Modifying Royal College of Physicians Geriatric Exam



Modifying, Computerzing & Updating the "Royal College of Physician" (RCP) Geriatric Hand & Wrist Assessment" into a Research DB for the Medical Community and the public.

PHYSICIANS still acknowlege that, "an ounce of prevention is worth a pound of cure."



As such Automating it into a 100% Noninvasive Unbiased comparison diagnostic examination technology allows the Medical Community and the general public academics to operate a home based business. Able to perform assessments with no or very little medical knowledge, but it does excel the examiners skill sets.

Also Physicians don't have to retain their exam procedures anymore or learn new ones because the new Epigenology Hand &

Wrist-Practice database now controls this process. Including an infinite number of variations associated with a variety of symptoms that may lead to conclusive diagnosis and other medical conditions.

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Zio ECH Inc Beyond Innovation



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Royal College of Physicians (RCP)

Automating The "Geriatric Hand & Wrist Assessment"

Ever since its foundation in 1518, the Royal College of Physicians has worked to improve patient care and reduce illness.

The RCP drives improvements in the diagnosis of disease, the care of individual patients and the health of the whole population, both in the UK and across the globe.

It does this through educating and supporting its 40,000+ fellows and members and by setting clinical and educational standards and measuring against them. In doing so, the RCP influences policymakers and other stakeholders in the design and delivery of quality healthcare. The RCP's fellows and members include medical students, trainees, consultants, SAS (staff, associate specialist and specialty) doctors, physician associates and advanced clinical practitioners as well as retired physicians. In over 100 countries around the world, they work in hospitals and communities in more than 30 different medical specialties.

This work ranges from caring for patients who are acutely unwell in hospital to supporting patients to manage long-term health problems at home. It also involves encouraging people to stay fit and healthy.

The RCP is a clinically led organization and works in partnership with its own Patient and Carer Network and other patient groups to achieve its aims. It also works with various health organizations and other royal colleges to enhance the quality of medical care and to promote research and innovation.

The RCP has a a wider duty to raise awareness of preventable illnesses such as those caused by smoking, alcohol, obesity and air pollution and to highlight the health impacts of climate change. It promotes evidence-based policies that tackle risk factors for disease to encourage good public health.Recommends a "Hand & Wrist Assessment" (H&W-Assessment) for geriatrics.

Royal College of Physicians "Geriatric Hand & Wrist Assessment"

The "**Royal College of Surgeons & Physicians**" reports that a reverent way a Physician approaches a patient is a critical part of the clinician's inner state. A non-invasive unbiased **H&W-Assessment** is a thoughtful observation revealing they both have a high density of useful information. For example, information routinely gained includes overall vitality, inner emotional state, cerebral dominance, occupations and hobbies, past medical history, neuromuscular function, cardiovascular function, rheumatic conditions, dermatologic problems, and risk of future functional decline. And with current University research from medical institutions all over the world would emphasize a very powerful Symptomatic comparison diagnostic tool. **EG**: new **Epigenetic research** has defined that **3rd finger length** is now giving up data on interpreting anger, analytical skills, levels of male and females hormones and their effects as we age. Valuable diagnostics that can no longer be ignored and and other research should be apart of ex-

amining patients of all ages including the general public not just for Geriatrics anymore. Hence the name "*Epigenology Clinic H&W-Practice*" (*EC-H&W-Practice*).

ZioTECH Inc. and Developer (**Gerald Biccum**) realized that todays highly advanced computer databases using AI could easily computerize and automate this procedure which is now ready to be implemented. As a very powerful, **easy-to-master Epigenology H&W-Practice** assessment tool. Whereby a **Medical Professional** or **Epigenologist H&W-Practitioner** would always have access to the latest research and medical data associated with examining the **Hands & Wrists**. Each hand and wrist is unique when it comes to interpreting symptoms and genetic features. Today the **Geriatric Hand & Wrist assessment** isn't practiced anymore because for lack of Physicians and its overwhelming with required knowledge which is becoming harder and harder to retain Symptomatic interpretation that involves enumerable amount of variations let alone having to learn new procedures, medicine usage and their cures etc.

ZioTECH'S new 100% Noninvasve unbiased **H&W-Practice exam**'s capabilities allows **Medical Professional** the ability to not have to retain their exam procedures or learn new ones because the database controls this process via a corresponding alphanumerical numbering system in the database. written on the exam worksheet. It also controls an infinite number of variants associated with any symptomatic diagnosis that may lead into further medical attention. This is where the "**Geriatric Hand & Wrist Assessment-Research**" (**GH&WA-Research**) computer database really shines because it allows the **Medical Professionals** to perform a more powerful assessment for **Geriatrics and the public in general** in just 45 minutes, thereabouts, with minimal medical effort. Plus it will have tremendous control and direction over the examination including access to any additional new research by the royal college of physicians and Surgeons plus global medical institutions additions.

Because the database uses computer codes while generating reports it's able to cross reference symptoms for accuracy allowing the **Medical Professionals** to examine those that have dementia, dysentery, language barriers, mental disorders including induced commas. It can also cross reference medical data from a previous assessments allowing the **Medical Professionals** to learn if the patient is improving or changing medical direction, instantly. **Medical Professionals** have always known for decades that the **Hand & Wrist** are very important part in assessing and interpreting a variety of Symptoms, ailments including genetic disorders. Enough data can be extracted from the **Hands & Wrists** to alarm any **Medical Professionals** well in advance in pursuing other types of testing if necessary to keep patients abreast of their condition or well-being.

Other capable options are:

1) Printing and archiving the assessment instantly accessing the patients' data anywhere in Canada online.

2) Printing current or previous archived reports along with any images for patient's records.

3) Compare and cross reference previous examinations, automatically during or after an assessment.

- 4) Having an option of listing cures and medication uses for each symptom.
- 5) Using the database's symptom variants for diagnostic comparison purposes.

6) Searching for a specific symptom with all the databases available options at hand.

