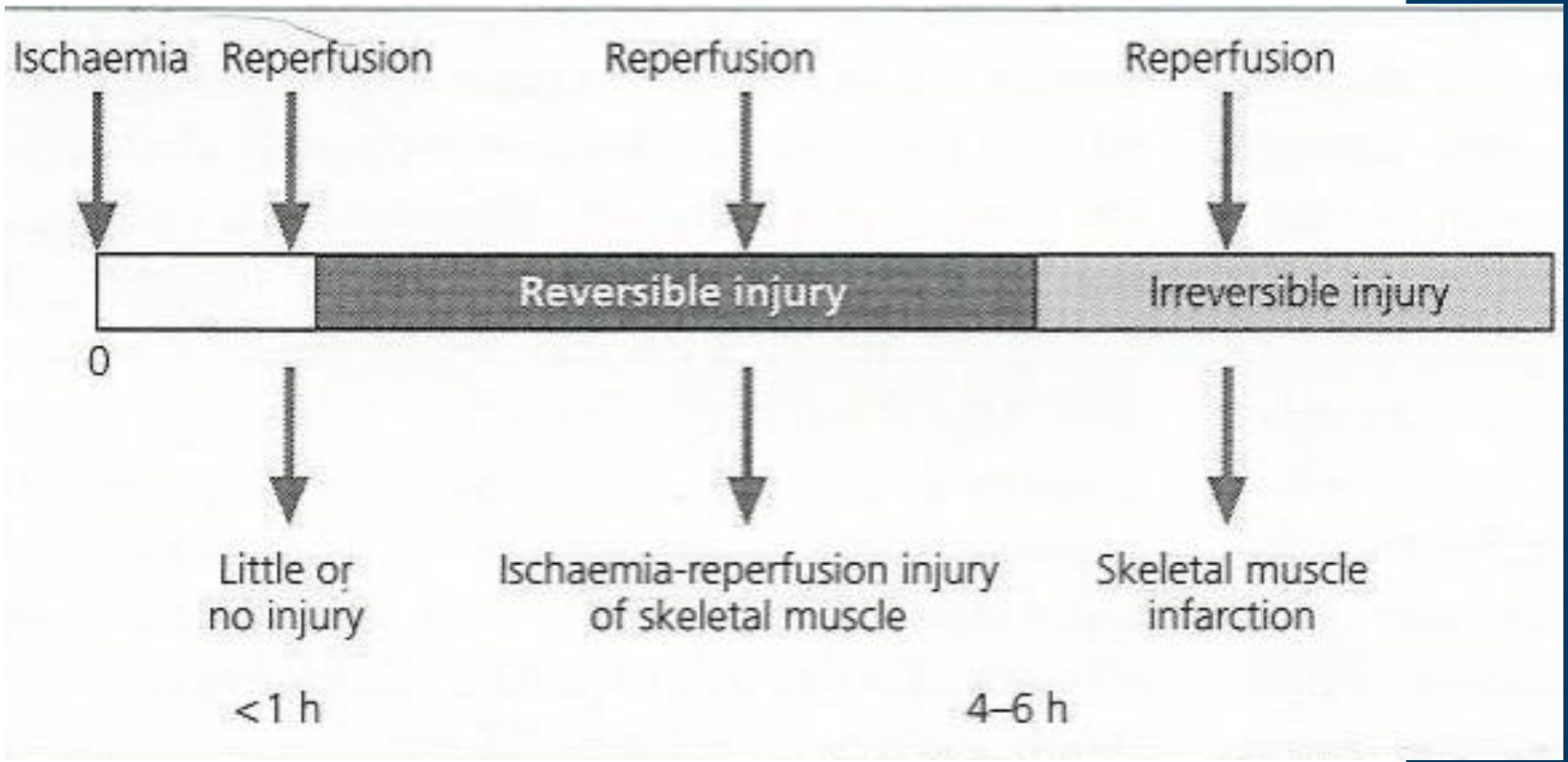
Adapted from Weitz JI, et al. *Circulation*. 1996;94:3026-3049.

Critical Limb Ischemia

- Rest Pain, ulcers, gangrene due to arterial obstruction
- Implies chronicity as opposed to acute limb ischemia

- What do we mean when we say “door to balloon time”?
- Time is _____
- Case scenario:
  - 75 year old male presents to ER with 4 hours of a cold left leg. Complains of worsening pain, numbness, and he is developing weakness in his left foot.

Time matters !!!



Drop Foot

(Inability to lift the front part of the foot off the ground)

Assessment

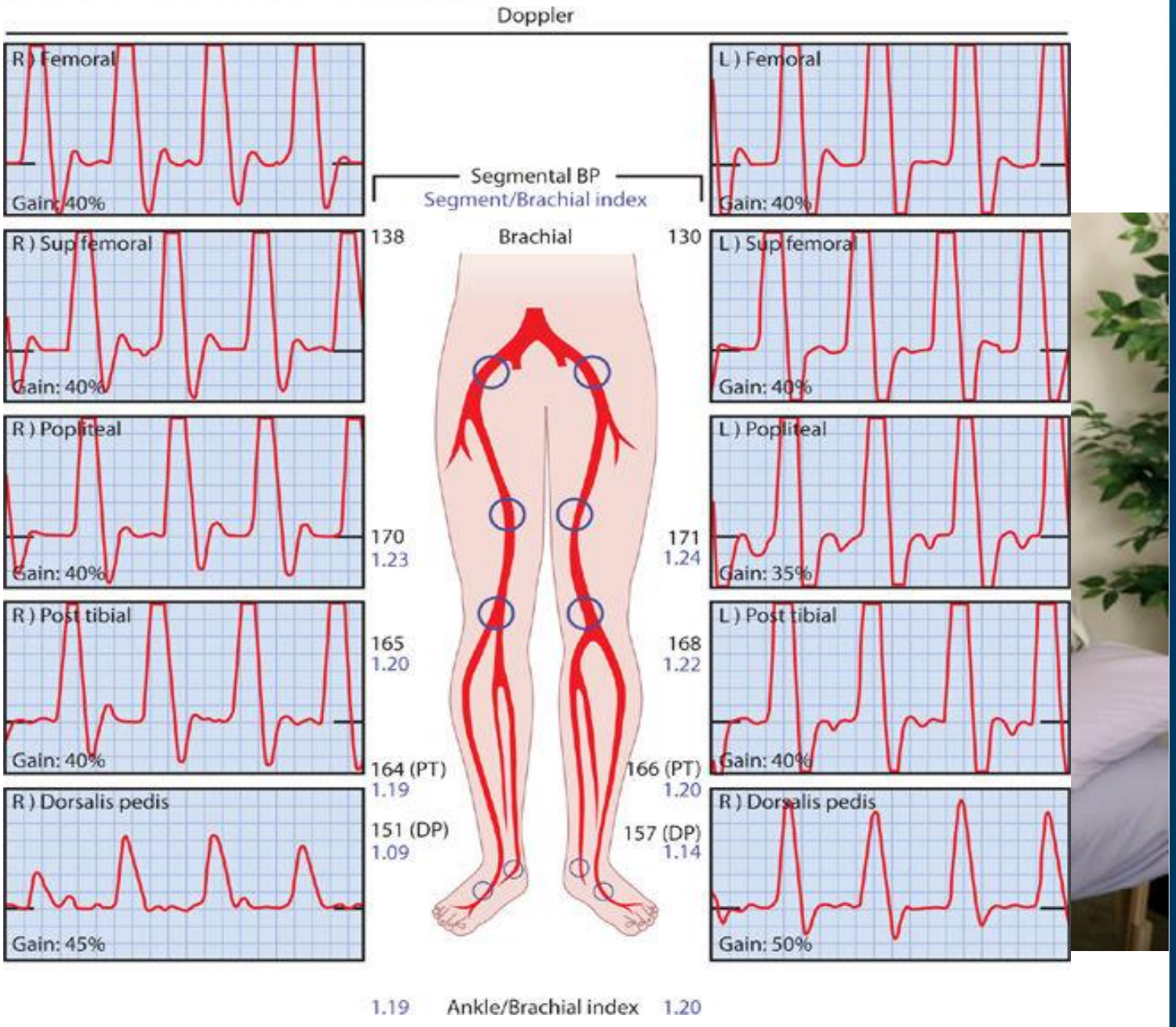
- H & P (remember shoes & socks off)
- Non-invasive tests
- Invasive test

Dorsalis Pedis Artery

- Lost art of palpating pedal pulses
- Located between first and second metatarsal bones, just lateral to extensor hallucis longus tendon
- Palpated with pads of fingers as the hand is partially wrapped around the foot
- Move fingers several millimeters medial or lateral until palpable
- Practice on normal patients!
- If you are not sure, check same location with Doppler device

Posterior Tibial Artery

- Located in hollow curve just behind the medial malleolus, halfway between the malleolus and the Achilles tendon
- Right hand should be used to palpate left foot (vice versa)
- If not sure, use Doppler device in same location with liberal use of ultrasound gel


Doppler
R) Femoral
Gain: 40%
L) Femoral
Gain: 40%
Segmental BP
Segment/Brachial index
R) Sup femoral
Gain: 40%
138
Brachial
130
L) Sup femoral
Gain: 40%
R) Popliteal
Gain: 40%
170
1.23
171
1.24
L) Popliteal
Gain: 35%
R) Post tibial
Gain: 40%
165
1.20
168
1.22
L) Post tibial
Gain: 40%
164 (PT)
1.19
166 (PT)
1.20
R) Dorsalis pedis
Gain: 45%
151 (DP)
1.09
157 (DP)
1.14
R) Dorsalis pedis
Gain: 50%
1.19
Ankle/Brachial index
1.20

ABI Value	Interpretation	Recommendation
Greater than 1.4	Calcification / Vessel Hardening	Refer to vascular specialist
1.0 - 1.4	Normal	None
0.9 - 1.0	Acceptable	
0.8 - 0.9	Some Arterial Disease	Treat risk factors
0.5 - 0.8	Moderate Arterial Disease	Refer to vascular specialist
Less then 0.5	Severe Arterial Disease	Refer to vascular specialist

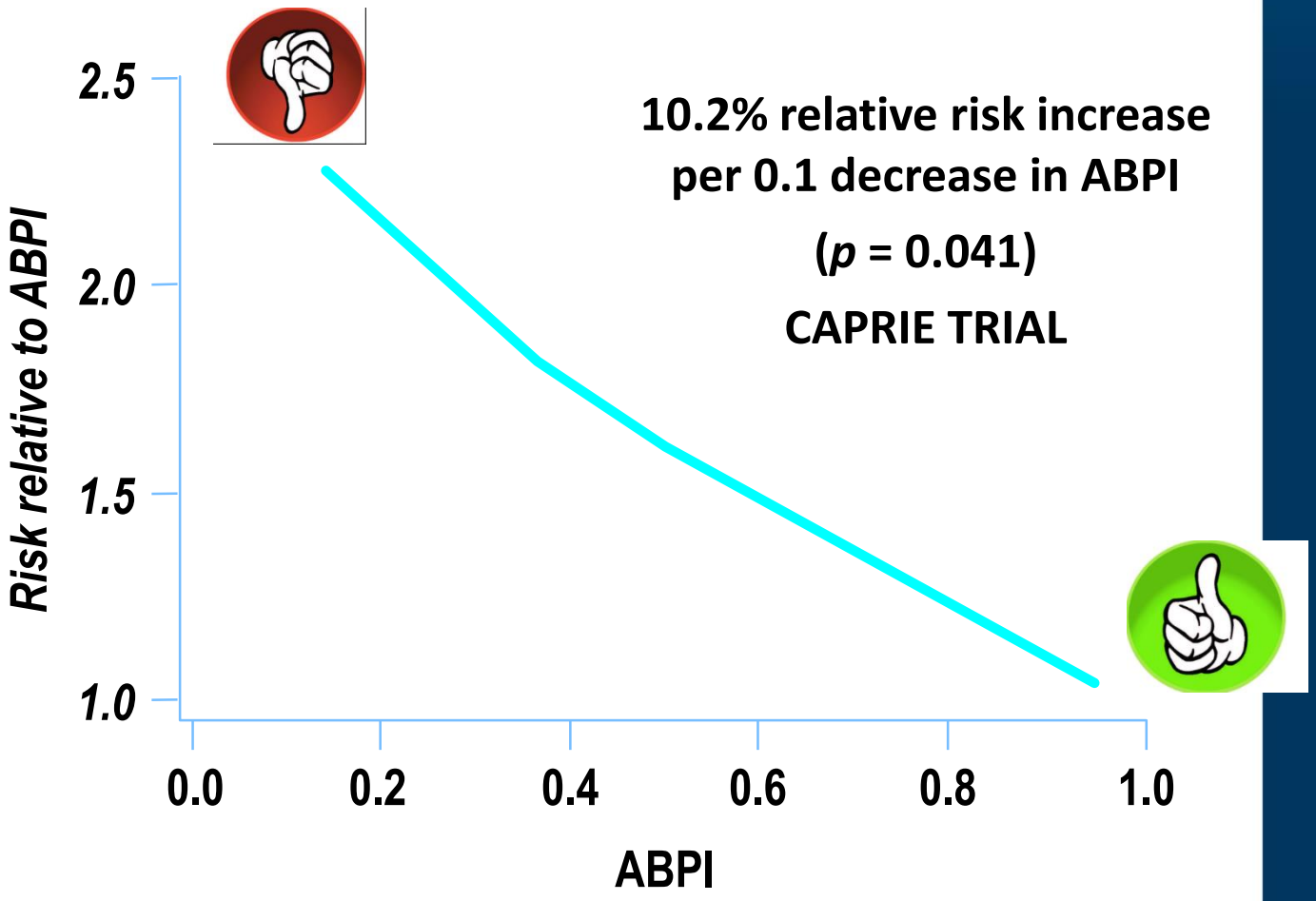
ABI remains an independent predictor of CV risk after adjusting for conventional risk factors

- True
- False

ABI remains an independent predictor of CV risk after adjusting for conventional risk factors

- **True**

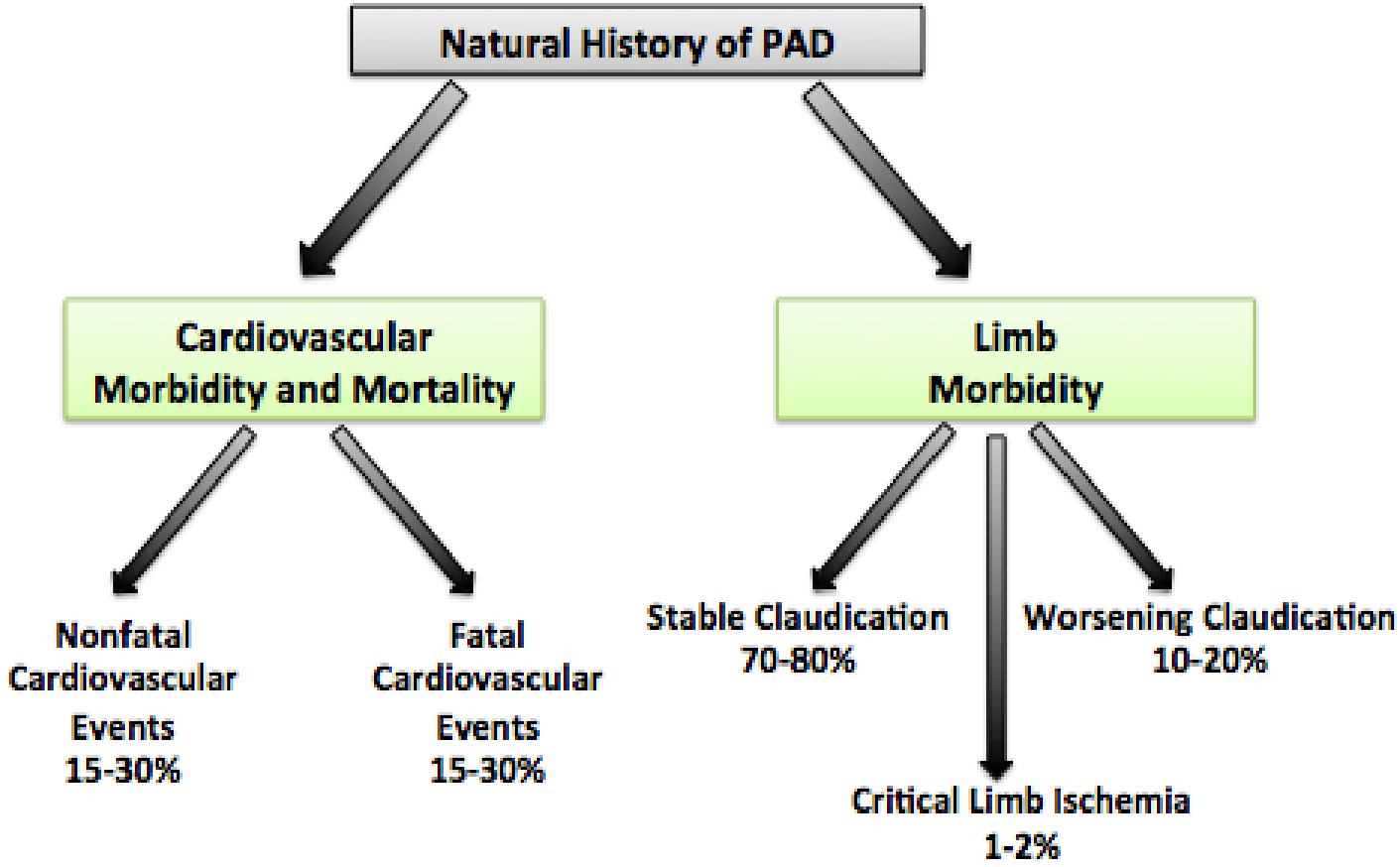
ABI – inverse relationship with 5-year risk of cardiovascular events and death

