Study Guide 5

This guide covers chapters 9 and 10, the history and identity chapters. First you follow chiropractic from D.D. Palmer's 1895 adjustment through B.J. Palmer's institutions, the legal fight, the straight, mixer and reform split and the changing meaning of subluxation, to the profession and its evidence today. Then you widen the lens to American medicine: heroic depletion, the crowded marketplace of rival systems, the Flexner Report, the licensing wars, Wilk v. AMA and the rise of integrative care. Dates and names matter here, so use the timelines and the cram sheet. Each worked case shows how to test a historical claim against evidence.

WHAT THIS GUIDE COVERS

- Chapter 9 · D.D. Palmer and the Lillard story, influences, tone and Innate Intelligence, B.J. Palmer, spinography, the neurocalometer and Hole in One, Morikubo and licensure, straights, mixers, objective straights and reform, the ICA, NCA, ACA and CCE, medical versus chiropractic subluxation, four subluxation models, the evidence, PART, and contemporary identity, training, scope and evidence.
- Chapter 10 · humoral theory and heroic medicine, proprietary schools and repeal of licensing, the science milestones, patent medicines, Thomsonian, eclectic, homeopathic, hydropathic and later systems, the Flexner Report and its costs, Dent v. West Virginia, basic science laws, Principle 3 and the Committee on Quackery, Wilk v. AMA, alternative versus complementary versus integrative care, NCCIH, the opioid crisis and collaboration.

CHAPTER 9

Chiropractic Models Through History

Read it in full: **Chapter 9 in the textbook**. See it in motion: **Chiropractic Models Walkthrough** and **Chiropractic Models Lab**.

What to know

D.D. Palmer (1845 to 1913), born near Port Perry in what is now Ontario, was a self taught reader who worked as a schoolteacher, beekeeper, raspberry grower and grocer. In the mid 1880s he

opened a **magnetic healing** office in Davenport, Iowa. Magnetic healing descended from Mesmer's animal magnetism: illness as an obstructed vital flow, removed by the healer's hands. That idea carried into his later thinking.

In September 1895 Palmer adjusted **Harvey Lillard**, an African American janitor who said he had been nearly deaf for about seventeen years after feeling something give way in his upper back. Palmer found a vertebra "racked from its normal position," thrust on the spinous process and reported that hearing improved. Historians treat the details cautiously, and the anatomy is a puzzle: the cochlear nerve runs from the inner ear to the brainstem and never passes through the thoracic spine. Palmer generalized quickly, reporting relief of heart trouble a few months later.

Influences: magnetic healing (obstructed flow, healing by hand), **bonesetting** (thrust, the image of a displaced bone), **osteopathy** (A.T. Still, 1874; first school 1892; structural lesions, but Still emphasized the artery and Palmer the nerve), spiritualism and vitalism, and nineteenth century ideas of tone. The Reverend Samuel Weed helped coin **chiropractic** from cheir (hand) and praxis (practice): done by hand. Palmer began teaching in 1897; B.J. was among the first graduates.

Palmer's 1910 book, *The Chiropractor's Adjuster*, sets out three ideas. **Tone**: health is normal tension and activity of nerves and tissues ("Life is the expression of tone"); too much gives heat and inflammation, too little gives weakness. **Innate Intelligence**: an inborn intelligence running and healing the body, part of Universal Intelligence. The **displaced vertebra**: bones out of place press on or stretch nerves; he claimed about 95% of disease came from displaced vertebrae. The model mixes a testable claim (which has not held up) with a philosophical one (which cannot be tested).

D.D. was convicted in Iowa in 1906 and chose jail over a fine. He broke with his son, who took control of the school, and died in Los Angeles in 1913. A widely repeated story says B.J.'s car struck him at a parade, but the death record lists typhoid fever, and historians still debate the incident's role.