7) Search for a specific assessment like, heart, neuromuscular, skeletoral exams and more etc.

Eventually we would like to see the database advance with enough medical Data whereby it could assist **Medical Professionals** with their preemptive health care service replacing the now canceled **yearly as physical** for both genders and the public in general. Whereby a **Registered Licensed Epigenologist H&W-Practitioner** such as Nurses, Nurse Practitioner, Medical Dr., Chiropracters, and the academic public etc. Will be able to perform a **H&W-Practices as a home based** perform the Hand and Wrist assessment **Medical Professional** (similar to a dental hygienists) using the 100% unbiased computer generated report for medical direction associated with a patient's yearly physical. Also as active online research database the **Medical Professionals** would always have access to the latest data associated with hands and wrists and enter any issues of the hands and get an instant interpretation such as symptoms of the nails and skin relaying heart and other internal organ problems.

Why computerize the Royal College's "Hands and Wrists assessment?"

Because we and thousands of other **Medical Professionals** all over the world still believe and understand that: "An ounce of prevention is worth a pound of cure." In fact **Medical Professionals** still rely on the hands and wrist as a reliable source of medical data whether physical or psychological in nature. The hand and wrist is now being researched and acknowledged as a viable source of medical data based on proven research by geneticists from Universities all over the world.

Nature vs Nurture argument solved

Scientists have now determined, "we are nurtured and natured."

Current Hand and Wrist is Assessment Technique

Hand and Wrist Overview

"It is a capital mistake to theorize before one has data." - Sir Arthur Conan Doyle

Please NOTE: A new non-invasive automated physical examination now exists that can be performed prior to or during a Doctor's medical physical with astonishing results. It's called: "**Epigenology Hand & Wrist Practice**" examination. It virtually illuminates a lot of repetitive drudgery and increases the efficiency and effectiveness of the **Hand & Wrist** physical examination in its entirety.

Why the hand? Because it is an excellent place to begin a physical examination. In social terms, hands are the least threatening part of the body to touch. By beginning the examination with a careful look at the hands, the process immediately reflects the clinician's attentive, meticulous, conscientious manner (competence) to the patient.

The reverent way that a practitioner approaches a patient is a critical part of the clinician's inner state. Thoughtful observation also reveals that hands have a high density of useful information that can be largely extracted via a **Epigenology Hand & Wrist Practice** assessment tool. For example, information routinely gained (past and current) may include overall vitality, inner emotional state, cerebral dominance, occupations and hobbies, past medical history, neuromuscular function, cardiovascular function, rheumatic conditions, dermatologic problems, and risk of future functional decline for the elderly of which can all be accomplished by first doing a Sequential of examination:

- 1) Shaking hands
- 2) Checking the nails
- 3) Inspect the fingers
- 4) Examine the joints
- 5) Survey the palms for Epigenetic defects
- 6) Evaluate neuromuscular function
- 7) Compare hands for similar genetic features.
- 8) Note skin conditions, and more

(1) The Hand Shake Test

Occasionally, a diagnosis will become evident from the handshake. Inability to let go of the hand suggests myotonia. In hyperthyroidism, the palms will be moist, a fine tremor may be evident, and palmar erythema will be visible. The handshake of an anxious patient may be similar but without the red palms. A very soft velvety feeling of the skin reminiscent of feeling a baby's foot suggests contralateral cerebrovascular disease. If the manual softness is bilateral, consider bilateral cortical disease such as Alzheimer's disease. The handshake of a patient with acromegaly is characteristic. The hand envelops your fingers like a soft pillow and has a full, smooth appearance. Parkinsonism can sometimes be evident by the underlying tremor and cogwheel rigidity.

Variations in the Size and Shape of the Hands

Gross irregularity of shape and size suggests rheumatoid arthritis, Paget's disease of bone, or, rarely, neurofibromatosis. Unilateral enlargement of a hand can be seen in significant manual labor or arteriovenous aneurysm. Square dry hands should raise the consideration of myxedema.

(2) Examine the Nails

Elderly people carry the last 6 months of their medical record on the approximately 10 square centimeters of keratin comprising the fingernails. The **patient's manicure** can reveal state of health, nutritional status, past events, personality, occupation, and one's inner state. Systemic illness should show the nail changes in each of the nails on one hand. The thumb may reveal more extensive changes given its increased size. It is critical to examine the nails in adequate light. Gently rotate the nail in the light so that the reflection highlights all aspects of the nail. Notice the lunula, the pale crescent moon-like coloration at the base of the nail. Leukonychia stria and a pointed tent-like lunula suggest an excessive manicure and pushing on the cuticle. Paronychias suggest stress and poor attention to hygiene. This can reflect depression, dementia, or psychiatric illness.

Nail Growth

Nail growth is continuous. It takes about 6 months for a fingernail in an elderly person to completely grow out. Cold temperature can slow growth rates but not to any clinically significant degree (pun intended). The middle finger nail grows the fastest, followed by the forefinger and ring finger. Aging slows the growth rate from approximately 3 months in childhood to the 6 months in 70 year olds. Nails in elderly people are also thicker than in younger people. Thin nails in a postmenopausal woman raise the possibility of metabolic bone disease. The nails of the dominant hand grow slightly more quickly than the non-dominant nails, probably because minor trauma accelerates nail growth. Conversely, immobility slows the growth rate of fingernails. Understanding the growth rate is important because the time interval from a critical event can be estimated from the location of a nail lesion. For example, a white line appearing transversely halfway up the nail suggests an acute illness 3 months earlier. Regular observation will demonstrate its progression to the end of the nail edge.

Nail Polish

Distance from base and line of polish gives approximate date of application (nails grow 0.1 mm/ day. Picking at polish reflects nervousness and agitation. Toenail polish suggests unusual flexibility or a friendly helper.