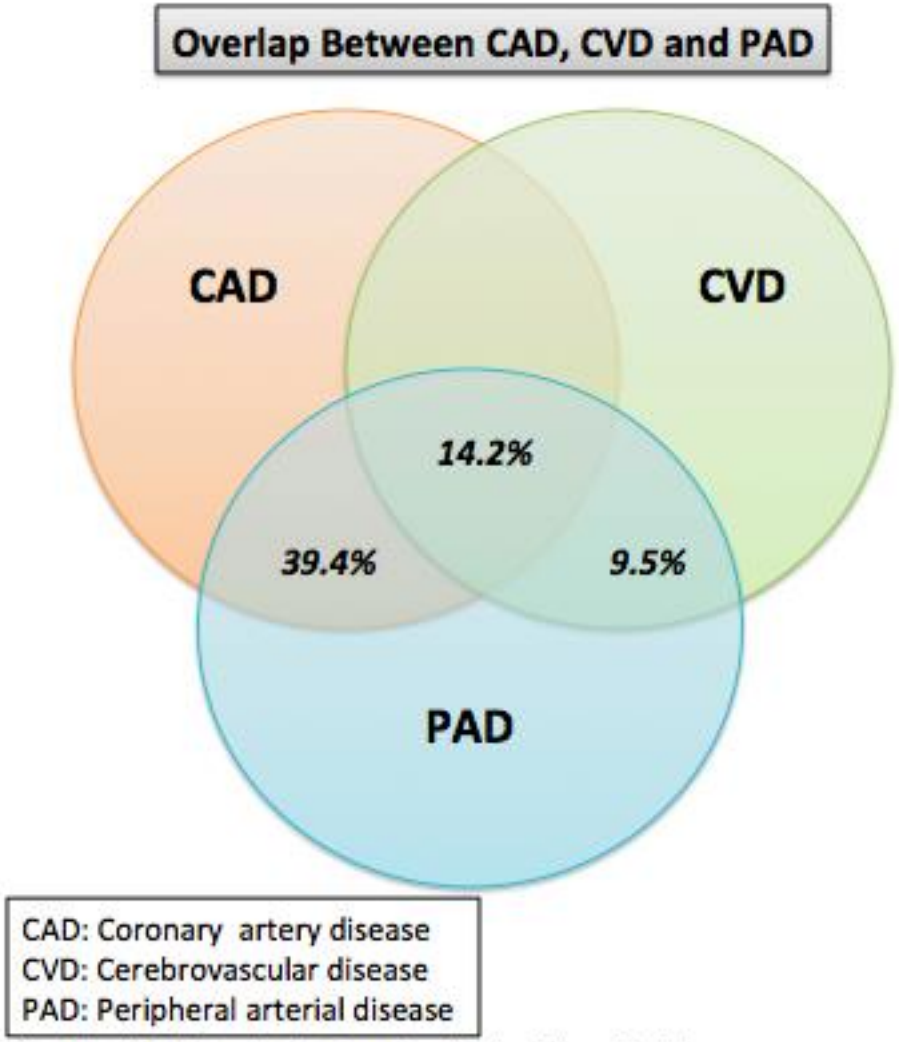


The majority of patients with Claudication will eventually progress to CLI

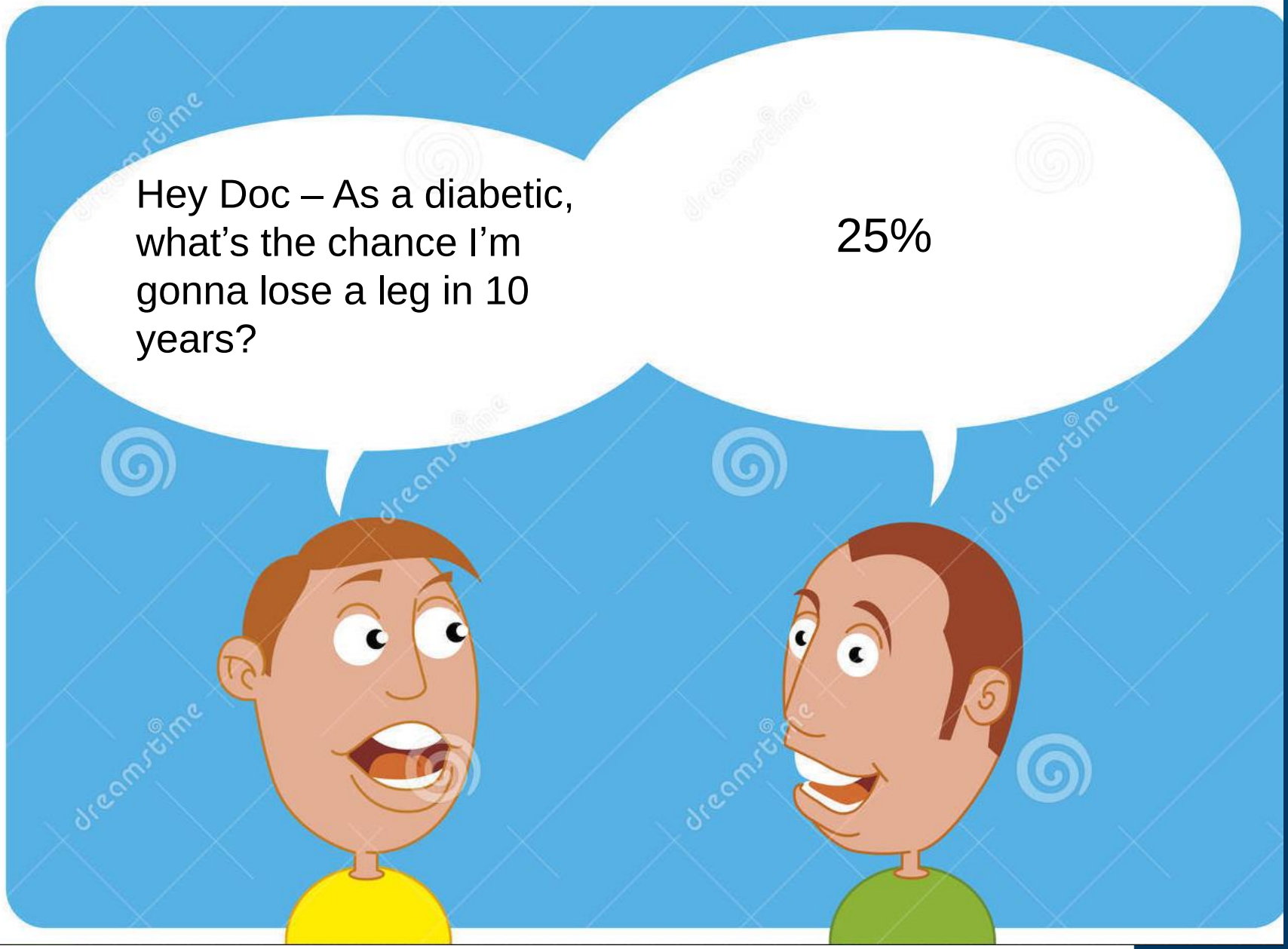
- True
- False

The majority of patients with Claudication will eventually progress to CLI





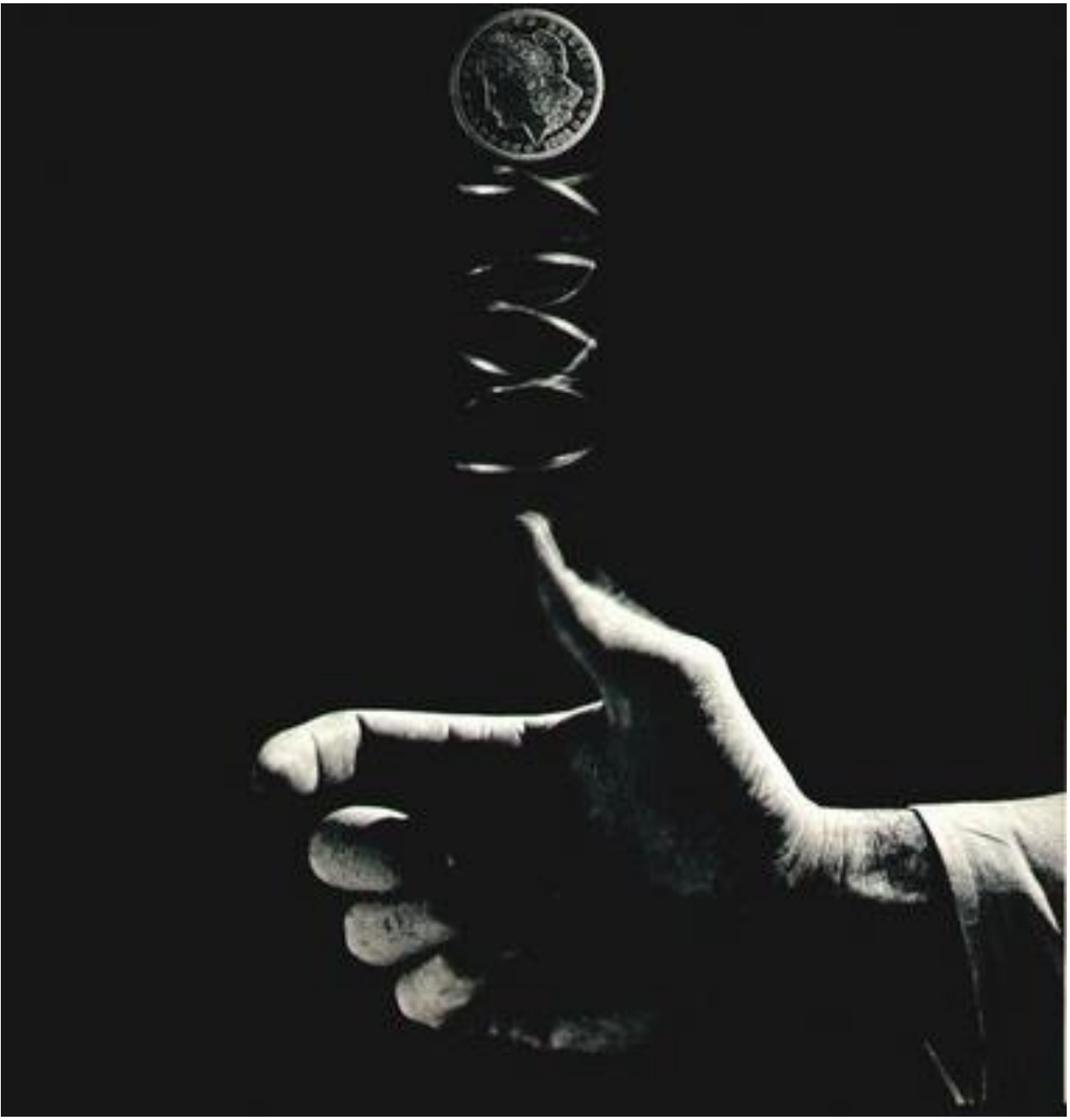
Bhatt DL, et al. REACH Investigation. Presented at: American College of Cardiology Annual Scientific Session; March 8, 2005; Orlando, FL. Abstract 1127-96.


Hey Doc – As a diabetic, what's the chance I'm gonna lose a leg in 10 years?
25%

82 yo DM, HTN, HLD, ABI 0.2

- % chance of him being alive with 2 limbs at one year is:

- 10
- 25
- 50
- 75



- Dangerous necrotizing infection
- Eschar should be unroofed to decompress gas-forming bacteria
- Tip of the Iceberg appearance
- Surgical urgency/emergency

- Xray of previous foot
- Gas gangrene
- Infection tracking along 4^{th}-5^{th} metatarsal deep space

- DO NOT CULTURE SKIN SURFACE
- Chronically colonized with bacteria
- Culture expressed pus directly onto swab
- Rely on cultures taken in operating room to direct antibiotics

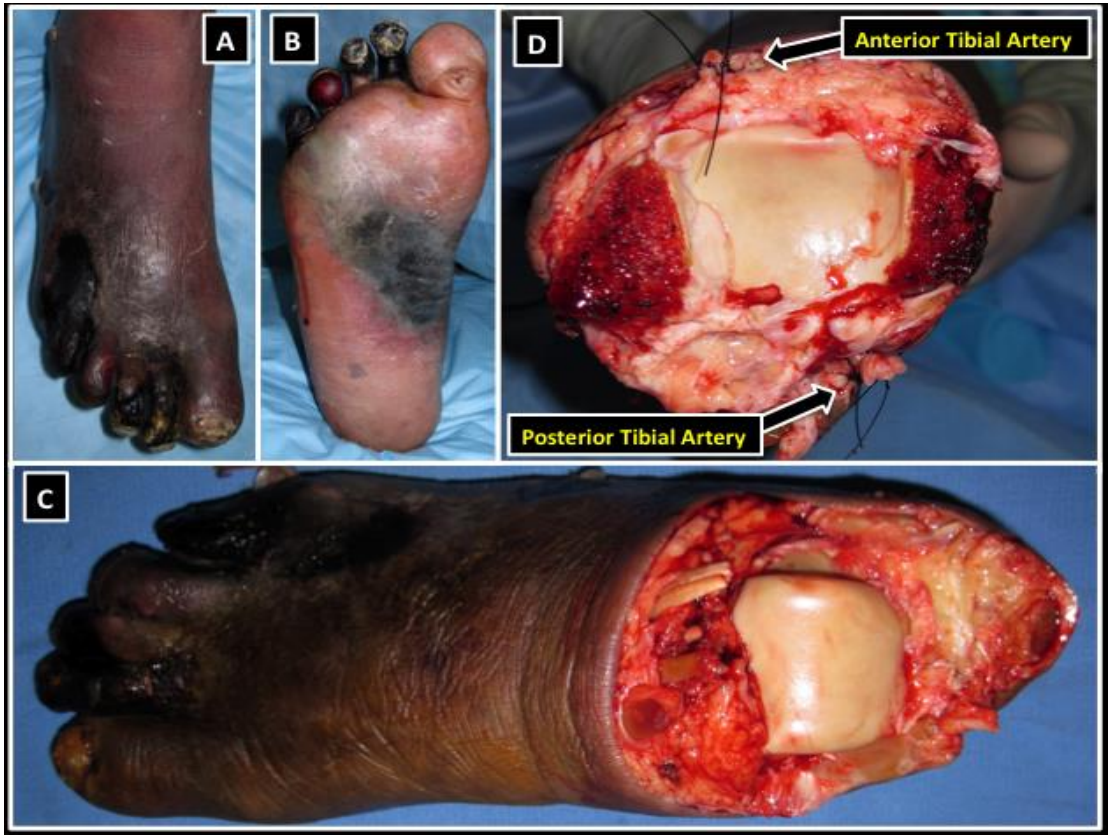
- Ascending necrotizing infection tracking up to level of mid-foot
- Patient likely manifesting systemic signs of sepsis
- Guillotine amputation if patient unstable
- Below-Knee Amputation if patient is stable

- Hyperkeratosis and dry gangrenous changes
- Angiogram indicated to evaluate for arterial insufficiency
- Must establish in-line blood flow into foot
- Surgical bypass indicated if percutaneous methods unsuccessful

•Extensive pedal infection requires rapid and aggressive action

•The two-stage guillotine amputation is usually required for extensive pedal sepsis

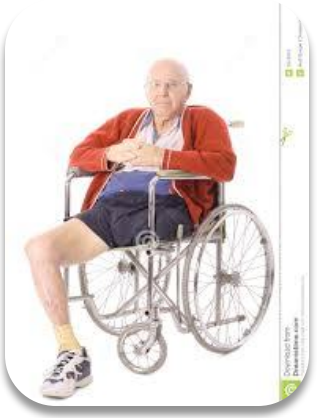
•Another option involves cryoamputation with dry ice in patients who are unstable and need rapid control of infection

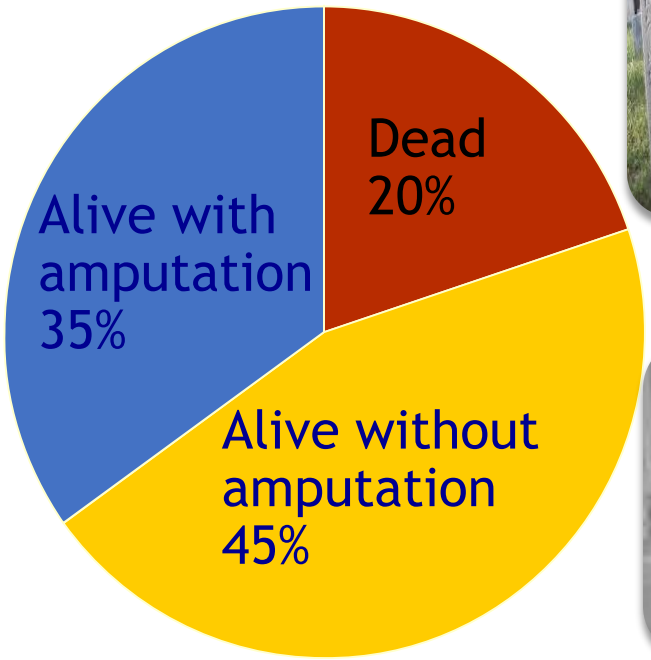


Critical Limb Ischemia (CLI): *Adverse Outcomes*

Fate of Patients With CLI After Initial Treatment

Summary of 6-month outcomes from 19 studies





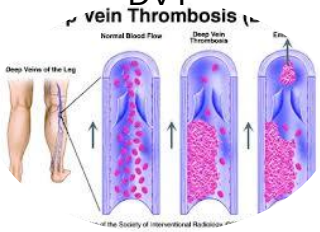
Dormandy JA, Rutherford RB. J Vasc Surg. 2000;31:S1-S296.