B.J. Palmer (1882 to 1961), the Developer, ran the school from about 1906 until 1961. He was a promoter and showman who wrote the Green Books; his wife **Mabel Heath Palmer** taught anatomy for decades and was called the First Lady of Chiropractic. He introduced **spinography**

(radiography) in 1910, the same field Roentgen opened in 1895. He launched one of the first Midwest commercial radio stations in 1922. His **neurocalometer** (1924), a two probe skin temperature device leased at a high price through his organization, split the profession: faculty resigned, enrollment fell and B.J. lost control of the UCA. Around 1930 he developed the **Hole in One** upper cervical technique (atlas and axis, toggle recoil), and in 1935 opened a research clinic whose case series had no controls. D.D. built the theory; B.J. built the institutions and instruments.

In 1906 B.J. and colleagues founded the Universal Chiropractors' Association as a legal defense fund. In the 1907 **Morikubo** case in La Crosse, Wisconsin, Shegetaro Morikubo was charged with practicing osteopathy without a license; attorney Tom Morris argued chiropractic was a distinct science (nerve interference and Innate) from osteopathy (blood flow), and the jury acquitted. The case gave the profession a strong reason to emphasize its unique philosophy. Kansas passed the first licensing law in 1913, California approved a board by ballot initiative in 1922 after hundreds were jailed, and Louisiana was last in 1974.

Straights limit care to locating, analyzing and correcting subluxations by hand; B.J. was the leading straight. **Mixers** add diagnosis and natural therapies (modalities, traction, nutrition, exercise, hydrotherapy); John Howard's school (1906, later in Chicago) and Willard Carver's schools led that tradition. B.J. founded the **ICA** in 1926 for straights. The UCA merged into the **NCA** in 1930, which became the **ACA** in 1963. John Nugent pressed for longer, nonprofit, accredited schools, leading to the **CCE**, federally recognized in 1974; today all US DC programs are CCE accredited.

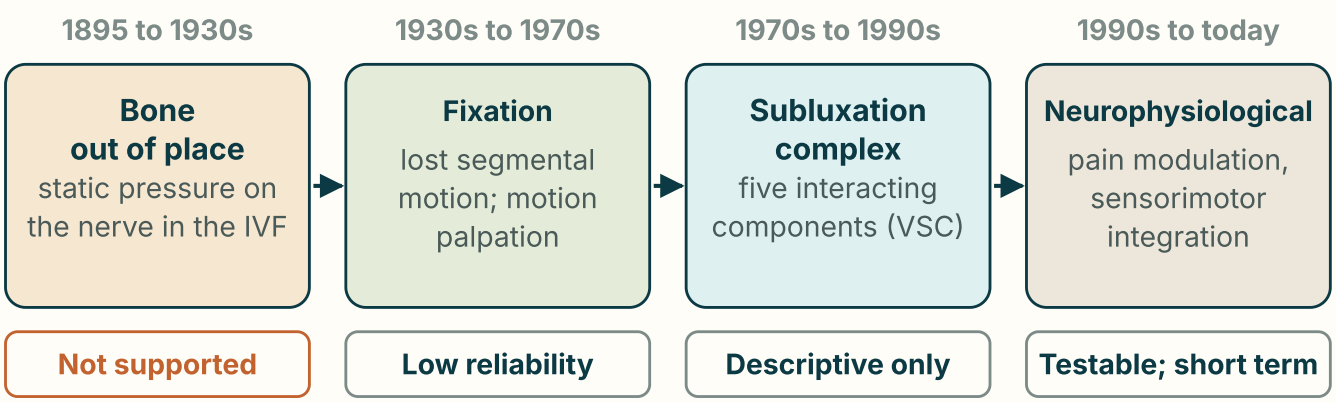
Objective straights (1970s) locate and correct subluxations only, explicitly do not diagnose or treat disease, refer health problems on, and frame care as wellness; critics say ongoing care for people without symptoms still makes an implicit claim. A **reform** association formed in 1984 rejected subluxation as a cause of organic disease and focused on neuromusculoskeletal care with medicine. Evidence based practice (best evidence plus clinical expertise plus patient values) spread from the 1990s. The world federation's identity in the early 2000s: the spinal health care experts in the health care system; later, primary spine care.