Lines of Beau

In 1846, Joseph Honoré Simon Beau described transverse lines in the substance of the nail as signs of previous acute illness. The lines, also known as Beau-Reil cross furrows because Johann Christian Reil described them 50 years earlier, look as if a little furrow had been plowed across the nail. By noting its location on the nail, the approximate date of the illness can be determined. Moreover, the depth of the line provides a clue to the severity of the illness. Illnesses producing Beau's lines include severe infection, myocardial infarction, hypotension, shock, hypocalcemia, or surgery. Intermittent doses of immunosuppressive therapy or chemotherapy can also produce Beau's lines. Severe zinc deficiency has also been proposed as a cause of Beau's lines.

Koilonychia (Spoon Nails)

Koilonychia gets its name from "koilos," the Greek word for spoon. The nail shape changes from mildly convex to frankly concave. Spoon nails suggest iron deficiency, diabetes mellitus, or deficiency in sulfur-containing amino acids (especially cysteine or methionine). The thickness of the nail plate can help you to infer the underlying disorder. Soft, thin spoon nails are seen in iron deficiency and deficiency of amino acids. Since small amounts of insulin and growth hormone are necessary for amino acid transport, uncontrolled diabetes (hemoglobin A1C over 10) can produce koilonychias with thick nails. Rarely, spoon nails can be seen in Raynaud's phenomenon.

The Water Drop Test.

To determine if a nail is spooned, perform the water drop test. Place a drop of water on the nail. If the drop does not slide off, then the nail is flattened from early spooning. An experienced clinician can look at the nail and perform a "mental" water drop test.

Nail Deformities

Various nail deformities may result from nutritional deficiency, infection, or trauma. Test the softness and flexibility of the free edge by bending the nail gently downward. A firm easy bending is normal. Next, examine the nail thickness by peering down on the fingertip. Thin, brittle nails suggest metabolic bone disease, thyroid disorder, or nutrient deficiency. A central thin canal can be seen in iron, folic acid, or protein deficiency. Distal changes appear first and then move proximally. Central canal with a fir tree appearance is Heller's deformity and is seen in peripheral arterial disease.

Beading of the nails is characterized by small longitudinal beads that resemble miniature candle wax dripping down the nail. This finding suggests endocrine abnormalities such as diabetes, thyroid disorder, and vitamin B12 deficiency.

Raynaud's can cause brittle nails with longitudinal ridges. Scleroderma produces dusky curved nails with characteristic soft tissue changes. (See Table 1 for hand and nail findings in diabetes.)

Hand Findings in Diabetes

Finding Differential Distinguishing Features

Spoon nails

Iron deficiency; deficiency in sulfur-containing amino acids; Raynaud's phenomenon; diabetes thickness of nail plate. Soft, thin spoon nails are seen in iron deficiency and deficiency of amino acids. Since small amounts of insulin and growth hormone are necessary for amino acid transport, uncontrolled diabetes (hemoglobin A1C over 10) can produce koilonychias with thick nails.

Beading of the nails

Diabetes; thyroid disorder; vitamin B12 deficiency.

Dupuytren's contracture

Diabetes mellitus; postmyocardial infarction; cirrhosis; Raynaud's disease; and is sometimes seen in syringomyelia.

Palmar xanthomas

Diabetes mellitus; myxedema; renal failure; biliary cirrhosis; chronic pancreatitis; cobalt chloride toxicity.

Palmar erythema

Cirrhosis; alcoholism; hyperthyroidism; diabetes mellitus; vitamin B deficiency; beriberi; rheumatoid arthritis; polycythemia rubra vera; tuberculosis; normal finding in 5% of the general population. Palms will also be sweaty with hyperthyroidism.

Burning sensation of hands

Diabetes; alcoholic neuritis; polyneuritis; lung cancer; lymphoma; gastric cancer; chemical neuritis; ischemic neuropathy; compartment syndromes. Look for atrophy of the interosseous muscles, which suggests diabetes.

Paronychias

Paronychias are common, result from infection along the edge of the nail, and suggest stress, trauma, bacterial infection, or herpetic whitlow. Water exposure is a risk factor. Healing can produce deformity along the side of the nail.

Pseudomonas paronychia can turn the nail green.

Fungal infections frequently affect the nails. *Candida* species most commonly affect the fingernails, while dermatophytes involve the toenails. While some nails are completely spared, the classic pattern for those nails that are affected is involvement of the entire nail surface. There is usually heaped-up debris under the nail edge, and the nail is dystrophic.

Onycholysis

The pulling away of the distal end of the nail is called onycholysis. Most commonly, onycholysis reflects thyrotoxicosis, trauma, psoriasis, drug effect (especially tetracyclines), and chemical exposures. Sometimes anemia can produce onycholysis. In psoriasis, there are pits in the nails in addition to the onycholysis. Lichen planus can also produce irregular white, raised lesions on the distal nails.

Nail Discolorations

Minor trauma to the nail plate can injure the capillaries below the nail base. The result is a chalky white spot that appears on the nail. Multiple white patches can be seen. They are usually on single nails. More significant trauma produces a hematoma under the nail. Repetitive trauma from occupations such as farming can produce characteristic nail changes.

Other discolorations include the following:

• Lilac discoloration along the free edge of the fingernail suggests syphilis (Millian's sign)

- Lilac-colored nails may also signify chronic congestive heart failure.
- Pink nails suggest heart failure and occasionally vitamins C or B deficiencies.
- Yellow nails suggest lymphatic obstruction.
- Renal failure produces a brownish discoloration along the distal end of the nail just below the free margin of the nail.
- White nails suggest chronic liver disease or renal failure (look for the brown renal failure line at the distal nail margin to tell them apart).

• Vascular disease causes nail opacity.

Terry's Half-and-half Nails.

Terry's half-and-half nails are pale at the base and dark red or brown at the free edge. Terry's nails suggest chronic renal or liver disease. Terry also described a half-and-half nail where the lunula and lower half of the nail is red and the upper half is pale. These nails suggest congestive heart failure, severe lung disease, or lymphoma.