THE UNIVERSITY OF KANSAS HEALTH SYSTEM

Differential Dx

Leg Pain

DVT



Spinal Stenosis
Pseudoclaudication
Pain erect (lumbar lordosis)
Relief sitting, lying, lean forward

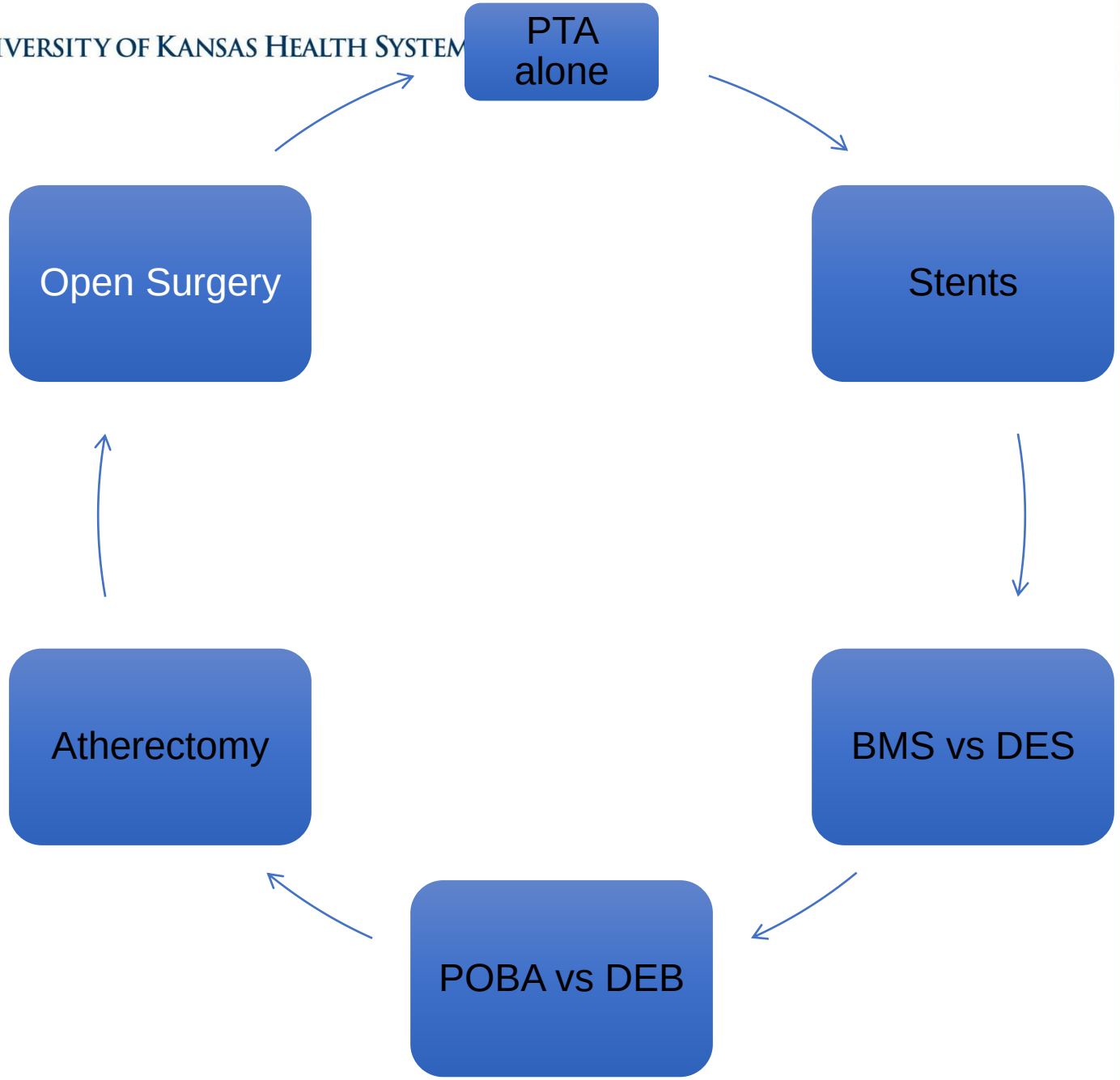
Chronic compartment syndrome

Popliteal Entrapment

Restless leg syndrome

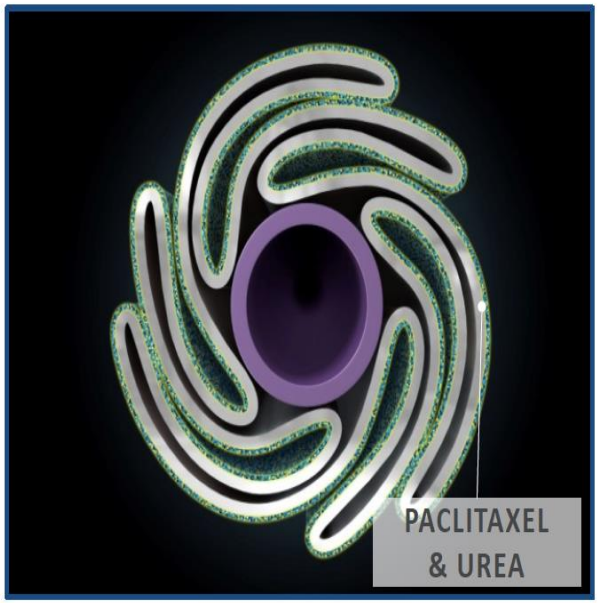
Fibromyalgia
Systemic autoimmune dz

Hips/knees
Variable activity
Certain positions


PTA alone
Stents
BMS vs DES
POBA vs DEB
Atherectomy
Open Surgery

DCB TECHNOLOGY

IN.PACT DCB MECHANISM OF ACTION

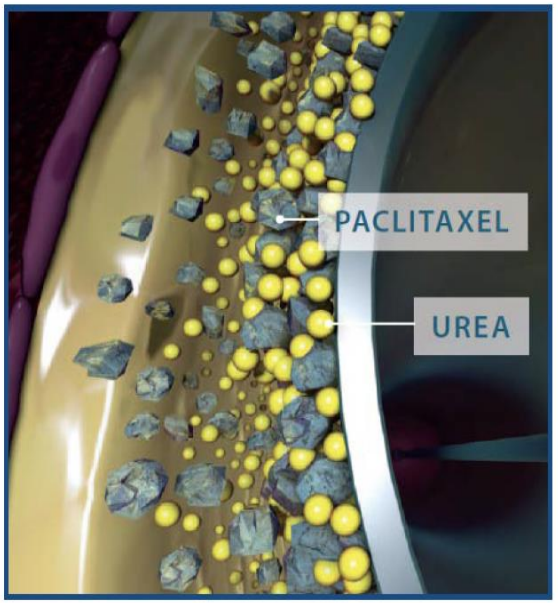


Manufacturing:

- Coated with matrix in semi-inflated state, then wrapped

During transit to lesion:

- Majority of matrix protected within folds of the balloon

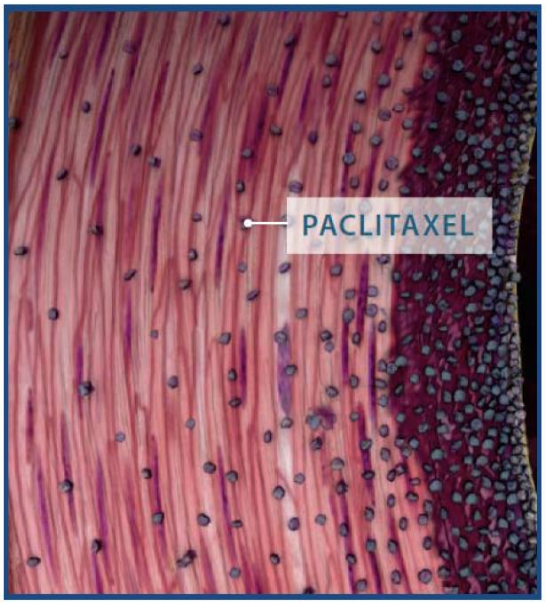


DCB matrix coating:

- Paclitaxel + Urea

DCB inflation:

- Matrix contacts blood
- Blood hydrates urea
- Urea releases paclitaxel



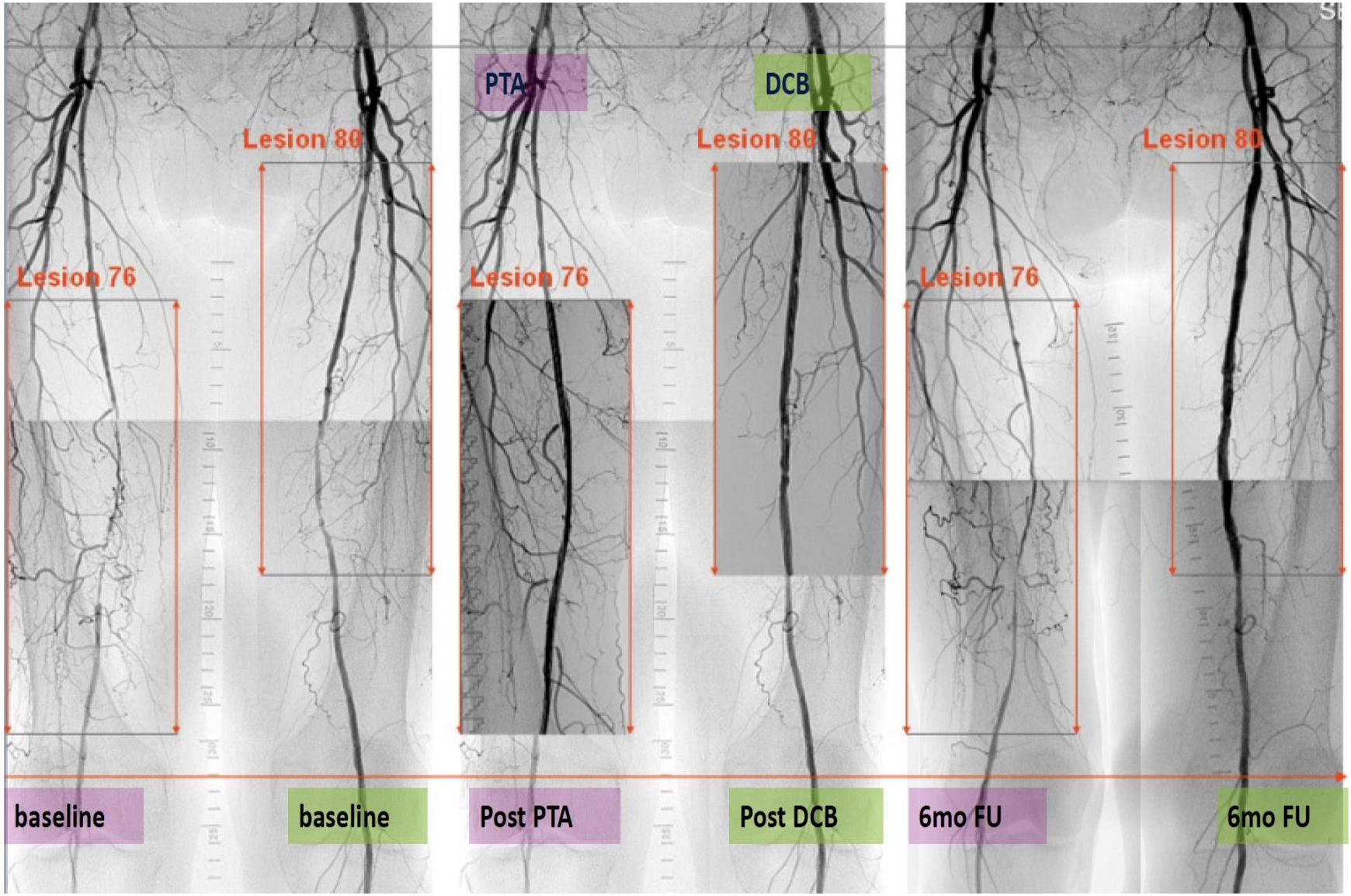
Paclitaxel Hydrophobic and Lipophilic Properties:

- Facilitates transfer from balloon and stickiness to vessel wall
- Migrates through vessel wall deep into the media and adventitia
- Remains in vessel wall for over 180 days at therapeutic levels[1]

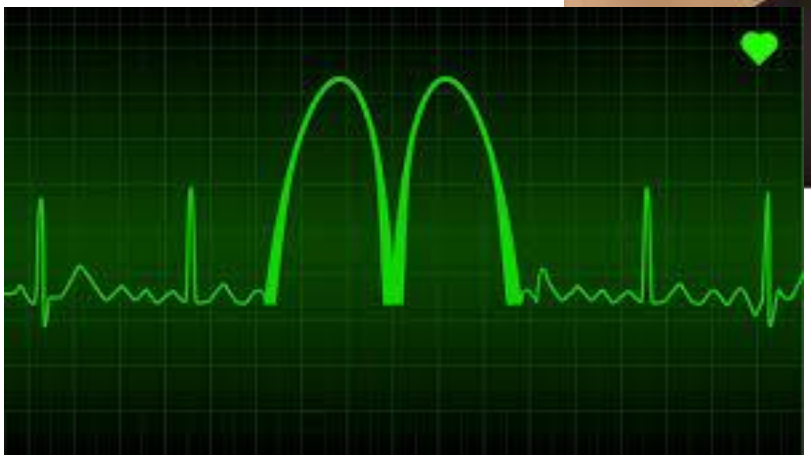
1. Data on file at Medtronic (GLP Study FS208; GLP Study PS516)

BILATERAL SFA DISEASE

Courtesy of M. Werk MD



YSTEM



VitalSigns

A Resource for Your Health

Diabetes on the Rise in Adults and Children

The sharp rise in obesity and sedentary lifestyles has resulted in an increased incidence of diabetes in the United States, where as many as 20 million people have the disease—a number expected to double by 2025. Type 2 diabetes, characterized by the body's inability to make enough, or properly use, insulin, was once called "adult-onset"; but, with the alarming number of children being diagnosed, that has become a misnomer. These children and their adult counterparts face potential complications over their lifetimes that include heart disease and stroke, nerve disease and amputations, kidney disease, and blindness.

"Today's foods and soft drinks contain much more concentrated levels of calories than they did in the past," says Vikram Kamdar, M.D., an endocrinologist at Santa Monica-UCLA Medical Center. "Meanwhile, physical activity in the schools and at home has declined. When added up, you can see why we are facing this epidemic."

Not all of the news is bad, Dr. Kamdar

Continued on page 2

Mental Activity Helps Prevent Memory Loss

Increasing evidence suggests that mental exercise—from crossword puzzles to learning a foreign language—can help stave off mental decline in

names, phone numbers, and where the car keys were last placed. "Genetics—what you inherit from your parents—accounts for only one-third of the risk for dementia or rapid brain aging. That

ages develop skills to improve memory retention and recall.

As brains age, the synapses—or connections between neurons—begin to function less efficiently. Diseases associated with age, including

Strategies for Healthy Aging

INSIDE

3 Vascular Disease Pulmonary Rehab

4 Menopause

THE UNIVERSITY OF KANSAS PHYSICIANS

Go

print | + share text-size: – +

Bariatric Home | About Us | Weight Loss Surgery | Our Services | Resources | Contact Us

Bariatric Surgery

Learn about our low-cost weight-loss surgery options.

Bariatric Surgery
913-588-1227

Find Us

10777 Nall Ave., Suite 210
Overland Park, KS 66211

Bariatric Surgery and Metabolic Care

The University of Kansas Health System offers bariatric surgery, metabolic care and comprehensive services to support you through a successful weight-loss journey with long-lasting, positive outcomes to improve your health. Our experienced, board-certified surgeons offer current techniques with minimum downtime.

Trust the team that has performed thousands of procedures and is backed by the region's premier academic medical center. Our goal is to be your resource when it comes to living a healthy lifestyle and help you get back to living your best life.

Learn about your treatment options for weight-loss surgery. Call 913-588-1227.

Learn about our specialties

Sleeve gastrectomy
Roux-en-Y gastric bypass surgery (RNY)
Duodenal switch surgery
Adjustable gastric banding (LAP-BAND®)

MyChart and you

Learn more about accessing your medical records, day or night.

Learn More >>

Planning for your surgery

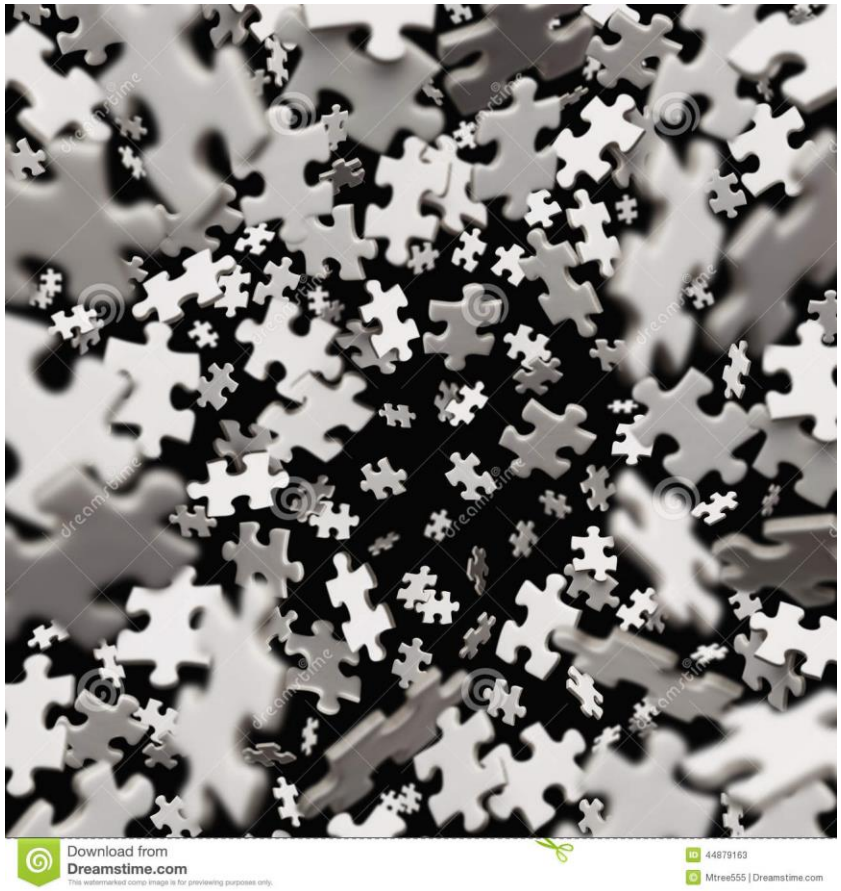
Here are some helpful guidelines as you prepare for your surgery.