A **medical subluxation** is a partial dislocation seen on imaging (atlantoaxial subluxation in RA, shoulder subluxation after stroke, nursemaid's elbow) and is often a reason not to manipulate. The

chiropractic subluxation is a proposed functional or minor positional disturbance with joint surfaces still in contact. Its models: (1) the **bone out of place** pressing on a nerve in the IVF (foot on a garden hose; the meric system linked levels to organs), undercut because the root fills only a third to a half of the foramen and a 1973 cadaver study found the foramen could not be narrowed enough without fracture or dislocation forces; (2) **fixation** and motion palpation (Henri Gillet from the 1930s, Leonard Faye in the 1970s; osteopathy's parallel is somatic dysfunction); (3) the **vertebral subluxation complex**, with five components: kinesiopathology, neuropathology, myopathology, histopathology and biochemical change; (4) consensus and neurophysiological models of pain modulation and sensorimotor integration.

Evidence: palpation and leg length checks for subluxation show poor to fair reliability (kappa often below 0.4). A 2009 review applying the Bradford Hill criteria found no supportive evidence that the subluxation causes disease. Trials against convincing sham for asthma, hypertension and dysmenorrhea show similar improvement in both groups. Manipulation has modest support for low back pain, neck pain and some headaches, which does not depend on the subluxation theory: separate the treatment from the theory. Medicare (enacted 1972, effective 1973) covers manual manipulation of the spine to correct a subluxation, documented by radiograph or **PART** (pain and tenderness, asymmetry, range of motion abnormality, tissue tone change): at least two elements, one of which must be A or R.

Today chiropractic is licensed in all fifty states and practiced in about ninety countries; the US has roughly 70,000 chiropractors, and about one in ten US adults sees one in a year, mostly for low back pain, then neck pain and headache. Training: at least 90 semester hours of prerequisites, then about four years and roughly 4,200 hours, national boards and state licensure. Chiropractors diagnose, may take radiographs and treat manually; they generally do not prescribe or operate. Competing identities: primary spine care, neuromusculoskeletal specialist and vitalistic wellness care. Internal debates include routine full spine radiographs, long prepaid care plans and vaccination, where responsible bodies direct patients to qualified sources. Evidence: about one point of pain relief on a ten point scale for acute low back pain (2017 meta-analysis), similar to other therapies for chronic low back pain, short term neck pain benefit, some support for cervicogenic headache and none for asthma, hypertension, colic or otitis media.



Evidence row: how each idea has fared when tested.

Trend: from a visible structural cause of disease toward measurable functional effects on pain and movement. All four still coexist in practice.

Throughout: subluxation detection is unreliable (kappa often below 0.4), and there is no good evidence that subluxations cause organ disease.

Four models of one word. The chiropractic subluxation moved from a displaced bone to lost motion, then to a five part complex, then to neurophysiological effects of the thrust. The medical subluxation, a partial dislocation, is a different thing.

LOCK THESE IN

- 1874 osteopathy, 1892 first osteopathic school, 1895 Lillard, 1897 first chiropractic school.
- D.D.: tone, Innate Intelligence, displaced vertebra; about 95% of disease claimed.
- B.J.: spinography 1910, radio 1922, neurocalometer 1924, Hole in One about 1930.
- Morikubo 1907: chiropractic argued distinct from osteopathy; acquitted.
- Licensure: Kansas 1913 first, Louisiana 1974 last. CCE recognized 1974.
- ICA 1926 (straight); NCA 1930 became ACA 1963 (broad scope); reform group 1984.
- VSC: kinesiopathology, neuropathology, myopathology, histopathology, biochemical.
- PART: two of four, one must be asymmetry or range of motion abnormality.