Transverse White Lines

Any acute illness can produce transverse milky white lines: Mee's lines if in the setting of arsenic poisoning, Reil's lines in the setting of infection. These lines should be distinguished from Muehrcke's lines, which are 2 parallel white lines caused by low serum albumin. Edema under the nail produces these lines, and they disappear when the albumin rises. Loss of the lunula reflects a low serum albumin and malnutrition.

Splinter Hemorrhages

Small red longitudinal lines in the nail are called splinter hemorrhages, an important clue of infectious endocarditis. They should be differentiated from the black hair-like discolorations produced by trauma in that they are wider and fuller. Transillumination the digit can help to bring out the slightly fatter red splinters. Psoriasis can produce a reddish brown spot below the nail plate resembling an oil spot.

(3) Fingers: Shape Abnormalities

Clubbing

Notice if the fingers are clubbed. In advanced clubbing, they will be drumstick-like with the distal portion of the finger appearing slightly larger. As one of the earliest signs, the nail loses its angle of insertion. To look for loss of this angle, check Schamroth's sign: have the patient place both forefinger nails together and look between them. If you can see a small diamond space between them, then the nails are not clubbed.

The mechanism of clubbing is not entirely clear. It may involve changes in autonomic control of the digital arterioles that help to modulate body heat. In addition, changes in vasomotor compounds such as kinins also affect blood flow through the fingertip. The mechanism for clubbing probably varies for differing conditions.

The causes of clubbing are numerous, and the following list is not exhaustive. Pulmonary causes include:

- Bronchogenic carcinoma;
- Alveolar cell carcinoma;

- Lung abscess (the condition first associated with clubbing by Hippocrates);
- Interstitial pulmonary fibrosis;
- Sarcoidosis; and
- Beryllium poisoning.

Important cardiovascular causes are:

- Subacute bacterial endocarditis;
- Infected arterial grafts; and
- Aortic aneurysm.

Gastrointestinal causes associated with clubbing are:

- Inflammatory bowel disease;
- Sprue; and
- Neoplasms (esophagus, liver, bowel).

Hyperthyroidism can also produce clubbing.

Blunt Fingers

Large, blunt fingers suggest acromegaly. As mentioned earlier, the characteristic handshake is another clue. Small, blunt fingers can be seen in renal failure with secondary hyperparathyroidism. This condition can produce resorption of the terminal portion of the digit, leading to wide but thin nails and fingers with blunt tips.

Spider Fingers, Slender Palm (Arachnodactyly)

While not often seen in old age, Marfan's syndrome sometimes produces arachnodactyly. Check Steinert's sign by having the patient make a fist over his opposed thumb; if the thumb extends beyond the base of the little finger, Marfan's syndrome is a consideration. Significant overlap of the thumb and pinky when grasping the opposite wrist also suggests Marfan's syndrome (Wrist sign). Another cause of thin, spidery fingers is pulmonic valve stenosis.

Antoine Bernard-Jean Marfan (1858-1942) was the French father of pediatrics who first recognized the importance of skin tests for tuberculosis.[5] In addition to describing the syndrome that bears his name, Marfan reported the spastic paraplegia of the lower extremities and mental retardation in children with congenital syphilis (Dennie-Marfan syndrome), Marfan's symptom of medial malleolar swelling in rickets, Marfan's sign of typhus (a red triangle on a furred tongue in a febrile child), and Marfan's law (which basically states that people who recover from childhood tuberculosis rarely get reinfected).

Other Abnormal Finger Findings

Slender, delicate, and hyperextensible fingers suggest a hypopituitary state.

Having the patient make a fist and seeing a dimpled fourth knuckle can determine a foreshortened fourth metacarpal bone, which suggests pseudo hypoparathyroidism (Fuller Albright's sign).

A very short pinky suggests congenital syphilis (DuBois' sign).

Fuller Albright (1900-1969) was the remarkable American endocrinologist who coined the term Cushing's syndrome.[6] Albright was an extensive clinical researcher who focused his work on the parathyroid gland, bone and mineral metabolism, and abnormalities of sex hormones. He developed an elegant method of follicle-stimulating hormone measurement and distinguished several forms of primary amenorrhea including Klinefelter's syndrome.

(4) Joint Findings

Various arthritides can produce findings on the hands. These clues are well worth appreciating if they are present because musculoskeletal disorders are very common in elderly people.

Osteoarthritis

Osteoarthritis produces nontender bony nodules of the distal interphalangeal joints (DIPs) and proximal interphalangeal joints (PIPs) called Heberden's nodes and Bouchard's nodes, respectively. Involvement of the metacarpophalangial (MCP) joints should suggest another diagnosis.

William Heberden (1710-1801) quickly established himself as an outstanding physician. When he was asked to accept an appointment to the court of King George III as the personal physician to the Queen, Heberden initially was reluctant to accept because he feared that it might interfere with his usual work of visiting and treating the sick.

He was meticulous in learning from experience. He would record, in Latin, the particulars of history, physical, and outcome of all of his patients. Then, at the end of every month, he reviewed his records to try to draw more general conclusions from his observations. To take it a step further, he spent the last 20 years of his life organizing these notes into the publication "Commentaries on the History and Cure of Diseases." This has been called the last important medical treatise in Latin. It was almost immediately translated into English and enthusiastically received. Heberden was the first to describe angina pectoris, and he described the differentiating features of chicken pox from small pox. He also observed the improvement in tuberculosis with pregnancy.

The diarist Samuel Johnson lauded Heberden's scholarly approach and contributions to medical care. When Heberden was called to Johnson's bedside, Johnson commented that Heberden was "the last of our learned physicians." His virtue led to a happy old age, and perhaps had even medical benefit, as

Heberden lived to age 91.