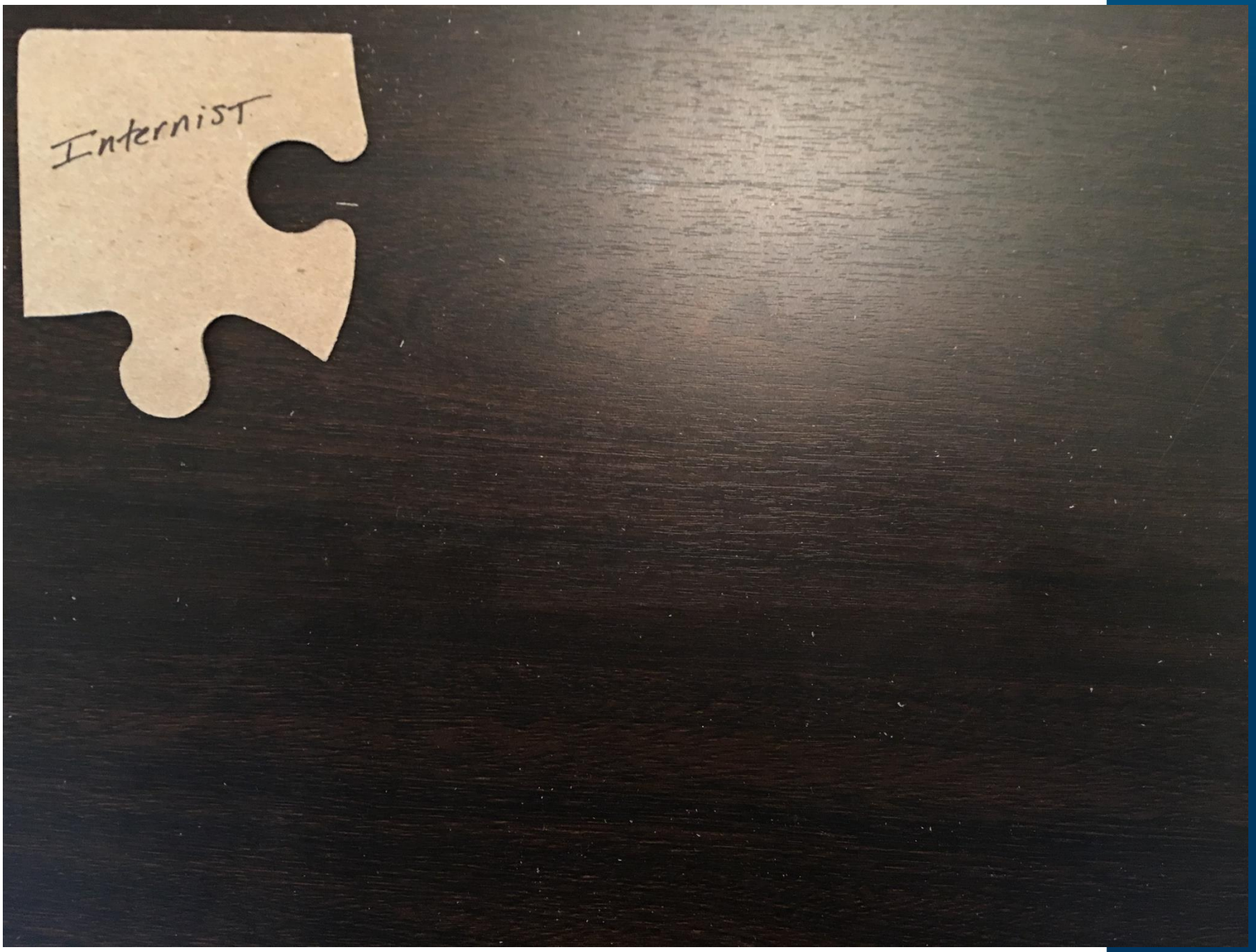
Learn More >>

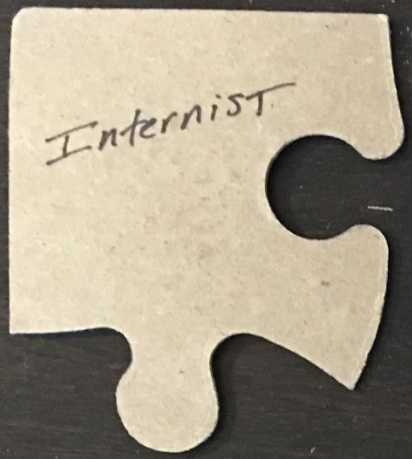
Medical library

Your trusted resource for health and wellness information.

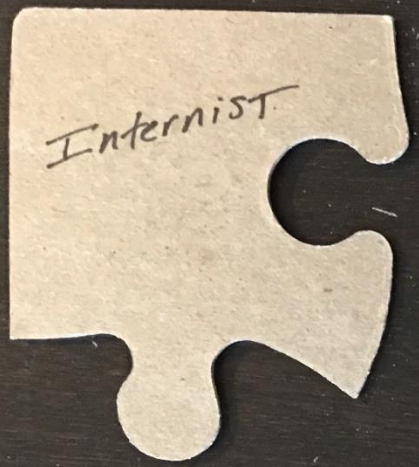
Learn More >>

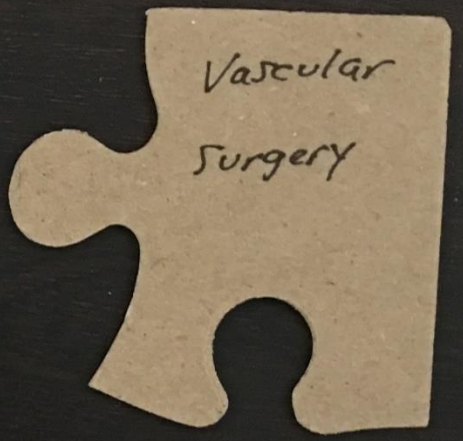

Download from
Dreamstime.com
This watermarked comp image is for previewing purposes only.
ID 44879163
Mtree555 | Dreamstime.com