Timeline of the founding era

Year	Event	Why it mattered
1895	Lillard adjustment	Founding moment; Roentgen discovers x-rays the same year
1897	D.D. begins teaching in Davenport	First school; B.J. among early graduates
1906	D.D. jailed; B.J. takes the school; UCA founded	Organized legal defense begins
1907	Morikubo acquitted in Wisconsin	Distinct science argument; philosophy as legal shield
1910	Spinography; *The Chiropractor's Adjuster*	Radiography enters practice; theory in print
1913	Kansas license; D.D. dies	State licensure begins
1924	Neurocalometer	Bitter split; B.J. loses the UCA
1926	ICA founded	Home of the straight position
1930s	Hole in One upper cervical technique	Focus on atlas and axis
1961	B.J. dies	End of family dominance
1974	Louisiana licenses; CCE recognized	Licensure in all states; accreditation

Positions and subluxation models

Item	Core idea	Status or evidence
Objective straight	Correct subluxation only; no diagnosis or disease treatment	Avoids disease claims; wellness framing criticized
Straight	Hand adjustment for subluxation; Innate philosophy	ICA
Mixer	Diagnosis plus modalities, exercise, nutrition	NCA, then ACA
Reform	Neuromusculoskeletal focus; rejects subluxation as disease cause	Evidence based, integrated
Bone out of place	Static pressure on the nerve in the IVF	Not supported; root fills a third to half of the foramen
Fixation	Lost segmental motion; motion palpation	Overlaps joint play; reliability low
VSC	Five interacting components	Descriptive, not demonstrated
Neurophysiological	Pain modulation, sensorimotor integration	Testable; explains short term effects, not disease
Medical subluxation	Partial dislocation on imaging	Often a contraindication to manipulation

Worked cases

WORKED CASE 1 · CHECKING PART DOCUMENTATION

A Medicare patient has (1) tenderness and pain at L3 with paraspinal hypertonicity and normal alignment and motion; (2) tenderness at L3 and reduced, painful L3 to L4 motion. Which visit documents a subluxation under PART?

STEP 1 · RECALL THE RULE

At least two of the four PART elements must be present, and one of them must be A (asymmetry or misalignment) or R (range of motion abnormality).

STEP 2 · SCORE VISIT 1

P (pain and tenderness) and T (tissue tone) are present, but neither A nor R. Two elements, but the required one is missing: **not documented**.

STEP 3 · SCORE VISIT 2

P and R are present. Two elements, and one is R: **documented**.

NOTE THE WIDER POINT

Coverage rests on this vocabulary, so even chiropractors who reject the traditional theory must document subluxation for Medicare patients.

WORKED CASE 2 · TESTING THE FOUNDING STORY WITH ANATOMY

Palmer explained Lillard's improved hearing as a thoracic vertebra no longer pressing on a nerve. Test the explanation in steps.

STEP 1 · IDENTIFY THE NERVE OF HEARING

Hearing depends on the cochlear part of cranial nerve VIII.

STEP 2 · TRACE ITS PATH

It runs from the inner ear through the internal acoustic meatus straight to the brainstem.

STEP 3 · COMPARE WITH THE CLAIM

It never exits through a vertebral foramen, so a displaced thoracic vertebra could not compress it.

STEP 4 · CONCLUDE

Whatever happened to Lillard's hearing, the stated mechanism cannot be the cause. The event still served as the profession's founding moment, and historians treat its details cautiously.

WORKED CASE 3 · PLACING A STATEMENT ON THE SPECTRUM

Three chiropractors describe their work to a new patient with asthma: (A) "I correct subluxations so your innate capacity can express itself; I do not diagnose or treat asthma, and your doctor should manage it." (B) "Trials show manipulation does not help asthma; I can help your back pain and will coordinate with your doctor." (C) "Adjusting your spine will boost your immunity and clear your asthma." Classify each.

STEP 1 · STATEMENT A

No diagnosis, subluxation only, wellness framing, referral for disease: **objective straight**.

STEP 2 · STATEMENT B

Evidence based, neuromusculoskeletal focus, coordination with medicine: **reform** or neuromusculoskeletal identity.

STEP 3 · STATEMENT C

A disease and immunity claim the evidence does not support; trials against sham show no benefit for asthma.

THE LESSON

A and B reason differently but both avoid a disease claim. Ask of any position what it says chiropractors do and what it says subluxation is.