Autoimmune Disease

Rheumatoid arthritis is a symmetrical small joint polyarthritis (sparing the DIPs) that produces swan neck deformities, boutonniere deformities, and ulnar deviation. It can produce fusiform swelling of the fingers during the acute phase of the illness. Remember that rheumatoid arthritis affects the ulna side of the wrist and tends to spare the radial side of the wrist. Synovial swelling of the PIP joints is called Haygart's nodes. Lack of ability to fold the hands in prayer suggests rheumatoid arthritis of the carpal joints (Plotz's sign). Systemic lupus erythematosus can affect the hand in several ways. The joint findings are a symmetrical nondeforming polyarthritis with a rash that spares the knuckles. The rash is in contrast to dermatomyositis, where there is a rash over the knuckles or pink to dark red (Gottron's) papules[12] on the knuckles. Heinrich Adolf Gottron (1890-1974) was a German dermatologist who also described a variant of acrogeria (Gottron's syndrome).[13,14]

Gouty Arthritis is evident by tophaceus deposits on the hands that appear as salmon-colored nodules.

Psoriatic Arthritis (Enthesitis)

Psoriasis tends to produce significant deformity affecting the DIP joints. Nail pitting and classical skin signs are usually present. Unless Enthesitis is the prominent illness in which case their is no deformity with extreme stiffness and pain do to ligament calcification.

(5) Physical Findings in the Palm

Callus

If you see a callus, ask the patient what activity produced the mark. Occupational and a vocational activities can result in callus formation in characteristic locations:

- Non-dominant palm at the base of the fingers golfers
- Non-dominant fingertips sparing the thumb steel string guitar player (the nails will also be shorter than the dominant nails)
- Circular blisters on the medial side of the thumb reflect a weekend gardener with raking or shoveling trauma
- Medial portion of the middle finger writers using old-fashioned pencil and paper develop a callus where the writing utensil rubs the digit

More extensive callus formation is called tylosis and is associated with squamous cell carcinoma of the esophagus, lung cancer, and bladder cancer. Arsenical toxicity produces hyperkeratoses of the palms with a yellowish waxy feel. Check for Mee's lines on the fingernails.

Dupuytren's Contracture

Dupuytren's contracture is a fibrosis of the palmar tendons usually affecting the ring and little finger. Palpating along the tendon can sometimes identify the lesion more easily than seeing it. Conditions associated with Dupuytren's contracture include diabetes mellitus, postmyocardial infarction, cirrhosis, and Raynaud's disease; and it is sometimes seen in patients with syringomyelia (also called Morvan's disease) and normal persons. Tenderness over the palmar MCPs suggests flexion tenosynovitis.

Baron Guillaume Dupuytren (1777-1835)[15] was born impoverished and remained quite poor through medical school. It is said that he lived in a garret lit by a lamp that burned oil from the fat of cadavers in the dissecting room.

As chief of surgery, he led the Hôtel-Dieu to a leading position in Europe. This ambition earned him the nicknames of the Napoleon of Surgery, and the Beast at the Seine. He was once described as "first among surgeons and last among men." Dupuytren was the first to correctly describe the pathology of the contracture that bears his name. He examined pathologic specimens for years and then became the first to surgically address the contracture.

Dupuytren's very busy practice and ambition made him one of the wealthiest physicians of his time: he offered to give Charles X 1 million francs when he was dethroned and in need of money. This was actually out of character, as Dupuytren was generally considered quite parsimonious. In 1833, Dupuytren suffered a stroke while giving a lecture and insisted on finishing the lecture. He lived only 2 years longer, and died in Paris, at age 58.

Xanthomas

Xanthomas are deposits of fats and cholesterol. The presence of xanthomas raises the question of a familial disorder or hypercholesterolemia, especially type II and type IV. Apoprotein abnormalities can also produce xanthomas. Palmar xanthomas suggest:

- Diabetes mellitus;
- Myxedema;
- Renal failure;
- Biliary cirrhosis (mainly in children);
- Chronic pancreatitis; or
- Cobalt chloride toxicity.

Palmar Erythema

Red palms are often due to states that increase the amount of circulating estrogens. Three percent to 5% of the normal population has red palms. Conditions producing palmar erythema include cirrhosis (liver palms), alcoholism, hyperthyroidism (erythema and sweat), diabetes mellitus, vitamin B deficiency, beriberi, rheumatoid arthritis, polycythemia rubra vera, and tuberculosis.

Unusual Colors on the Palm

- Blue palmar creases suggest the possibility of generalized purpura.
- Pale, silvery, or white creases that do not darken with hyperextension reflect hemoglobin below 7 g/100 mL. (Normally, hyperextending the palm causes the creases to turn a dark red color.)
- Dark brown or black palmar creases raise the possibility of Addison's disease as well as a normal racial variation.

Other Palm Findings

Petechiae on the palm suggest blood dyscrasias, thrombocytopenic purpura, subacute bacterial endocarditis, and scurvy.

Livedo reticularis over the palm raises the possibility of the antiphospholipid antibody syndrome.

(6) Neuromuscular Conditions Involving the Hand

Painless vs Painful Atrophy

Painless atrophy of the intrinsic muscles of the hand without sensory loss suggests central nervous system disease such as:

- Amyotrophic lateral sclerosis;
- Charcot-Marie-Tooth peroneal atrophy;
- Syringomyelia (loss of heat, cold, and pain sensation); or
- Loss of function as in old rheumatoid arthritis.

Occasionally, neural leprosy can produce this finding.

Painful atrophy suggests:

- Peripheral neuropathy;
- Extrinsic pressure on the nerves (cervical, axillary, supraclavicular, or brachial);
- Pancoast's tumor in the pulmonary apex;
- Aneurysms of the subclavian arteries, axillary vessels, or thoracic aorta;
- Cervical rib;
- Degenerative arthritis of cervical spine; or
- Herniation of a cervical intervertebral disc.

Possible Radial Nerve Palsy (Wrist Drop)

Check wrist extension and thumb extension (moving the part toward the radius) for signs of radial nerve damage. Weakness producing wrist drop can be caused by:

- Lead poisoning;
- Alcoholism; or
- Polyneuritis trauma, polyarteritis, and neurosyphilis.