Internist

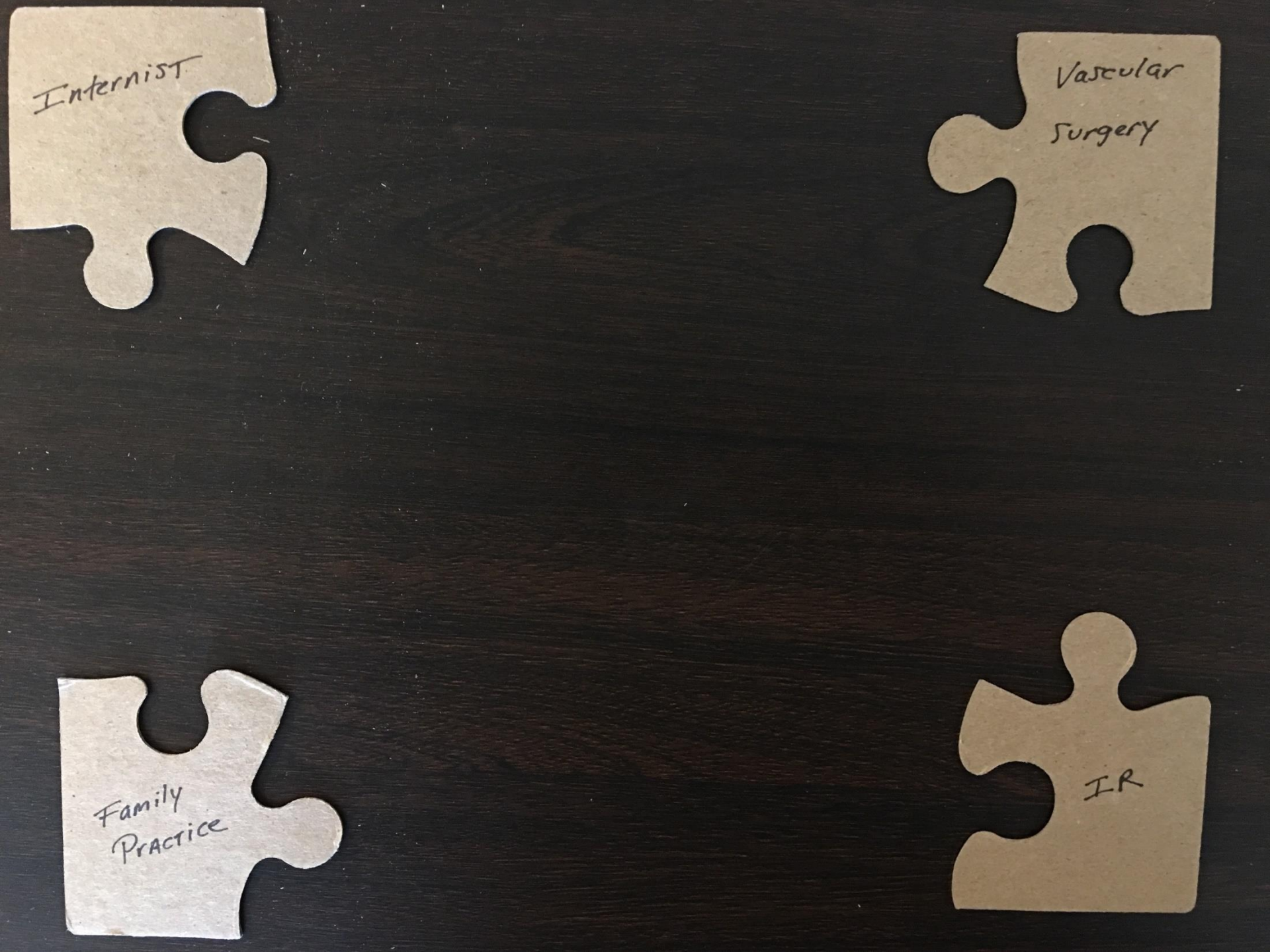

Internist

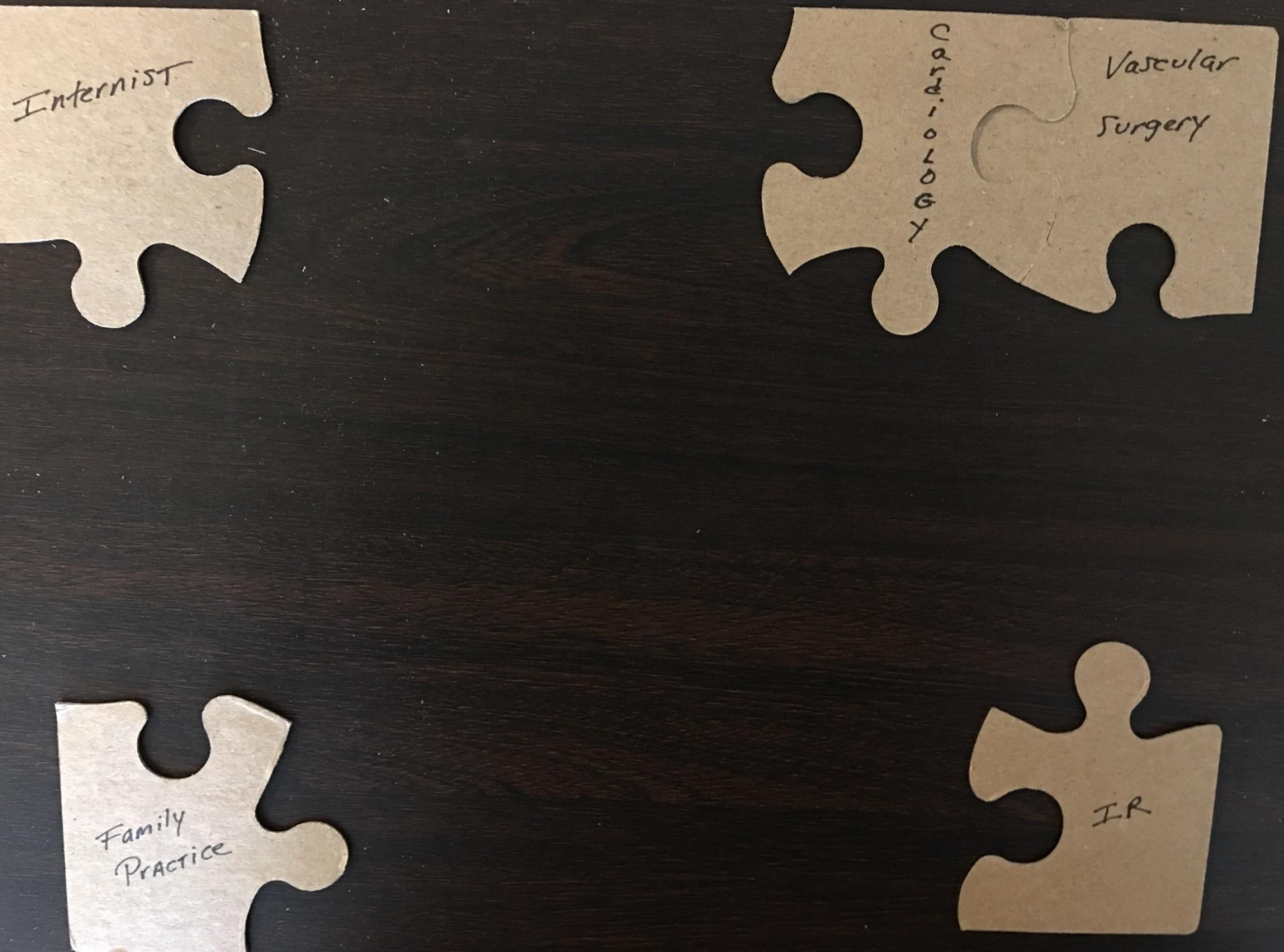
Family
Practice

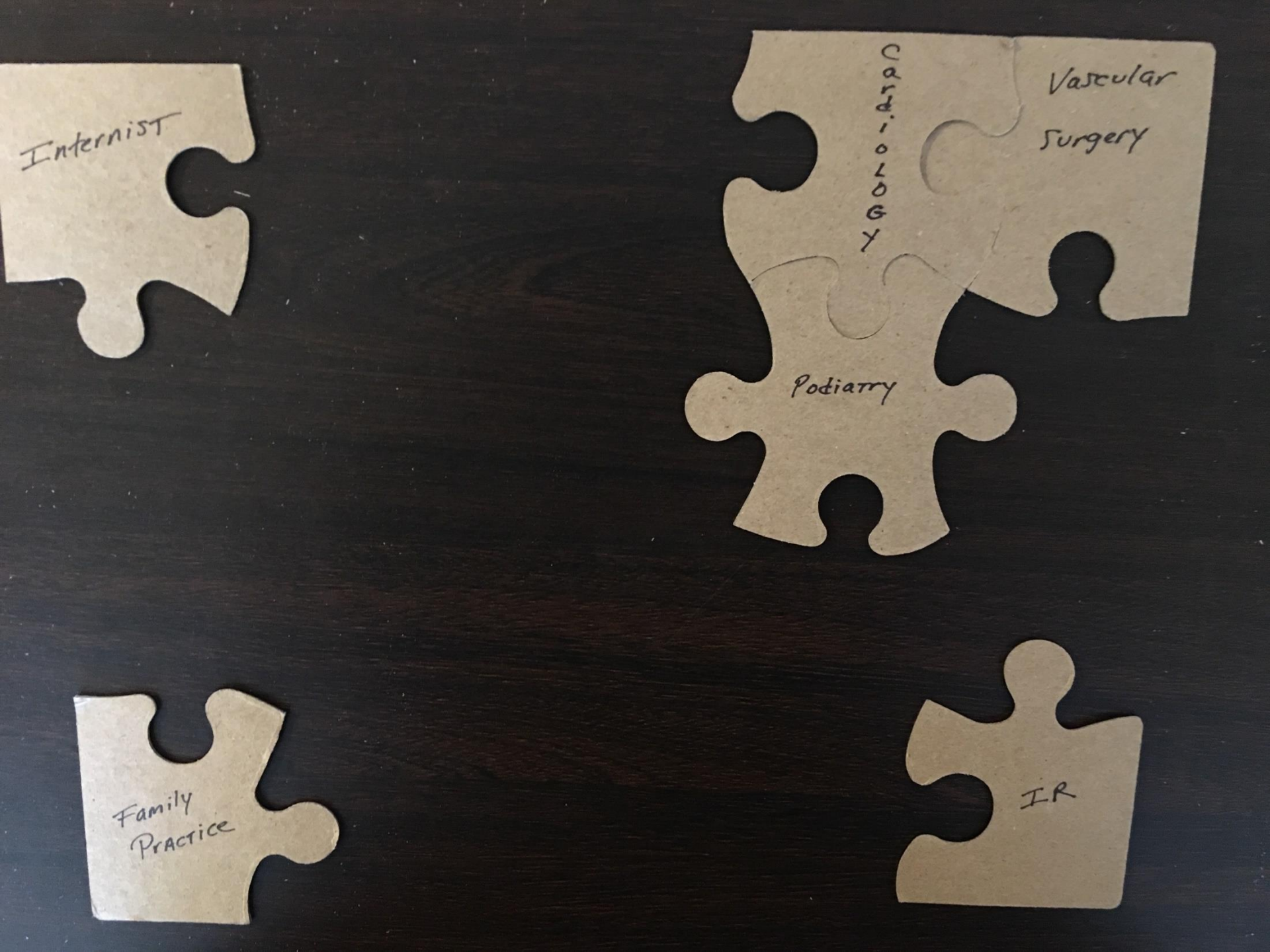

Internist

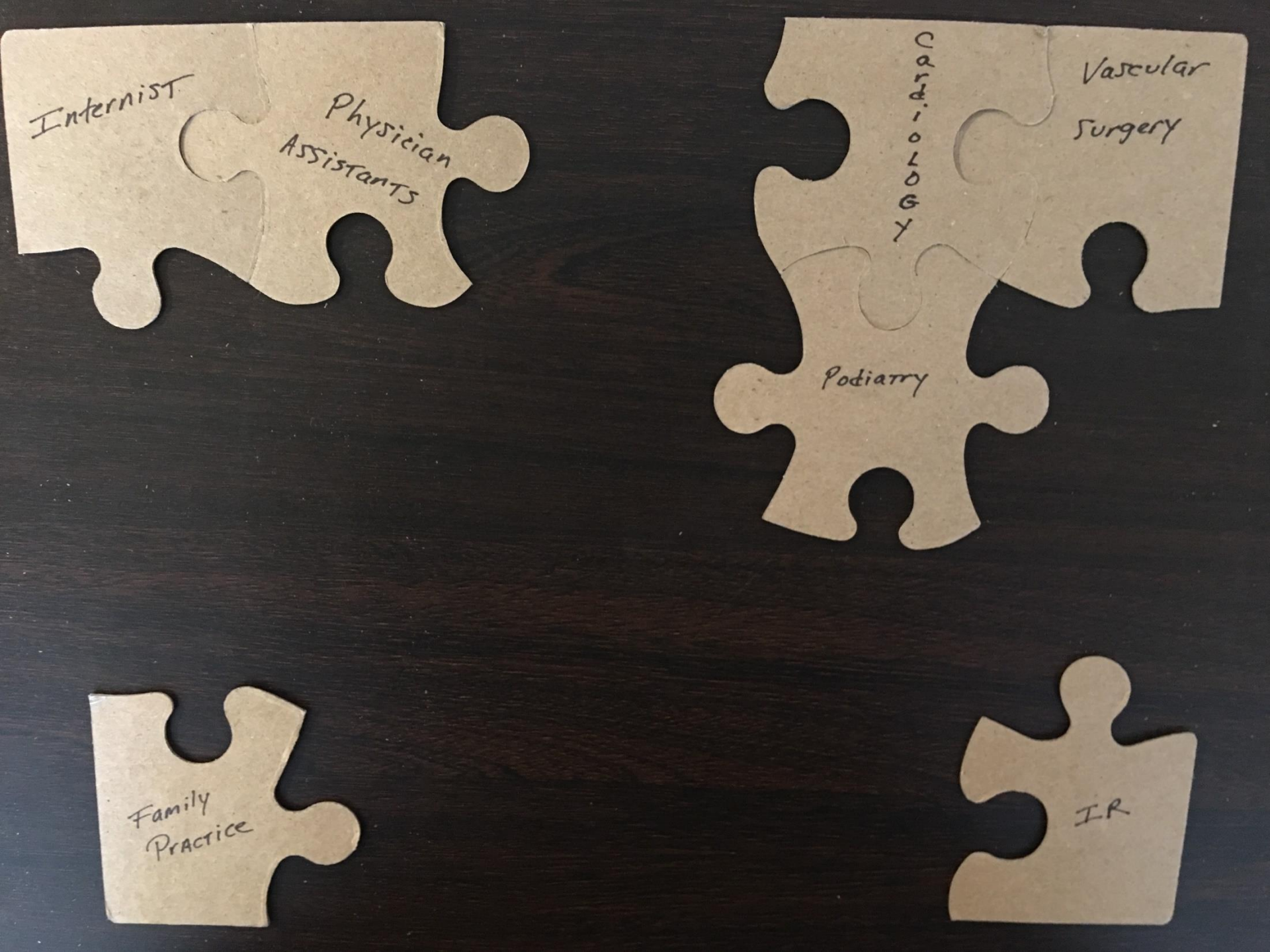

Vascular
Surgery

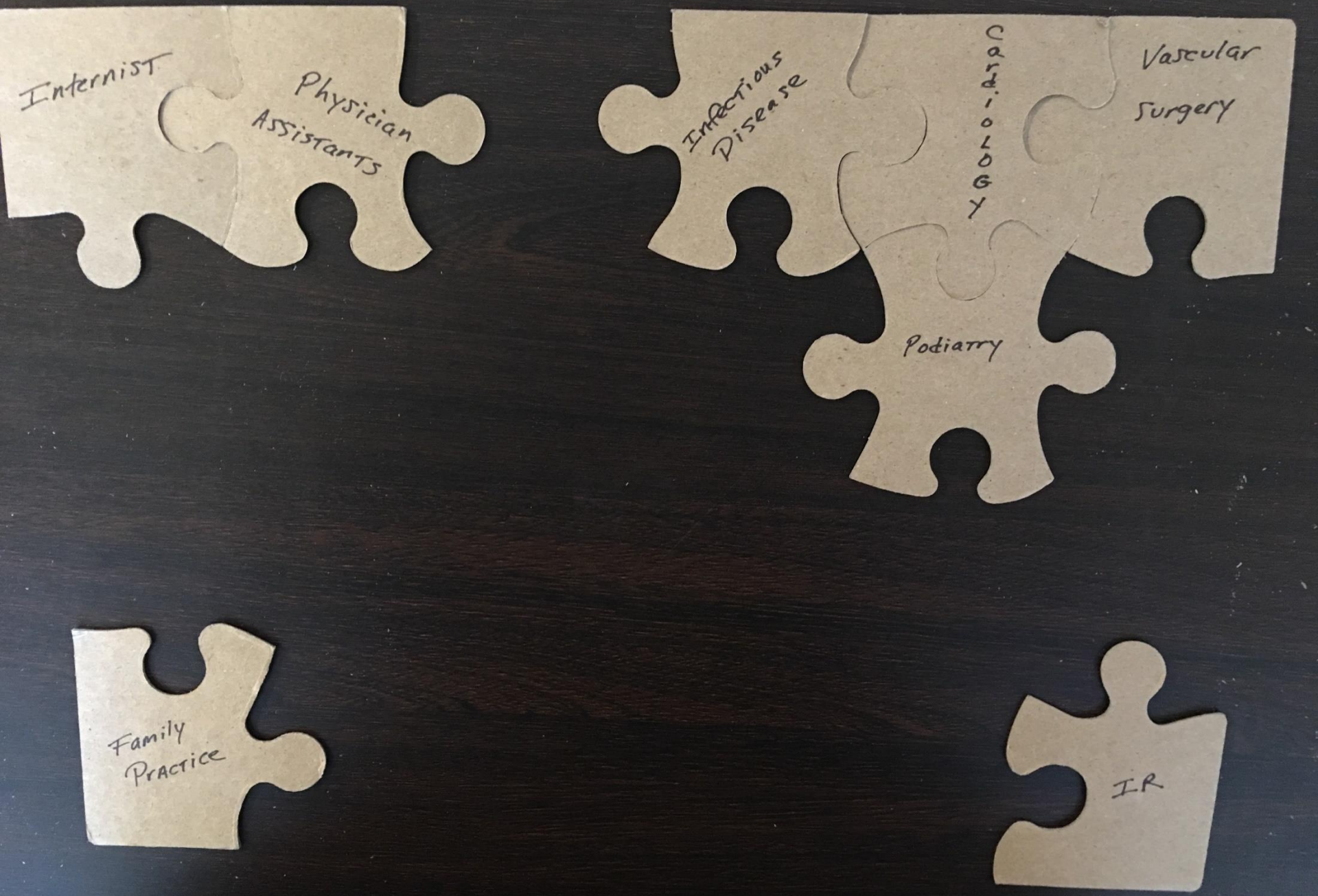
Family
Practice

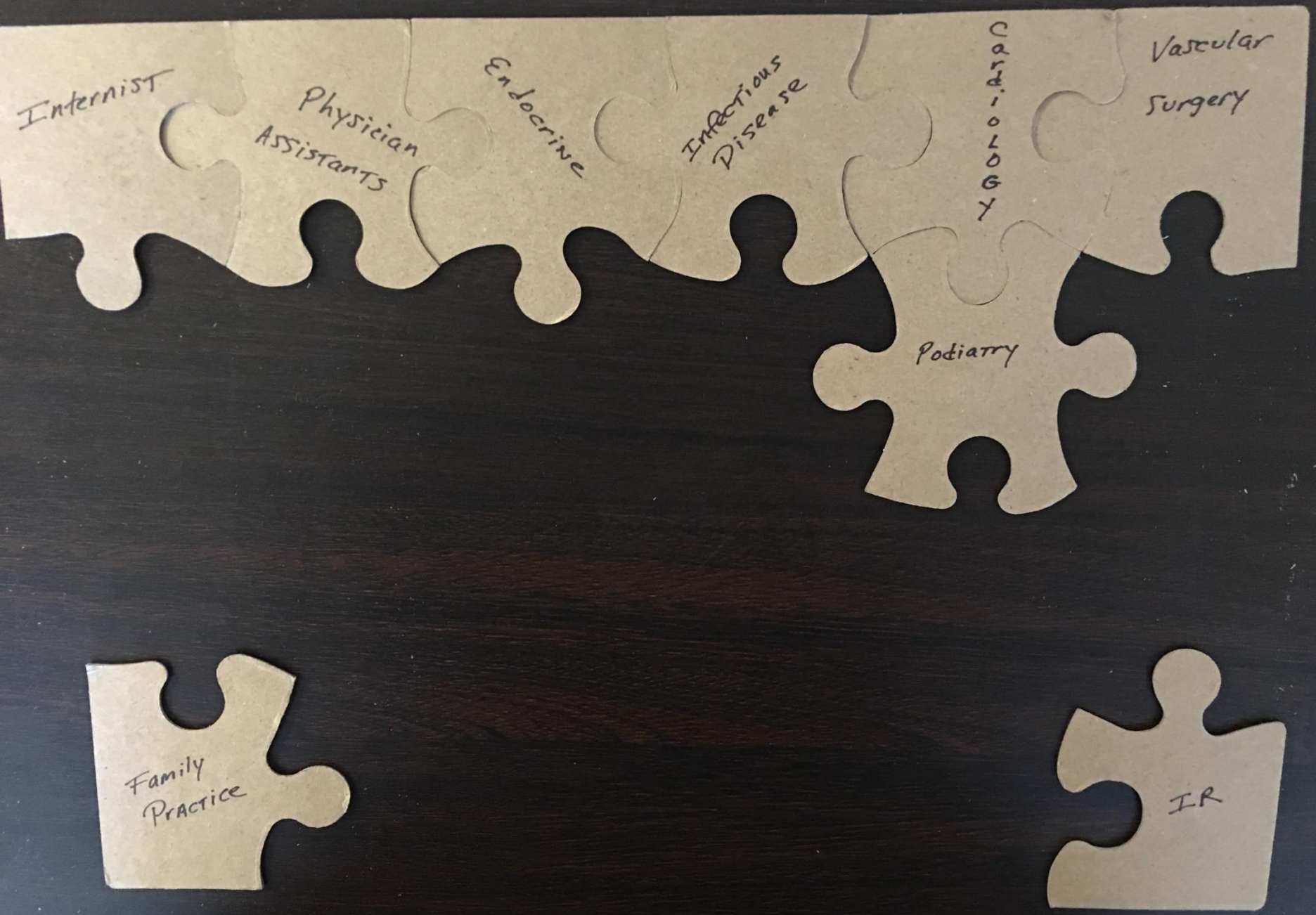

Internist
Vascular Surgery
Family Practice
IR

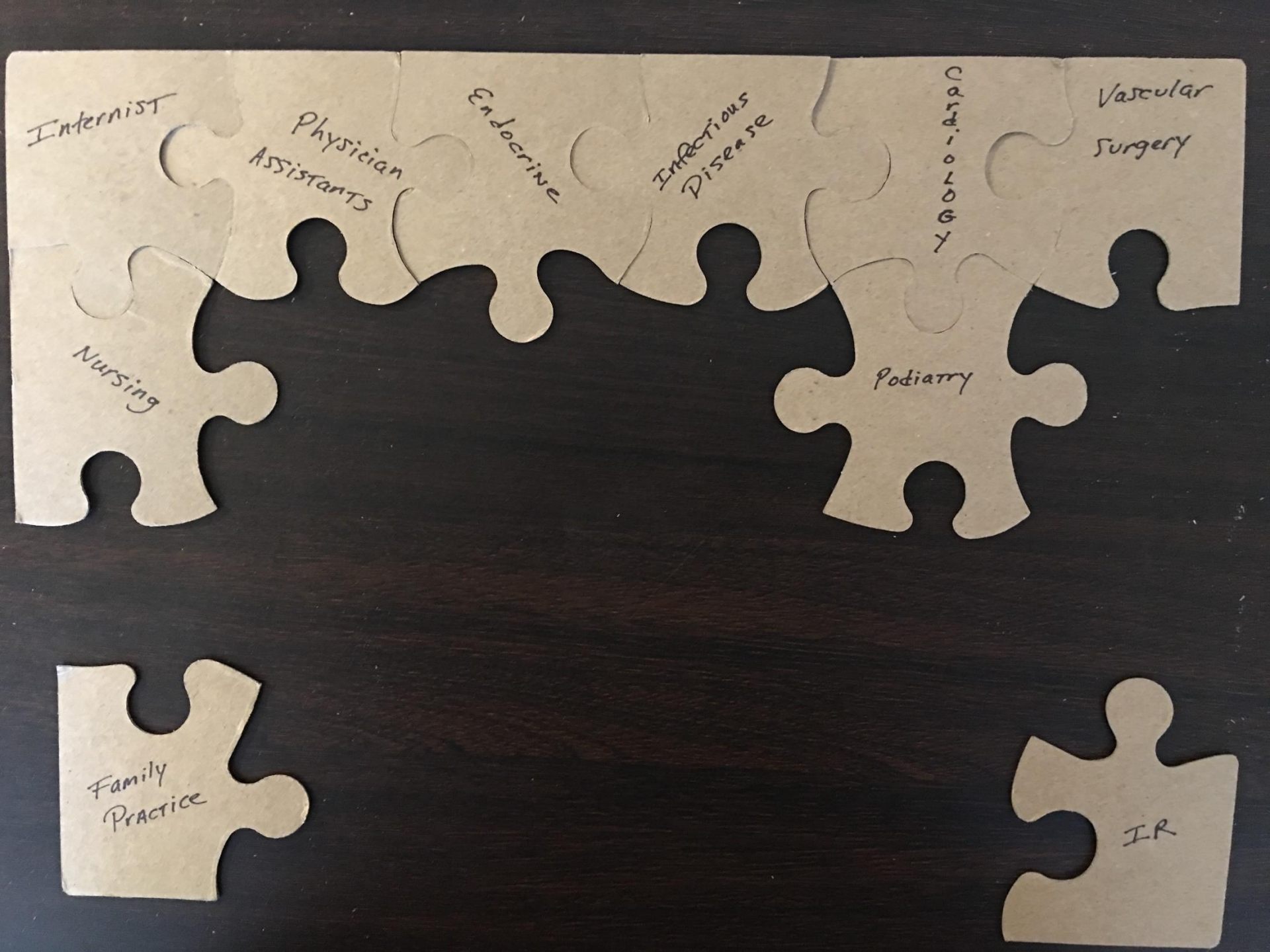

Internist
Cardiology
Vascular Surgery
Family Practice
IR

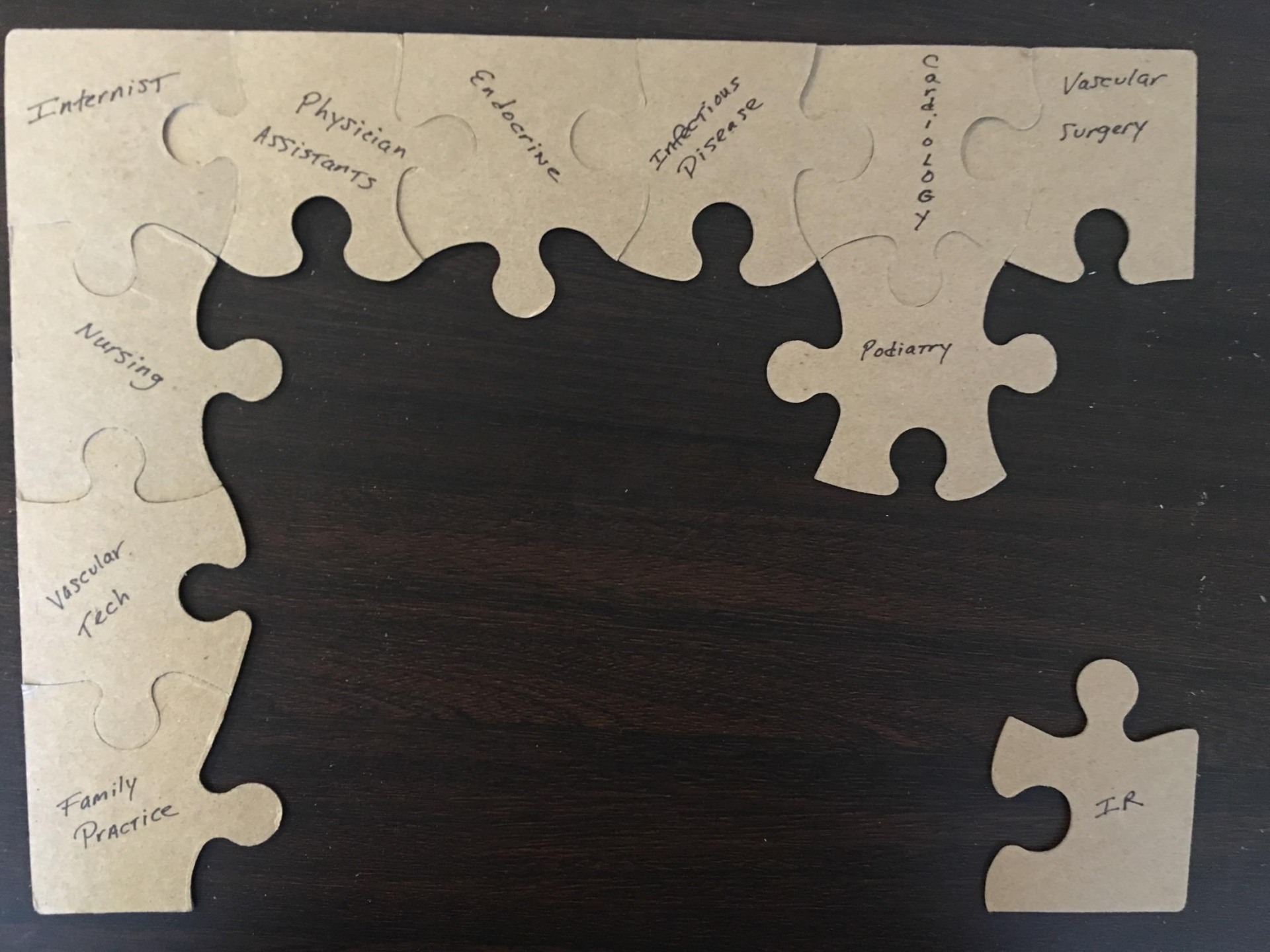

Internist
Cardiology
Vascular Surgery
Podiatry
Family Practice
IR

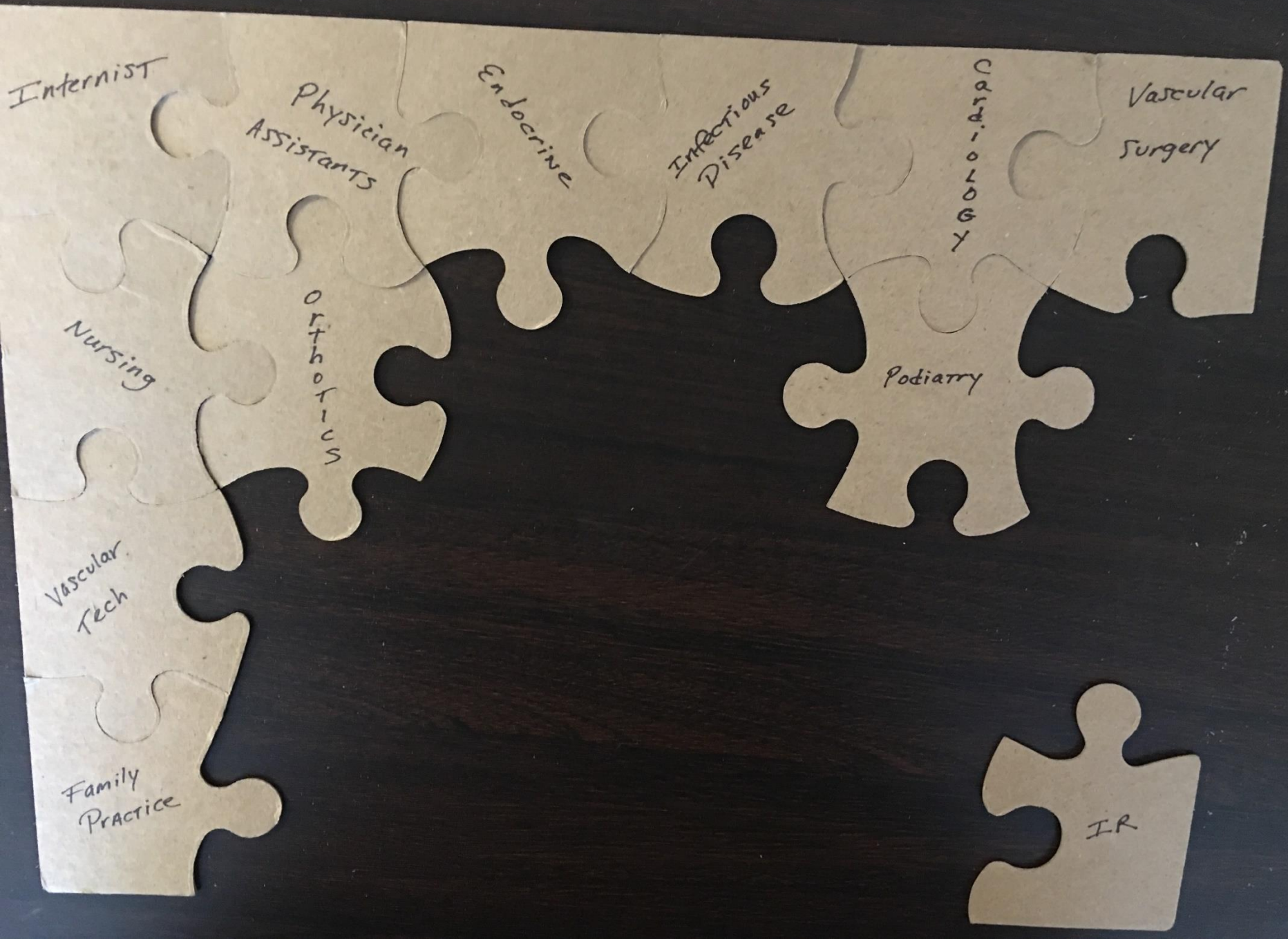

Internist
Physician Assistants
Cardiology
Vascular Surgery
Podiatry
Family Practice
IR