TRAPS PEOPLE FALL INTO

- **Crediting D.D. with B.J.'s inventions.** Spinography, the neurocalometer and Hole in One all belong to B.J.
- **Putting osteopathy after chiropractic.** Osteopathy was announced in 1874, about two decades before the Lillard adjustment.
- **Reading Morikubo as proof that chiropractic works.** It was an acquittal on a legal argument that chiropractic was distinct from osteopathy.
- **Equating straight with making the most claims.** Objective straights use traditional vocabulary but make the fewest disease claims.
- **Confusing the two subluxations.** A medical subluxation is a partial dislocation, often a reason not to manipulate.
- **Letting treatment evidence prove the theory.** Manipulation helping back pain does not show that subluxations cause disease.
- **Miscounting PART.** Two elements are needed, and one must be asymmetry or range of motion abnormality.
- **Treating the parade story as settled.** The death record lists typhoid fever; the parade's role is debated.

Chapter 9 self-test · ten items

1. Before founding chiropractic, D.D. Palmer ran a practice in Davenport based on which system?

A. Hydropathic care
B. Homeopathic care
C. Magnetic healing
D. Osteopathic care

C. Magnetic healing Palmer opened a magnetic healing office in the mid 1880s. Its idea of illness as an obstructed vital flow carried into his later theory.

2. Why is Palmer's explanation of Harvey Lillard's hearing loss hard to reconcile with anatomy?

A. Lillard's hearing loss began in childhood
B. The vagus nerve exits through the upper thoracic foramina
C. The thoracic nerves carry no sensory fibers
D. The cochlear nerve never passes through the spine

D. The cochlear nerve never passes through the spine The cochlear part of cranial nerve VIII runs from the inner ear to the brainstem, so no thoracic displacement could compress it.

3. According to the founder's 1910 book, a nerve carrying excess tone would leave its tissue in what state?

A. Hot, inflamed and overactive
B. Displaced from its bony site
C. Balanced and fully healthy
D. Weak, sluggish and slow

A. Hot, inflamed and overactive Palmer taught that excess tone produced overactivity, inflammation and heat, while too little produced sluggishness and weakness.

4. A classmate says D.D. Palmer introduced the neurocalometer. What is the correction?

A. It came from Morikubo's legal team
B. B.J. introduced it in 1924, after D.D. died
C. B.J. introduced it in 1895 with spinography
D. D.D. introduced it, but only in Oregon

B. B.J. introduced it in 1924, after D.D. died B.J. introduced the neurocalometer in 1924, more than a decade after his father's death in 1913. D.D. built the theory; B.J. built the instruments.

5. What was the main lasting effect of the 1907 Morikubo case?

A. It made a distinct philosophy a legal defense
B. It proved chiropractic effective in court
C. It merged chiropractic with osteopathy by law
D. It created the first chiropractic license

A. It made a distinct philosophy a legal defense The acquittal rested on chiropractic being distinct from osteopathy, which gave the profession a strong reason to emphasize its unique philosophy.

6. After losing control of the UCA, B.J. Palmer started a new body in 1926. Which one was it?

A. Council on Chiropractic Education
B. International Chiropractors Association
C. National Chiropractic Association
D. American Chiropractic Association (ACA)

B. International Chiropractors Association After losing the UCA over the neurocalometer, B.J. founded the ICA in 1926. The NCA (1930) became the ACA (1963).

7. A chiropractor tells patients she never diagnoses or treats disease; she only corrects subluxation and refers any health problem. Which position is this?

A. Reform movement
B. Primary spine care
C. Broad scope mixer
D. Objective straight

D. Objective straight Objective straights removed disease from chiropractic's job description, framing care as wellness and referring health problems elsewhere.

8. Which finding most directly undercut the bone out of place model?

A. Radiographs showed every vertebra exactly aligned
B. Motion palpation showed perfect agreement between examiners
C. Foramina could not be narrowed enough without fracture forces
D. Nerve roots filled the whole intervertebral foramen

C. Foramina could not be narrowed enough without fracture forces A 1973 cadaver study found the foramen could not be narrowed enough to touch the roots without forces that would fracture or dislocate the spine, and the root fills only part of the foramen.