Since the radial nerve supplies the forefinger and the wrist extensors, inability to extend the forefinger can be a sign of radial nerve palsy even if the wrist extensors are normal. If you suspect radial nerve damage, check the sensation at the base of the thumb.

Possible Ulnar Nerve Palsy

Check finger abduction by asking the patient to spread his fingers as wide as possible. Difficulty with this suggests ulnar neuropathy. Abduction of the fifth (little) finger suggests ulnar nerve palsy (Wartenberg's finger sign). Another excellent maneuver (provided the median nerve is intact) is testing for Froment's sign: have the patient pinch a piece of paper between the thumb and the radial aspect of the forefinger. If you can pull out the paper, Froment's sign is present and there is ulnar nerve weakness.

If you suspect ulnar nerve palsy, look for hypothenar atrophy and interosseous atrophy. The sensation of the little finger and usually the ulnar side of the ring finger will be impaired. Also check for atrophy of the flexor carpi ulnaris in the forearm. (If you have forgotten the location of this useful muscle, flex and extend your ring and little fingers and observe the muscles that contract in your medial forearm.) No atrophy of the flexor carpi ulnaris suggests ulnar nerve entrapment at the wrist (ulnar tunnel syndrome). Atrophy suggests C8 radiculopathy or nerve entrapment at the elbow (cubital tunnel syndrome). Polyneuritis and trauma can produce ulnar neuropathy in addition to the entrapment syndromes. Anesthesia of the ulna nerve in the setting of neurosyphilis is Biernacki's sign.

Possible Median Nerve Palsy

One tip off to a possible median nerve problem is inability of the patient to flex the forefinger and sometimes the middle finger (this posture is called the papal benediction hand). To test for median nerve integrity, check the "OK" sign. Have the patient make an "OK" sign by opposing the thumb and forefinger to make a ring. Check the strength of the "O" by trying to open it with your fingers. Weakness indicates a median nerve abnormality.

Have the patient make a fist (to test the finger flexors) to see if the forefinger can flex. Also look for thenar atrophy, which reflects median neuropathy. If these signs are present, then check for atrophy of the flexor carpi radialis (if necessary, refresh your memory by making a fist and feeling the muscle contraction on the lateral forearm). Atrophy of the flexor carpi radialis suggests entrapment at the elbow (pronator syndrome, due to entrapment by the ligament of the pronator teres). No atrophy of the flexor carpi radialis suggests entrapment at the wrist (carpal tunnel syndrome).

If the findings suggest carpal tunnel syndrome, consider:

• Rheumatoid arthritis;

- Tenosynovitis of the wrist;
- Amyloidosis;
- Gout;
- Myxedema;
- Plasmacytoma; and
- Acromegaly.

Color Changes in the Hands

Cyanosis of the hands suggests:

- Congestive heart failure;
- Cor pulmonale;
- Raynaud's phenomenon;
- Systemic lupus erythematosus;
- Polycythemia;

• Drug effects, including warfarin "purple fingers and toes syndrome," and ingestion of phenolaphthalein — a stimulant laxative that lost its Category I safety status by the US Food and Drug Agency in 1999 because of questions of carcinogenicity; it has been replaced by other ingredients in over-the-counter laxatives;

- Arteriovenous aneurysm;
- Myxedema; or
- Syringomyelia.

Pallor of the hands can reflect:

- Anemia;
- Aortic insufficiency ("paradoxical pallor");
- Raynaud's phenomenon; or
- Vasospasm (consider tobacco abuse, Buerger's disease, anxiety, and vasomotor instability).

Rubor

A red, sunburned appearance on the dorsum of the hand suggests pellagra. Generalized rubor can be a sign of:

- Polycythemia;
- Systemic lupus erythematosus (especially involving the fingertips);

- Dermatomyositis; or
- Chronic lymphocytic leukemia.

Coldness, redness, and edema of the hand suggests syringomyelia.

Miscellaneous Pigmentations

Pigmentation overlying the dorsum veins suggests lymphoma (especially Hodgkin's disease). Diffuse melanosis can reflect Addison's disease or malignant melanoma. A slate-gray pigmentation to the hands suggests silver ingestion (argyria). Yellow palms can be a sign of pernicious anemia, carotinemia, or laborer's callus.

Depigmentation raises the possibility of vitiligo, pinta, postdermatitis, scleroderma, and dermatomyositis. Purpura suggests subacute bacterial endocarditis, thrombocytopenic purpura, and blood dyscrasias.

A rash of the palms and soles has a limited differential that includes Rocky Mountain spotted fever, secondary syphilis, and coxsackie infection.

Pink or red transverse lines along the wrists, antecubital fossa, or groin that remain hyperpigmented suggests scarlet fever (Pastia's sign).

Special Circumstances

Painful Hands

A burning sensation of the hands suggests:

- Alcoholic neuritis;
- Polyneuritis;
- Diabetes mellitus (look for atrophy of the interosseous muscles);
- Carcinoma of the lung (check for the thenar atrophy of a Pancoast's tumor);
- Lymphoma;
- Gastric carcinoma;

• Chemical neuritis (look for antimony, benzene, bismuth, carbon tetrachloride, heavy metals, alcohol, arsenic, lead, or gold);

- Ischemic neuropathy (sensory loss in fingers);
- Compartment syndromes;
- B vitamin deficiency; or
- Burning sensations in hookworm infestation.

Arthritides can also produce hand pain, so check for tenosynovitis. If passive extension of the digits produces pain on the dorsum of the hand, then tenosynovitis is present (Kanavel's sign).

Shoulder-hand syndrome produces pain, stiffness, and swelling in the hand but spares the elbow.

Miscellaneous causes of hand pain include:

- Myocardial infarction;
- Pancoast's tumor;
- Brain tumor;
- Intrathoracic neoplasms;
- Cervical spondylosis;
- Vascular occlusion;
- Hemiplegia; or
- Herpes zoster.