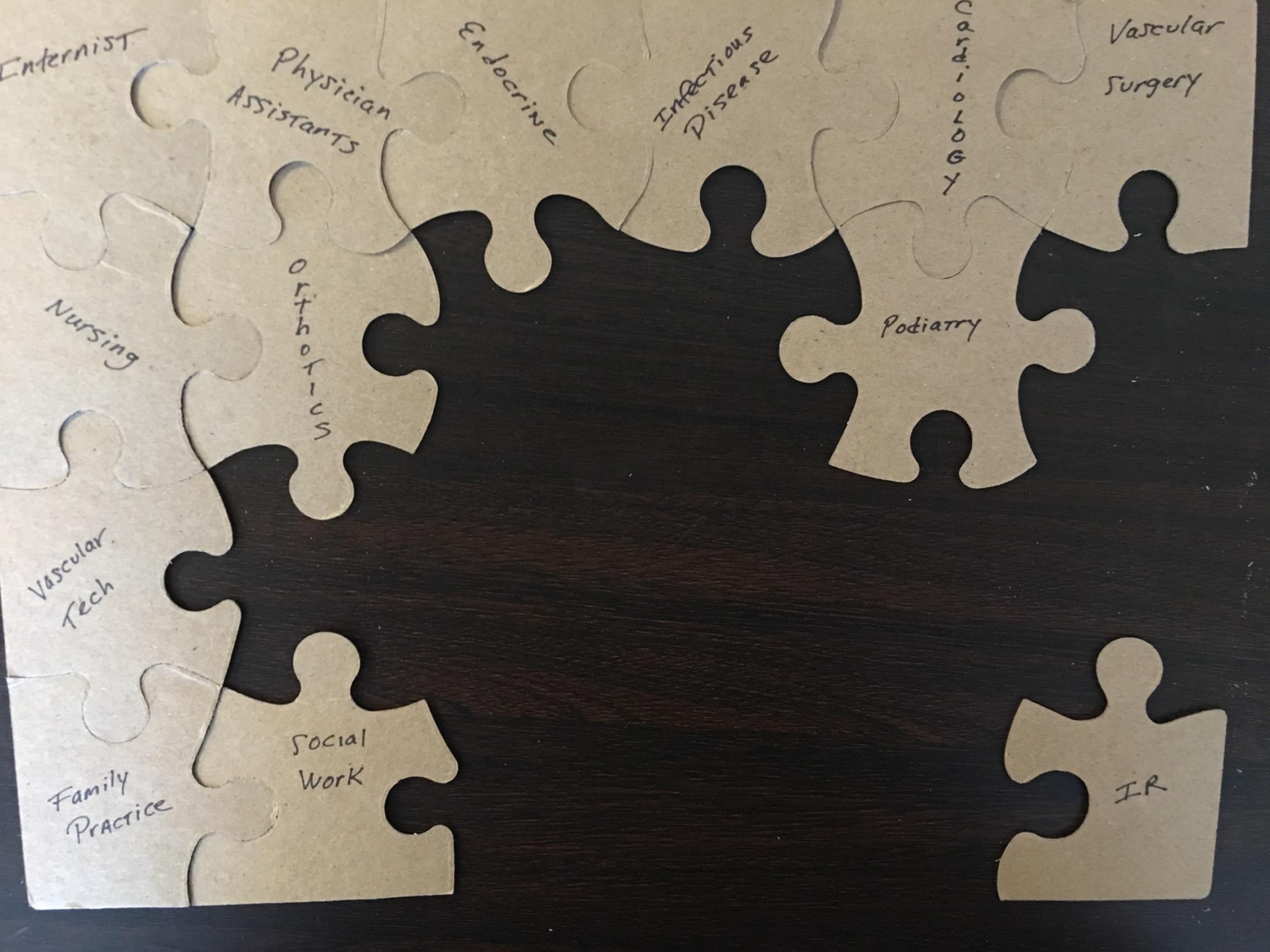

Internist
Physician Assistants
Infectious Disease
Cardiology
Vascular Surgery
Podiatry
Family Practice
IR

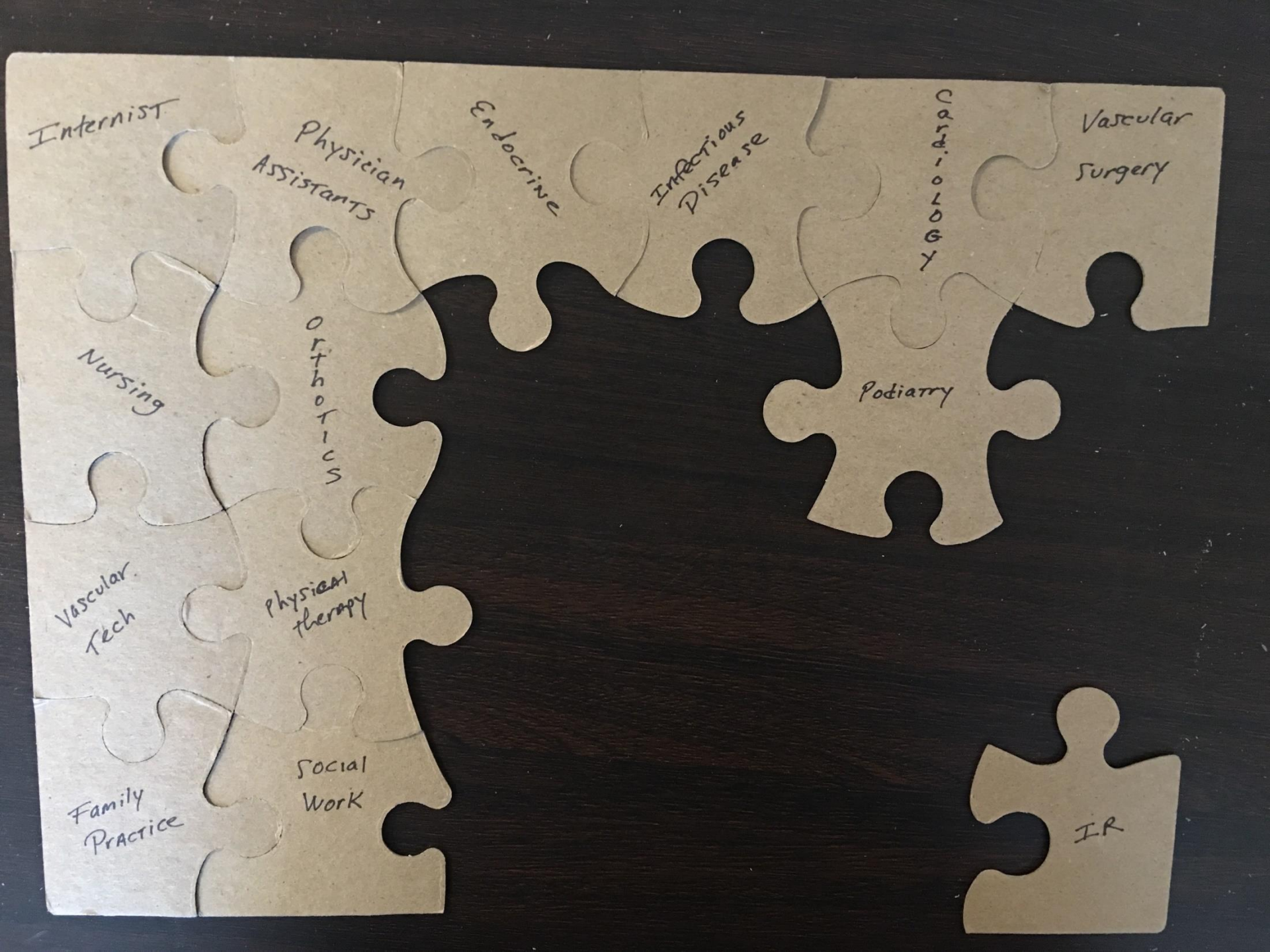

Internist
Physician Assistants
Endocrine
Infectious Disease
Cardiology
Vascular Surgery
Podiatry
Family Practice
IR

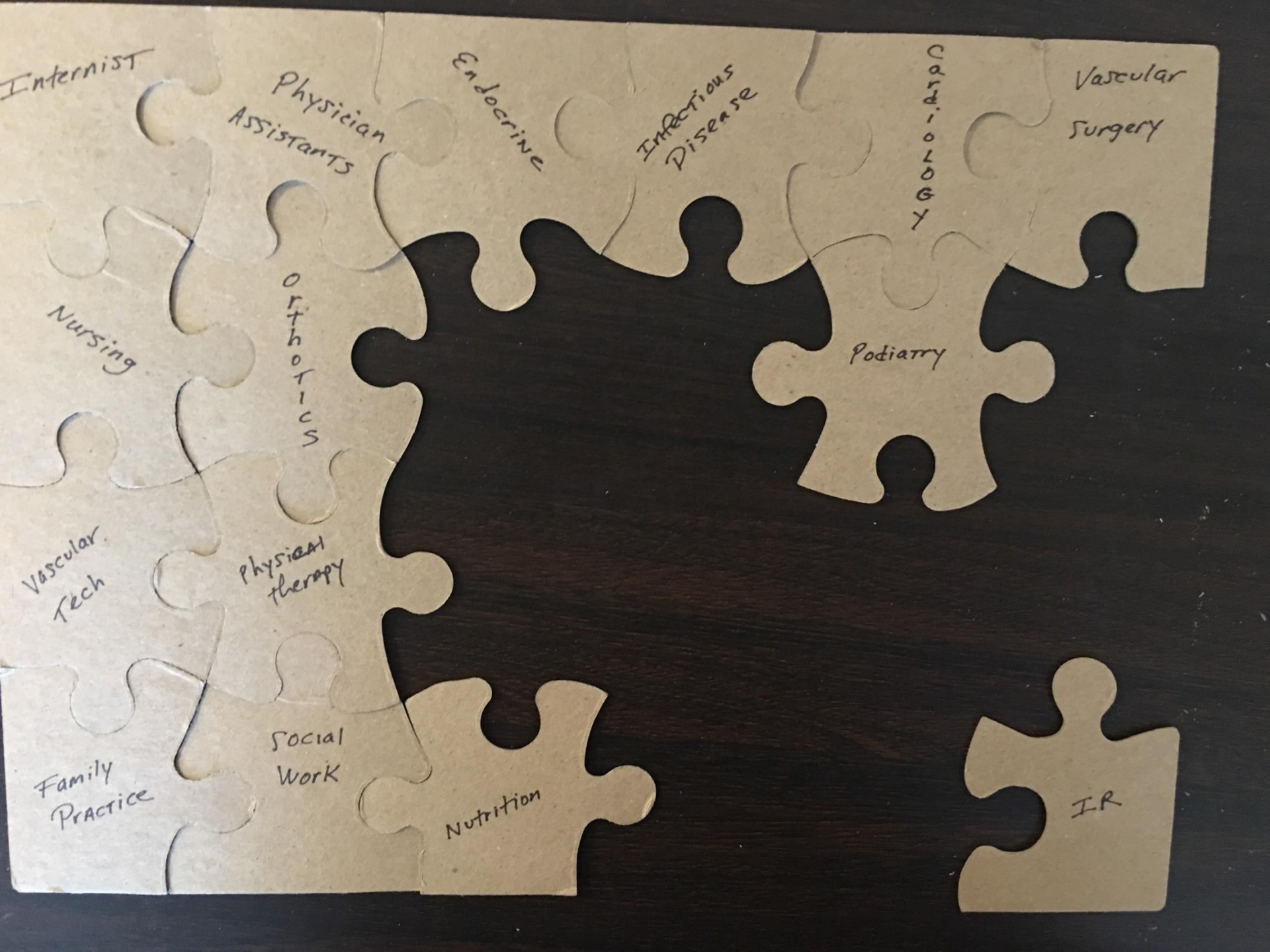

Internist
Physician Assistants
Endocrine
Infectious Disease
Cardiology
Vascular Surgery
Nursing
Podiatry
Family Practice
IR

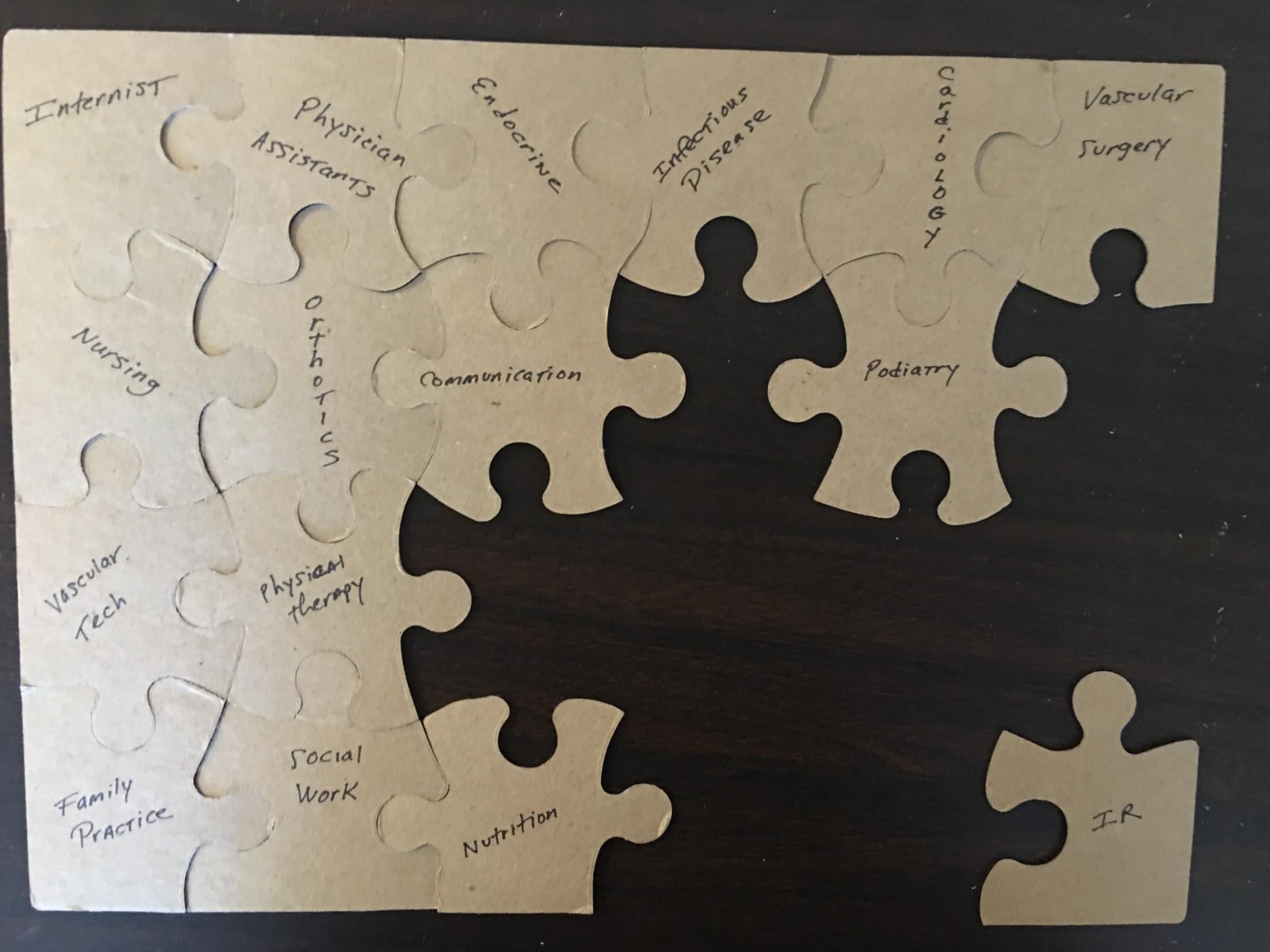

Internist
Physician Assistants
Endocrine
Infectious Disease
Cardiology
Vascular Surgery
Nursing
Podiatry
Vascular Tech
Family Practice
IR