9. Which list gives the five classic components of the vertebral subluxation complex?

A. Tone, Innate, Universal, displacement and the meric
B. Kinesio-, neuro-, myo-, histopathology and biochemical
C. Fixation, motion, palpation, leg length and heat
D. Pain, asymmetry, range of motion, muscle tone and imaging

B. Kinesio-, neuro-, myo-, histopathology and biochemical The VSC bundles altered motion, nerve, muscle, tissue and biochemical changes. It is descriptive and does not show a single lesion causing disease.

10. A 2009 review applied the Bradford Hill criteria to the chiropractic subluxation. What did it find?

A. No supportive evidence that it causes disease
B. Evidence that it causes only heart disease in adults
C. Proof that it causes most organ disease
D. Strong evidence that it causes asthma

A. No supportive evidence that it causes disease The review found no supportive evidence of causation. Trials against convincing sham for visceral conditions also show similar improvement in both groups.

The Transformation of American Medicine

Read it in full: **Chapter 10 in the textbook**. See it in motion: **American Medicine Walkthrough** and **American Medicine Lab**.

What to know

For two thousand years Western medicine followed **humoral theory**: blood, phlegm, yellow bile and black bile, each with qualities, seasons and temperaments; disease was imbalance or excess. Benjamin Rush taught that all fevers came from one morbid excitement of the blood vessels and bled and purged aggressively in the 1793 Philadelphia yellow fever epidemic. George Washington was bled several pints in a day in 1799, shortly before he died.

Heroic medicine used bloodletting, **calomel** (mercurous chloride, purging until salivation, a sign of mercury poisoning), emetics (tartar emetic, ipecac), diaphoretics and blistering, plus opium, alcohol and a few specific drugs such as cinchona bark. Physicians acted on the best theory they had, but without controlled comparison they could not see that patients often did better untreated. In the 1830s Pierre Louis's numerical method found bloodletting did little for pneumonia, an early ancestor of the clinical trial.

Education moved from apprenticeship to for profit **proprietary schools**: two four month lecture terms, the second repeating the first, little lab or bedside teaching, admission by fee. In the Jacksonian 1830s and 1840s most licensing laws were repealed, so by about 1850 almost anyone could be a doctor. The **AMA** formed in 1847 but had little power for decades.

Science arrived: ether anesthesia demonstrated in Boston (1846), Semmelweis and handwashing (1847), John Snow and the cholera pump (1854), Pasteur and germ theory (1860s), Lister's antiseptic surgery (1867), Koch's microbes and postulates (1876 to 1883) and Roentgen's x-rays (1895). About two thirds of Civil War deaths were from disease. Patent medicines with unlabeled alcohol, opium and cocaine led to the **Pure Food and Drug Act of 1906**, the first major federal drug law.

Rivals shared a rejection of harsh drugs, faith in the healing power of nature (vis medicatrix naturae), attention to the whole person, a democratic spirit and openness to women.

Thomsonianism (Samuel Thomson, patented 1813): cold causes disease, heat is life; lobelia, cayenne, steam and family rights for self care; a force behind repeal of licensing. **Eclectic medicine** (Wooster Beach, 1820s to 1830s): select what works from botanicals, avoid bleeding and mineral poisons; introduced echinacea; last school closed in 1939; ancestor of modern Western herbalism.

Homeopathy (Samuel Hahnemann, from his 1790 cinchona experiment): the law of similars (like cures like), provings, and potentization by serial dilution and succussion. A 30C remedy is diluted 1 in 100 thirty times, 10^{60} in all; with about 6×10^{23} molecules in a mole, beyond about 12C even one molecule is unlikely. Its 1844 national society was the first national medical association, three years before the AMA, whose 1847 consultation clause targeted homeopaths. Homeopathic patients often fared better in cholera because the remedies did no harm. A comprehensive 2015 Australian review found no reliable evidence of benefit beyond placebo; the main risk is delay or substitution of effective care.