Edema of the Hands

Edema of the hands can be associated with generalized anasarca, or hypoproteinemia. To tell whether the edema is protein-rich or hypoalbuminemic in origin, check the pit recovery time. Push into the edema fluid to produce a pit. Protein-poor fluid will spring back quickly (like pushing into a balloon filled with saline); protein-rich fluid retains the pit for more than 2 minutes. Protein-poor fluid suggests hepatic disease, renal disease, or malnutrition. Protein-rich fluid suggests cardiac disease (congestive heart failure) or inflammation.

Vascular obstruction, like superior vena caval syndrome (SVCS), can also produce swollen hands. Causes of SVCS include the following:

- Tumor in the superior thoracic outlet, mediastinum, or pulmonary apex;
- Mediastinal inflammation;
- Aneurysm of the ascending or transverse aorta or of the axillary artery; and
- Pressure on the innominate or subclavian vessels.

Ischemic paralysis produces a cold, blue, swollen, numb hand. Lymphatic obstruction suggests:

- Lymphoma;
- Axillary mass;
- Metastatic tumor;
- Abscess;
- Leukemia;
- Postoperative lymphedema from radical mastectomy;
- Hemiplegic hand;
- Syringomyelia;
- Raynaud's disease;
- Myositis; or

• Trichiniasis.

Ulcerative Lesions on the Hands

Hand ulcers have a fairly limited differential diagnosis:

- Sporotrichosis (rose gardener's disease);
- Cutaneous anthrax;
- Actinomycosis;
- Coccidiomycosis;
- Tuberculosis;
- Tularemia;
- Syphilis (the ulcer should feel like a coin under the skin if you close your eyes because the margins of the ulcer are usually fibrotic);
- Leishmaniasis; or
- Blastomycosis.

(7) Change in Function (Decreased Range of Motion)

Decreased Finger Range of Motion

Decreased range of motion of the fingers suggests arthritides, fracture, and collateral ligament sprain (look for medial or lateral PIP swelling). Flexion tenosynovitis can present with intermittent "locking" (trigger finger), tenderness over the palmar tendons, and a snap or click on flexion and extension. For diffuse tenosynovitis, check Kanavel's sign. (As a reminder of this and other unique hand findings, see Table 2.).

Hand Findings: Alphabetic Listing of Unique Signs

Name of the Sign or Test

- a) Description
- b) Positive Finding
- c) Interpretation

Dubois' sign

Very short pinky Suggests congenital syphilis

Eichhoff-Finkelstein's sign

Have the patient make a fist over his opposed thumb and then flex and ulnarly deviate the fist. Pain over the anatomic snuffbox or production of a painful click

Thumb dysfunction from De Quervain's tenosynovitis.

Froment's sign

Have the patient pinch a piece of paper between the thumb and the radial aspect of the forefinger. If you can pull out the paper, Froment's sign is present

Ulnar nerve weakness

Fuller Albright's sign

Have the patient make a fist. Dimpled fourth knuckle Foreshortened fourth metacarpal bone, which suggests pseudohypoparathyroidism

Grind test

Grasp the patient's thumb and (gently) grind it like a peppermill. Pain Osteoarthritis of the thumb

Gubler's sign

Fusiform swelling of the dorsal wrist. Suggests chronic lead poisoning.

Kanaval's sign

Passive extension of the digits produces pain on the dorsum of the hand

Tenosynovitis

Maisonneuve's sign

Extreme hyperextension of the hand. Suggests a Colle's fracture.

Millan's sign

Lilac discoloration along the free edge of the fingernail. Possible syphilis.

"OK" sign

Have the patient make an "OK" sign by opposing the thumb and forefinger to make a ring. Check the strength of the "O" by trying to open it with your fingers. Tests integrity of the median nerve. Weakness indicates median nerve abnormality.

Pastia's sign

Pink or red transverse lines along the wrists, antecubital fossa, or groin that remain hyperpigmented. Suggests scarlet fever.

Plotz's sign

Lack of ability to fold hands in prayer position. Possible rheumatoid arthritis of the carpal joints.

Schamroth's sign

Have the patient place both forefinger nails together and look between them

If you can see a small diamond space between them, then the nails are not clubbed. No diamond space, then clubbing is present.

Many pulmonary, cardiac, and gastric conditions can cause clubbing. See text. Hyperthyroidism can also cause clubbing.

Steinert's sign

Have the patient make a fist over his or her opposed thumb. If the thumb extends beyond the base of the little finger, the test is positive. Possible Marfan's syndrome.

Wartenberg's finger sign

Abduction of the fifth finger. Suggests ulnar nerve palsy.

Watson's stress test

Pinch the patient's hand between your thumb at the anatomic snuffbox and your forefinger at the palmar base of the thumb, and as you radially deviate the wrist, release your forefinger. If you feel a click with your thumb, the test is positive. Scapholunate sprain or dislocation.

Wrist sign

Significant overlap of the thumb and pinky when grasping the opposite wrist

Possible Marfan's syndrome.

Decreased Thumb Range of Motion

Osteoarthritis of the thumb is very common. Check the grind test for osteoarthritis of the thumb. Grasp the patient's thumb and (gently) grind it like a peppermill. Pain on movement is a positive test.

Fracture can also limit the function of the thumb. Scaphoid fracture will show tenderness over anatomical snuffbox. (As a reminder — the anatomical snuffbox is a hollow seen on the radial aspect of the dorsum of the wrist when the thumb is fully extended.[17] It is called the snuffbox because historically powdered tobacco or snuff was placed there to be inhaled.)

Ulnar collateral ligament tear will present as swelling at the base of the thumb, tenderness on the medial aspect, and excessive abduction to passive flexion and extension (> 30 degrees and 10 degrees).

Another cause of thumb dysfunction is De Quervain's tenosynovitis. To test for this, check for the Eichhoff-Finkelstein's sign. Have the patient make a fist over his opposed thumb and then flex and ulnarly deviate the fist; pain over the anatomic snuffbox or producing a painful click is a positive test.