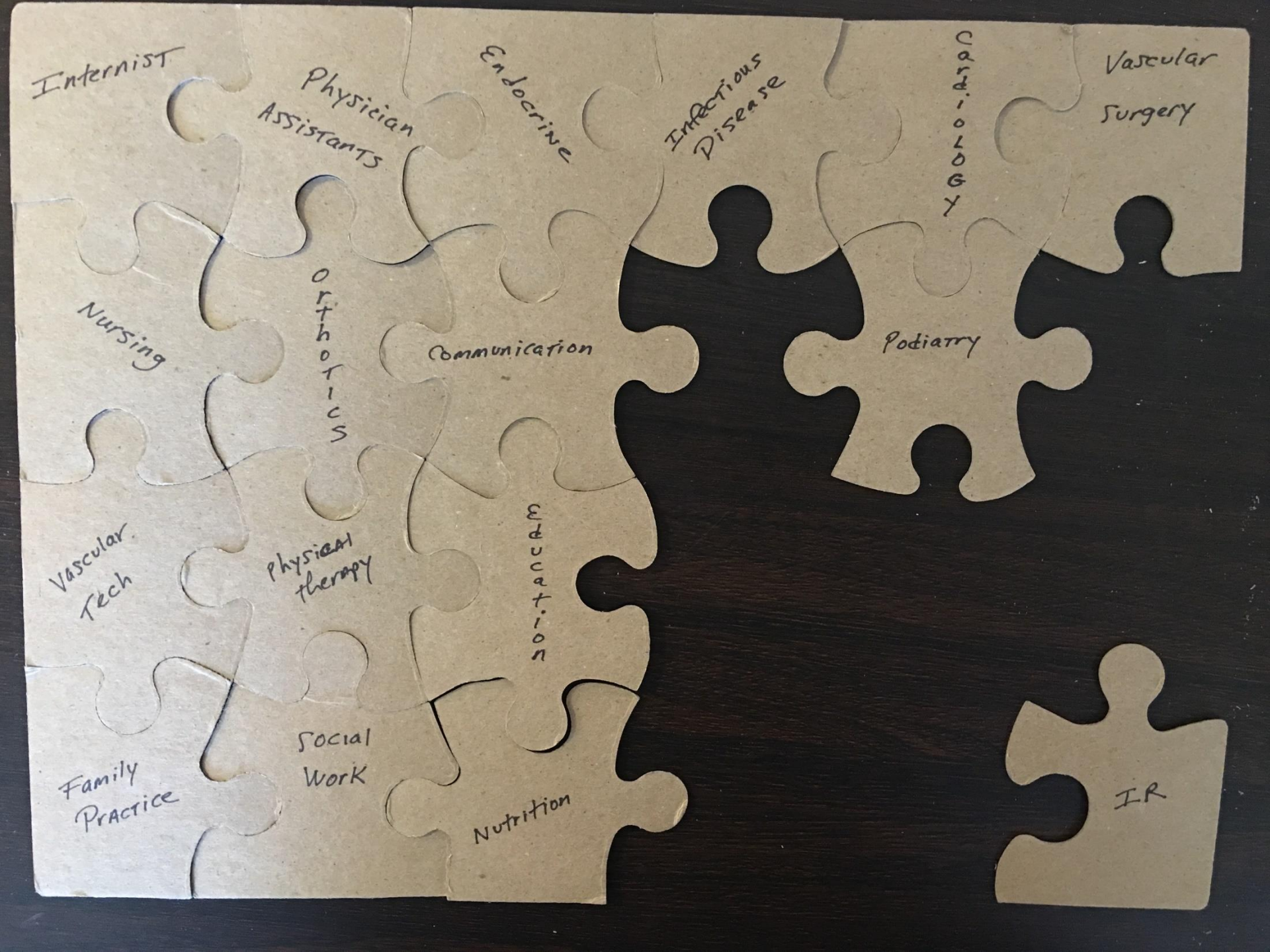

Internist
Physician Assistants
Endocrine
Infectious Disease
Cardiology
Vascular Surgery
Nursing
Orthotics
Podiatry
Vascular Tech
Family Practice
IR

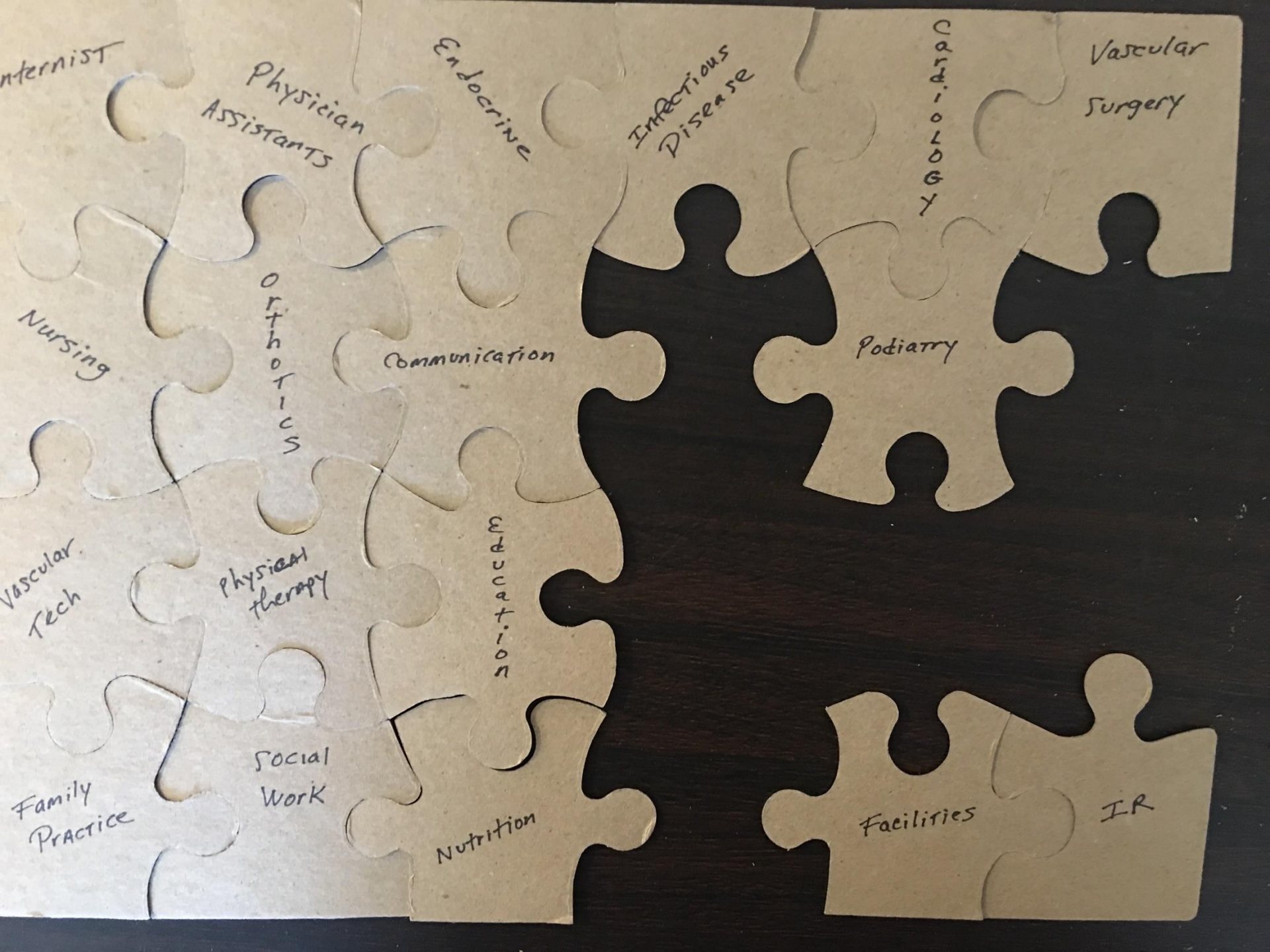

Internist
Physician Assistants
Endocrine
Infectious Disease
Cardiology
Vascular Surgery
Nursing
Orthotics
Podiatry
Vascular Tech
Social Work
Family Practice
IR

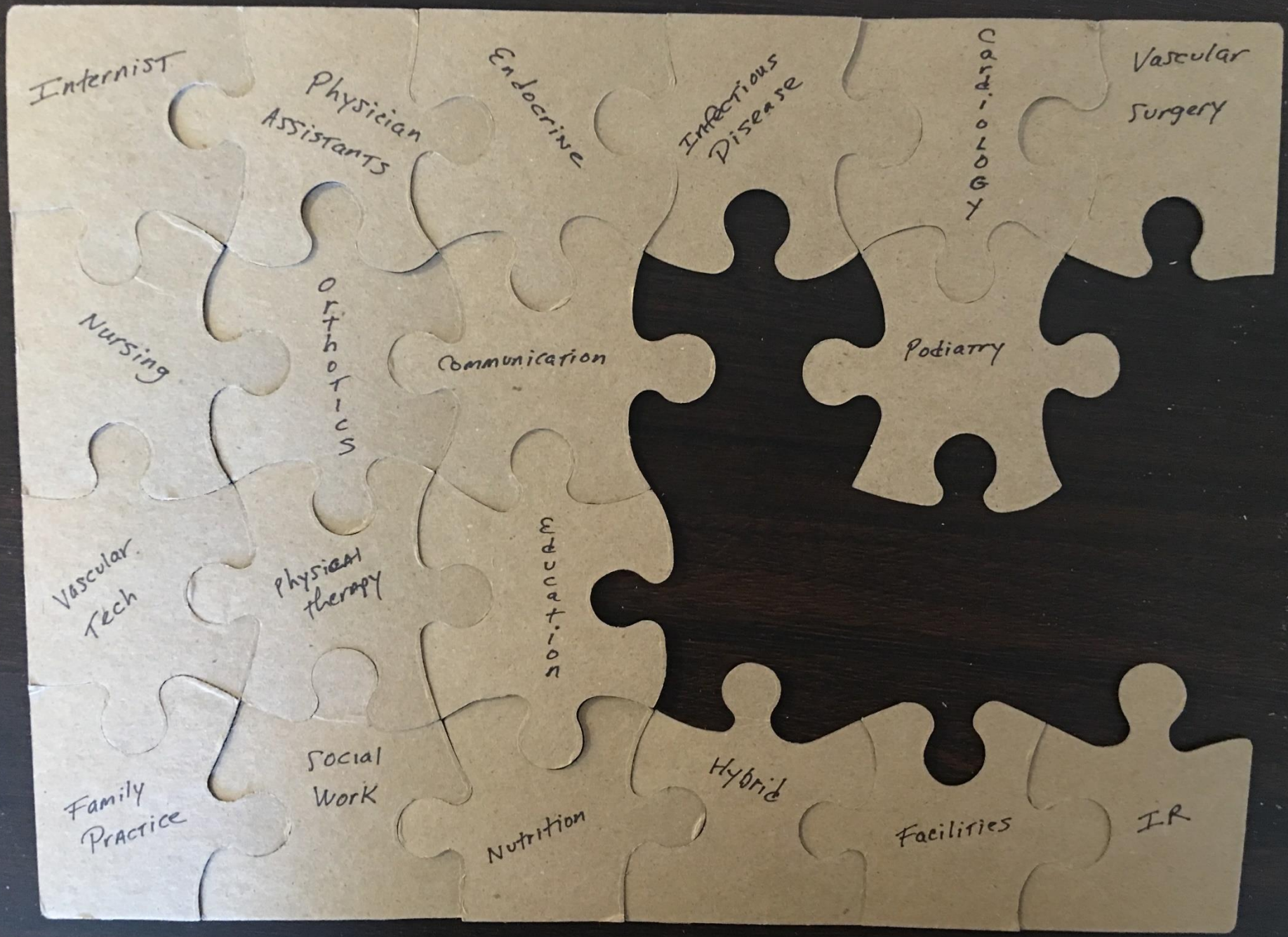

Internist
Physician Assistants
Endocrine
Infectious Disease
Cardiology
Vascular Surgery
Nursing
Orthotics
Podiatry
Vascular Tech
Physical therapy
Social Work
Family Practice
IR

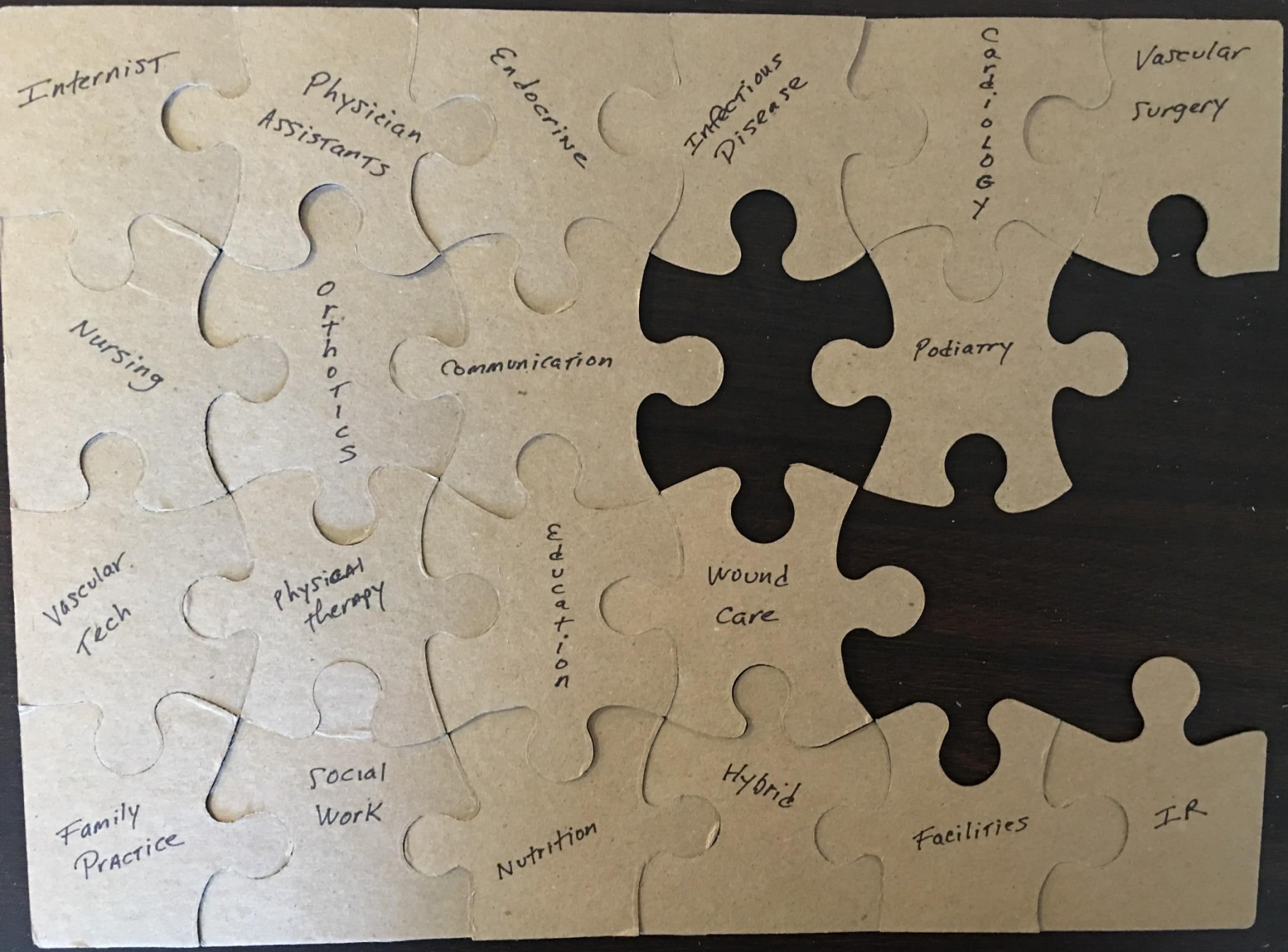

Internist
Physician Assistants
Endocrine
Infectious Disease
Cardiology
Vascular Surgery
Nursing
Orthotics
Podiatry
Vascular Tech
Physical therapy
Family Practice
Social Work
Nutrition
IR

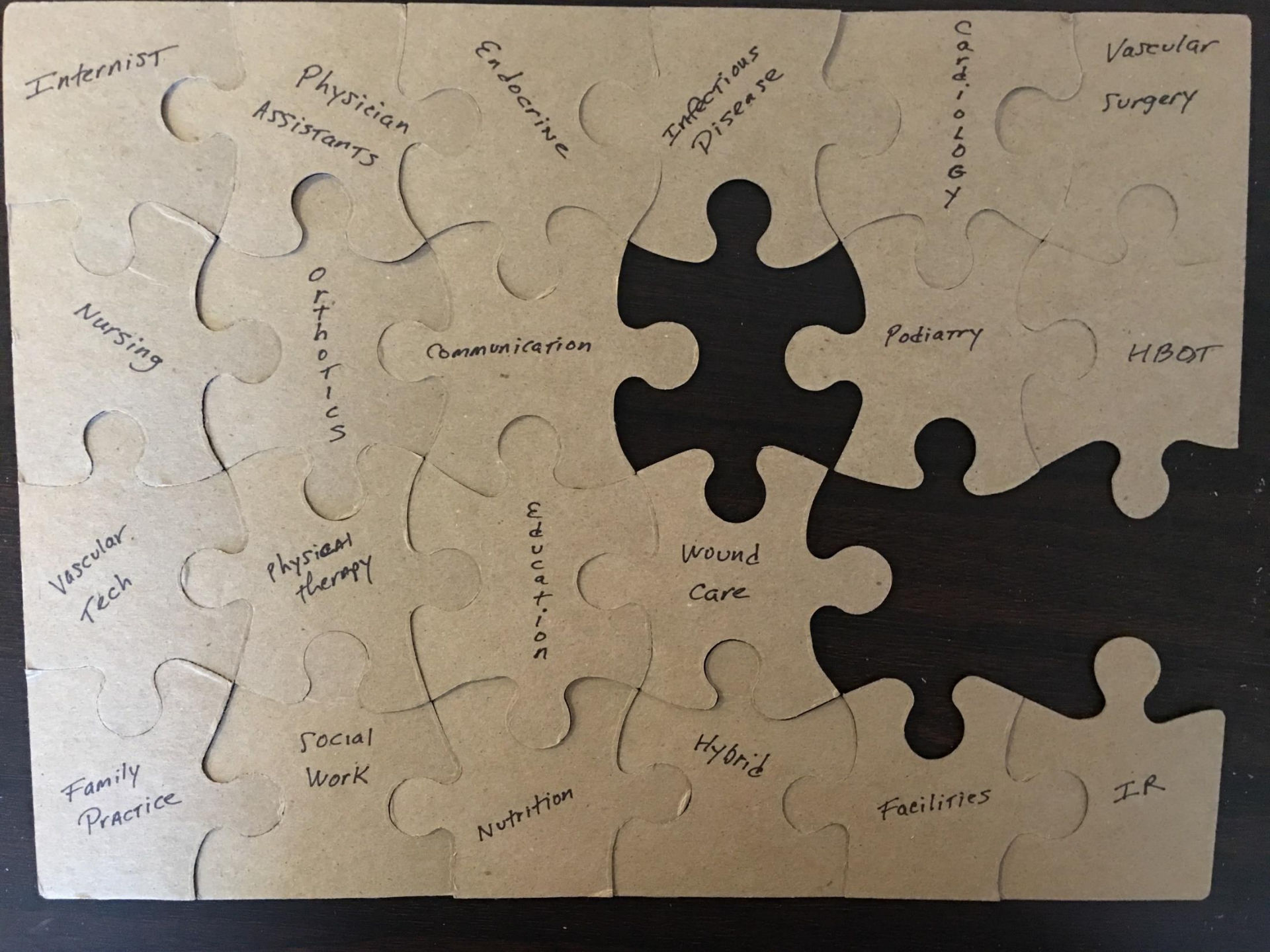

Internist
Physician Assistants
Endocrine
Infectious Disease
Cardiology
Vascular Surgery
Nursing
Orthotics
Communication
Podiatry
Vascular Tech
Physical therapy
Family Practice
Social Work
Nutrition
IR

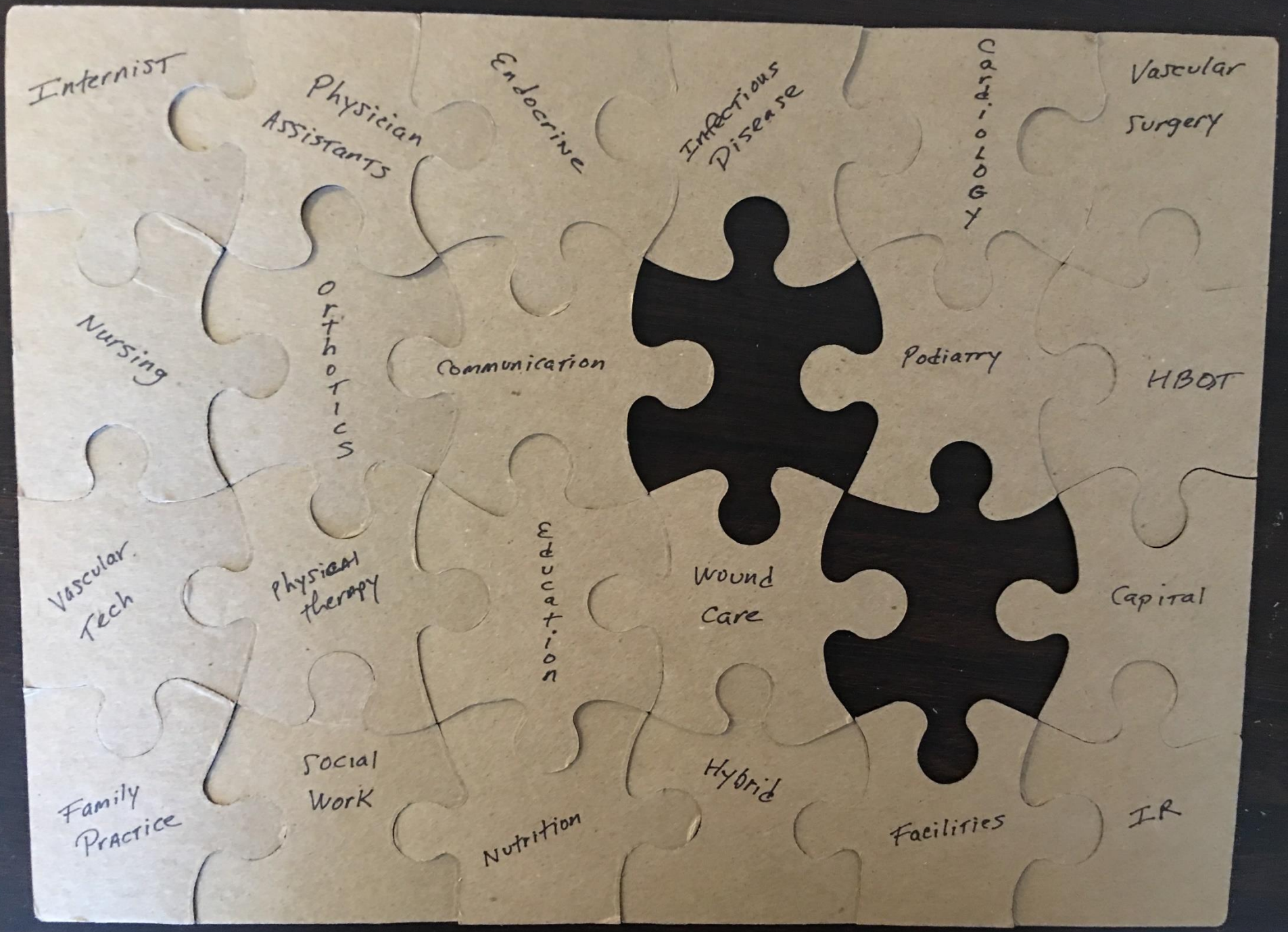

Internist
Physician Assistants
Endocrine
Infectious Disease
Cardiology
Vascular Surgery
Nursing
Orthotics
Communication
Podiatry
Vascular Tech
Physical therapy
Education
Social Work
Family Practice
Nutrition
IR

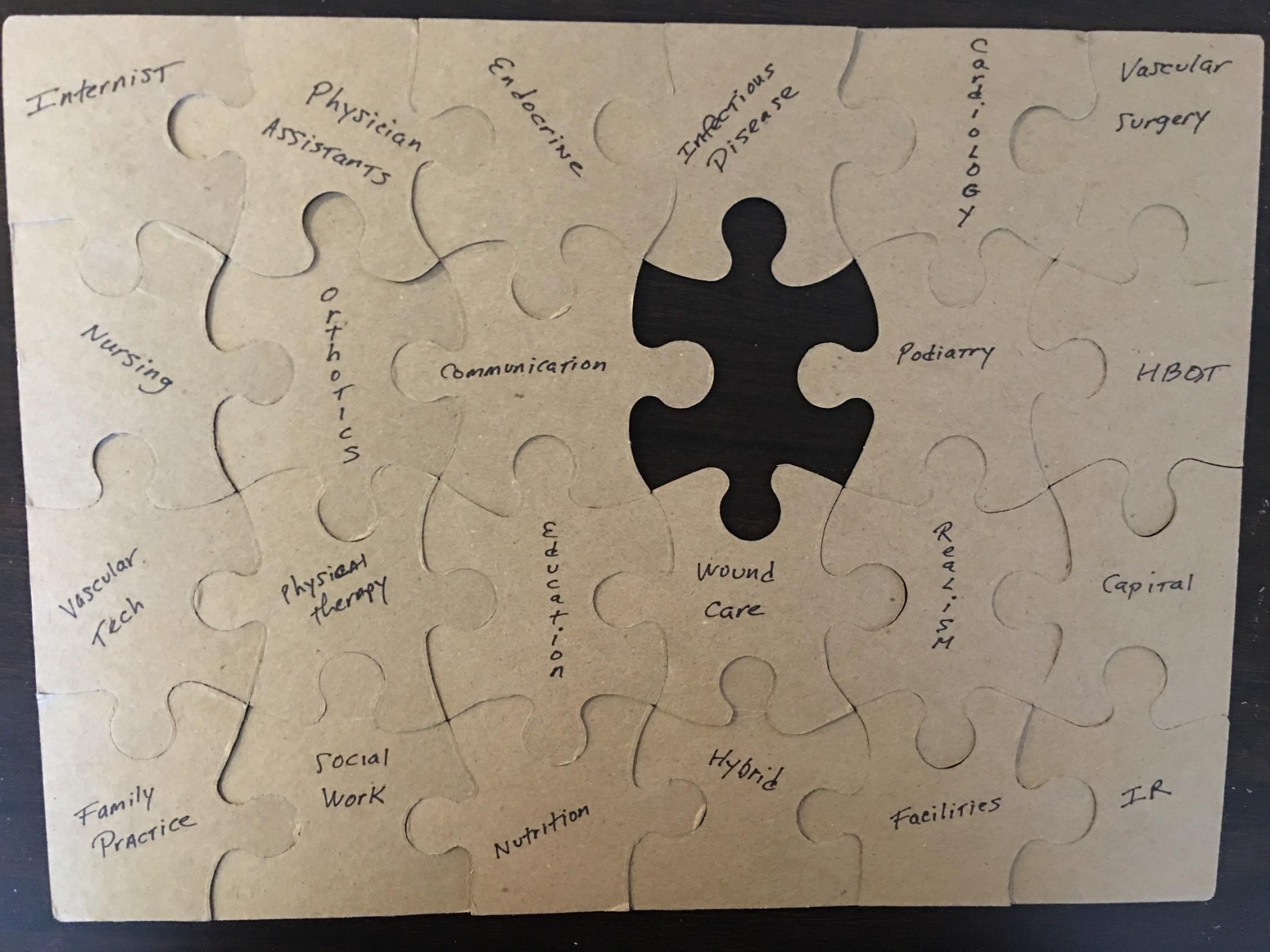

nternist
Physician Assistants
Endocrine
Infectious Disease
Cardiology
Vascular Surgery
Nursing
Orthotics
Communication
Podiatry
Vascular Tech
Physical therapy
Education
Family Practice
Social Work
Nutrition
Facilities
IR

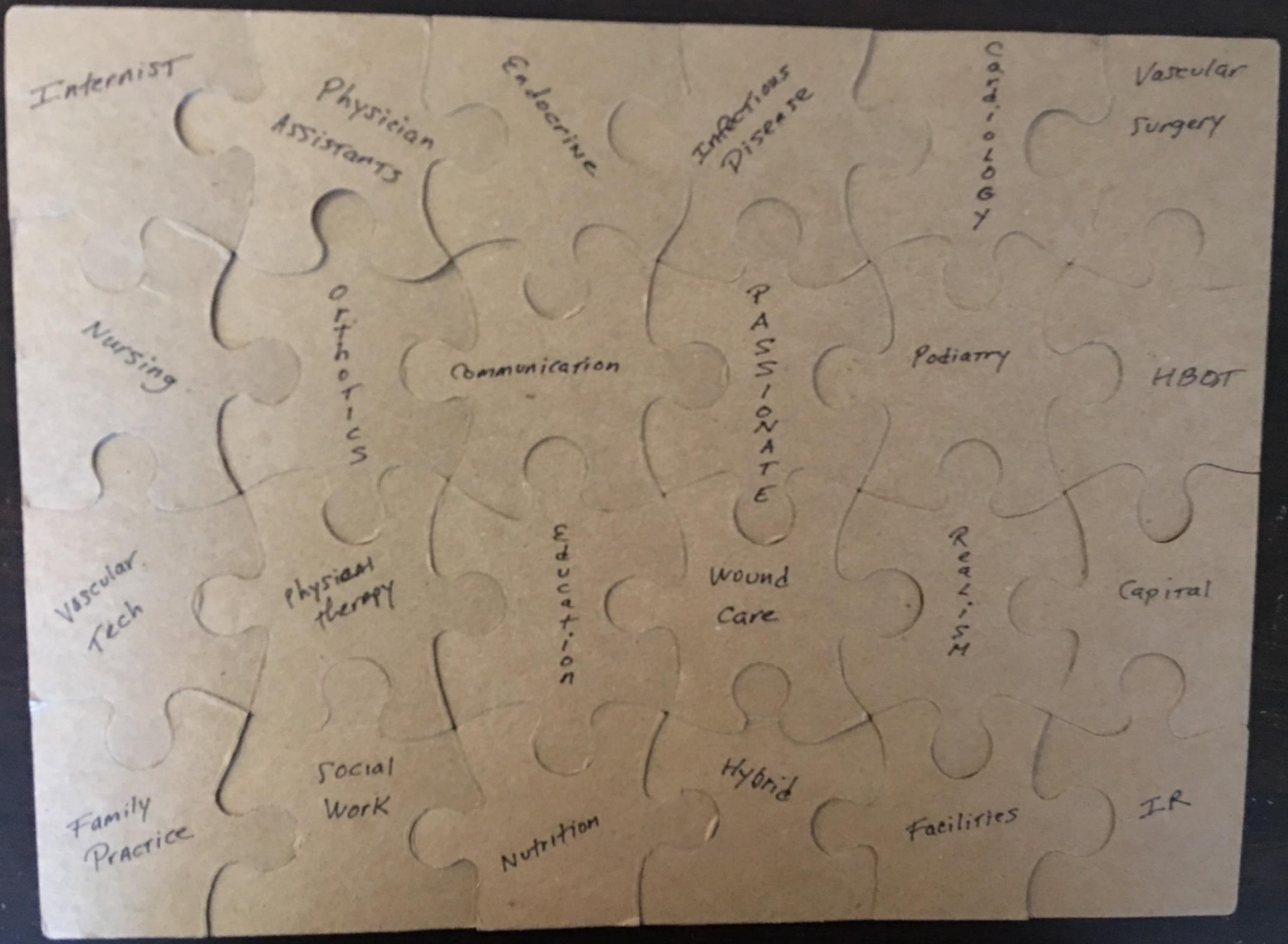

Internist
Physician Assistants
Endocrine
Infectious Disease
Cardiology
Vascular Surgery
Nursing
Orthotics
Communication
Podiatry
Vascular Tech
Physical therapy
Education
Family Practice
Social Work
Nutrition
Hybrid
Facilities
IR


Internist
Physician Assistants
Endocrine
Infectious Disease
Cardiology
Vascular Surgery
Nursing
Orthotics
Communication
Podiatry
Vascular Tech
Physical therapy
Education
Wound Care
Family Practice
Social Work
Nutrition
Hybrid
Facilities
IR


Internist
Physician Assistants
Endocrine
Infectious Disease
Cardiology
Vascular Surgery
Nursing
Orthotics
Communication
Podiatry
HBOT
Vascular Tech
Physical therapy
Education
Wound Care
Family Practice
Social Work
Nutrition
Hybrid
Facilities
IR


Internist
Physician Assistants
Endocrine
Infectious Disease
Cardiology
Vascular Surgery
Nursing
Orthotics
Communication
Podiatry
HBOT
Vascular Tech
Physical therapy
Education
Wound Care
Capital
Family Practice
Social Work
Nutrition
Hybrid
Facilities
IR


Internist
Physician Assistants
Endocrine
Infectious Disease
Cardiology
Vascular Surgery
Nursing
Orthotics
Communication
Podiatry
HBOT
Vascular Tech
Physical therapy
Education
Wound Care
Realism
Capital
Family Practice
Social Work
Nutrition
Hybrid
Facilities
IR


Internist
Physician Assistants
Endocrine
Infectious Disease
Cardiology
Vascular Surgery
Nursing
Orthotics
Communication
Passionate
Podiatry
HBOT
Vascular Tech
Physical therapy
Education
Wound Care
Realism
Capital
Family Practice
Social Work
Nutrition
Hybrid
Facilities
IR

That's all Folks!
Any Question ?

Surgery

- Your Surgery
- Surgical Services
- What Sets Us Apart
- Our Surgeons
  - Breast surgeons
  - Burn and wound surgeons
  - Cardiothoracic surgeons
  - Endoscopy surgeons
  - Gastroenterology surgeons
  - Neurosurgeons
  - Pediatric surgeons
  - Plastic surgeons
  - **Vascular surgeons**
- Locations
- Destination Surgery

BEST HOSPITALS U.S.News NATIONAL 2017-18

MAGNET RECOGNIZED AMERICAN NURSES CREDENTIALING CENTER

Maps & Directions
find your way here

Request an Appointment
913-588-1227
844-323-1227

Home ▸ Surgery ▸ Our Surgeons ▸ Vascular surgeons

Vascular Surgeons

Specially trained surgeons at The University of Kansas Hospital surgically repair damaged or diseased blood vessels. Our vascular surgeons work closely with cardiologists, neurologists and interventional radiologists to develop and implement comprehensive, individualized treatment plans.

Our surgeons are experts in both vascular surgery and a less-invasive technique called endovascular surgery, which can be used to treat aneurysm (dilation of the artery) and stenosis (narrowing of the artery). This advanced surgery results in less pain, quicker recovery and less strain on the heart. Learn more about vascular surgery at The University of Kansas Hospital.

Learn More
Click a physician's name or photo to learn more about him or her. To request an appointment, click the "Request Appointment" link next to the physician you've chosen.

Arnspiger, Richard C MD RPVI

Clinical Focus:
Vascular Surgery
Carotid Artery Disease
Peripheral Vascular Disease
Abdominal Aneurysm Surgery
Hemodialysis Access Placement

Request an Appointment

Beezley, Michael J MD

Clinical Focus:
Vascular Surgery
Renal Artery Stenosis
Aortoiliac Occlusive Disease
Wound Care
Abdominal Aneurysm Surgery

Request an Appointment

Cho, Jenny G MD RPVI

Clinical Focus:
Vascular Surgery
Peripheral Vascular Disease
Abdominal Aneurysm Surgery
Hemodialysis Access Placement
Carotid Artery Disease

Request an Appointment

Connelly, Daniel P MD

Clinical Focus:
Vascular Surgery
Visceral Artery Disease
Abdominal Aneurysm Surgery
Hemodialysis Access Placement
Mesenteric Artery Disease

Request an Appointment

Hance, Kirk A MD RPVI

Clinical Focus:
Vascular Surgery
Peripheral Vascular Disease
Carotid Artery Disease
Aortoiliac Occlusive Disease
Mesenteric Artery Disease

Request an Appointment

Thors, Axel DO RPVI

Clinical Focus:
Thoracic Outlet Syndrome
Vascular Surgery
Hemodialysis Access Placement
Aortoiliac Occlusive Disease
Mesenteric Artery Disease

Request an Appointment