Fritz de Quervain (1868-1940) was a Swiss surgeon with a special interest in the thyroid gland.[18] He introduced iodized table salt in the treatment of thyroid disease. He was one of the first clinicians to appreciate that some postoperative pneumonias were in fact caused by pulmonary emboli. In addition to the chronic tenosynovitis that bears his name,[19,20] de Quervain also described subacute inflammation of the thyroid gland after viral illness (de Quervain's stuma), and a syndrome of male pseudohermaphroditism caused by complete testicular feminization (de Quervain's syndrome).[18]

(8) Skin Condition

Wrist and Hand Problems

Ulnar swelling and ecchymoses suggests a boxer's fracture. Pushing on the extended fingers and gently palpating the area or visible deformity can sometimes diagnose fractures. Fracture of the little finger can result in a dropped knuckle when the patient makes a fist.

Diffuse tenosynovitis causes swelling of the wrists and can be seen in gout or pseudogout. Check for Kanavel's sign. Fusiform swelling of the dorsal wrist suggests chronic lead poisoning (Gubler's sign).

Colle's fracture is a transverse fracture of the distal radius. Extreme hyperextension of the hand suggests a Colle's fracture (Maisonneuve's sign). The lateral view of the wrist is often depressed, producing a silver fork deformity. A very prominent ulnar head in the wrist suggests Smith's fracture where the radial segment is displaced toward the palm.

Finally, consider scapholunate sprain or dislocation. To test for this, perform Watson's stress test. Pinch the patient's hand between your thumb at the anatomic snuffbox and your forefinger at the palmar base of the thumb, and as you radially deviate the wrist, release your forefinger. If you feel a click with your thumb, the test is positive.

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Have you looked at your hands, lately?

An elderly man probably some ninety plus years, sat feebly on the park bench. He didn't move, just sat with his head down staring at his hands & wrists. When I sat down beside him he didn't acknowledge my presence and

the longer I sat I wondered if he was ok.

Finally, not really wanting to disturb him but wanting to check on him at the same time, I asked him if he was ok. He raised his head and looked at me and smiled.

"Yes, I'm fine, thank you for asking," he said in a clear strong voice.

"I didn't mean to disturb you, sir, but you were just sitting here staring at your hands/wrists and I wanted to make sure you were ok?" I explained to him.

"Have you ever looked at your hands & wrists?" He asked. "I mean really looked at them."

I slowly opened them and stared down to look. I turned them over, palms up and then palms down. No, I guess I had never really looked at my them as I tried to figure out the point he was making.

Then he smiled and related this story:

Stop and think for a moment about the hands & wrists you have, how they have served you well throughout your years. These hands & wrists, though wrinkled, shriveled and weak have been the tools I have used all my life to reach out and grab and embrace life. They braced and caught my fall when as a toddler I crashed upon the floor. They put food in my mouth and clothes on my back. As a child my mother taught me to fold them in praver. They tied my shoes and pulled on my boots. They dried the tears of my children and caressed the love of my life. They held my rifle and wiped my tears when I went off to war. They have been dirty, scraped and raw, swollen and bent. They were uneasy and clumsy when I tried to hold my newborn son. Decorated with my wedding band they showed the world that I was married and loved someone special. They wrote the letters home and trembled and shook when I buried my parents and spouse and walked my daughter down the aisle. Yet, they were strong and sure when I dug my buddy out of a foxhole and lifted a plow off of my best friends foot. They have held children, consoled neighbors, and shook in fists of anger when I didn't understand. They have covered my face, combed my hair, and washed and cleansed the rest of my body. They have been sticky and wet, bent and broken, dried and raw. And to this day when not much of anything else of me works real well these hands hold me up, lay me down, and again continue to fold in prayer. These hands are the mark of where I've been and the ruggedness of my life. But more importantly it will be these hands & wrists that "All there is..." "All there is..." will reach out and take when he leads me home. And "All there is..." won't care about where these hands & wrists have been or what they have done. What "All there is..." will care about is to whom these hands & wrists belong and how much "All there is..." loves these hands & wrists. And with them "All there is..." will lift me up and there I will use these hands wrists to touch "All there is...".

No doubt I will never look at my hands & wrists the same again.

I never saw the old man again after I left the park that day but I will never forget him and the words he spoke. When my hands &wrists are hurt or sore or when I stroke the face of my children and wife I think of the man in the park. I have a feeling he has been stroked and caressed and held by "All there is...".

Laughter is the best medicine.

Life can been explained

On the first day "All there is..." created the cow. "All there is..." said, "You must go to the field with the farmer all day long and suffer under the sun, have calves and give milk to support the farmer. I will give you a life span of 60 years." The cow said, "That's kind of a tough life you want me to live for 60 years. Let me have 20 years and I'll give back the other 40." And "All there is..." agreed.

On the second day, "All there is..." created the dog. "All there is..." said, "Sit all day by the door of your

house and bark at anyone who comes in or walks past. I will give you a life span of 20 years." The dog said, "That's too long to be barking. Give me 10 years and I'll give back the other 10." So "All there is..." agreed (sigh).

On the third day "All there is..." created the monkey. "All there is..." said, "Entertain people, do monkey tricks, make them laugh. I'll give you a 20 year life span." Monkey said, "monkey tricks for 20 years? I don't think so. Dog gave you back 10, so that's what I'll do too, okay?" And "All there is..." agreed again.

And the fourth day "All there is..." created man. "All there is..." said, "Eat, sleep, play, recreate, enjoy. Do nothing, just enjoy, I'll give you 20 years."

Man said, "What? Only 20 years? No way man. Tell you what, I'll take my 20, and the 40 Cow gave back, and the 10 Dog gave back and the 10 Monkey gave back. That makes 80, okay?" "Okay," said "All there is...". "You've got a deal."

So that is why for the first 20 years we eat, sleep, play, recreate, enjoy, and do nothing; for the next 40 years we slave in the sun to support our family; for the next 10 years we do monkey tricks to entertain our grandchildren; and for the last 10 years we sit in front of the house and bark at everybody.

Uknown author