Hydropathy (Vincent Priessnitz, 1820s; US 1840s): cold baths, wet sheet wraps, plain food, fresh air and walking, linked with temperance and women's rights; Sylvester Graham's diet reform fed into Adventist sanitariums. Osteopathy (Still, 1874; Kirksville school 1892) later adopted the full medical model. Mary Baker Eddy published *Science and Health* in 1875 and founded **Christian Science**, drawing on Phineas Quimby's mind cure. Benedict Lust named **naturopathy** around 1902 after the Kneipp water cure.

Reform began before 1910: a Baltimore school opened in 1893 required a bachelor's degree, taught lab science with full time scientists, put students on the wards and admitted women. The AMA reorganized in 1901 and its Council on Medical Education (1904) rated schools A, B or C from 1906. The **Carnegie Foundation** sponsored **Abraham Flexner**, an educator and not a physician, who visited all 155 US and Canadian schools between 1908 and 1910. The **Flexner Report** (1910, Bulletin Number Four) called for at least two years of college science, a four year curriculum (two lab, two clinical), nonprofit university schools, full time research faculty, teaching hospitals, fewer schools and state board enforcement.

Licensing boards and philanthropy (above all the Rockefeller funded General Education Board) did the enforcing. Schools fell from about 160 in 1904 to 85 by 1920 and 76 by 1930. Gains:

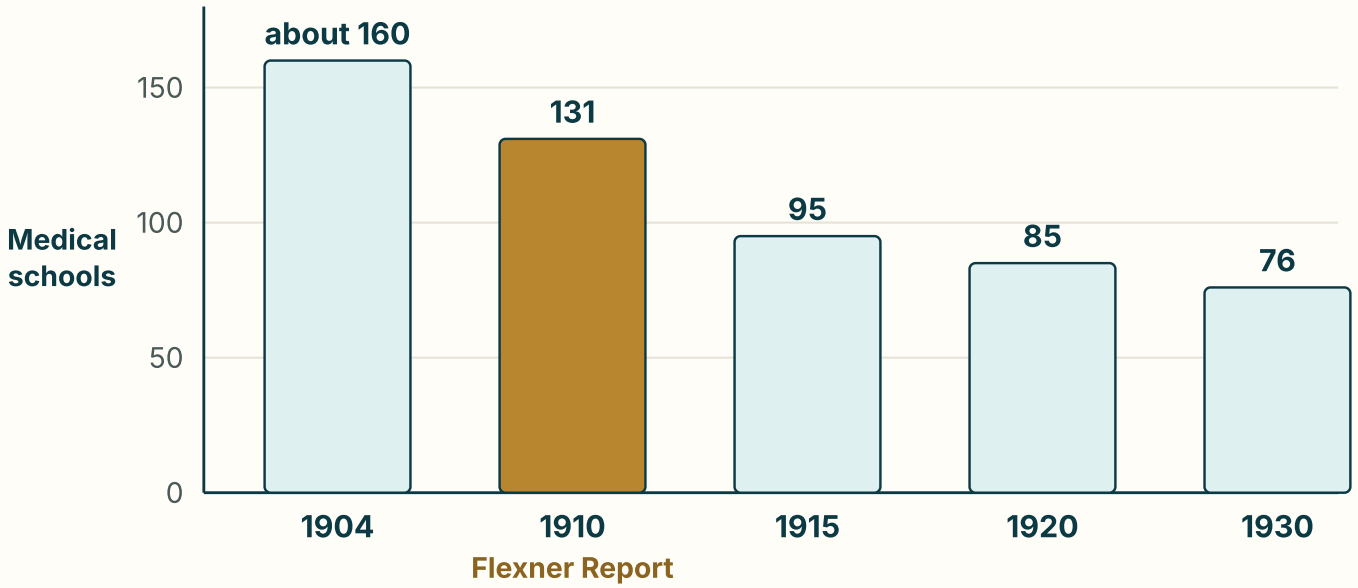
science based medicine and world class research. Costs: of seven schools training Black physicians only two survived (the AMA apologized in 2008); most women's colleges closed; rural areas lost doctors; homeopathic and eclectic schools largely vanished; critics say a narrower biomedical view took hold. John Nugent became chiropractic's Flexner, leading to CCE recognition in 1974.

States restored licensure from the 1870s; **Dent v. West Virginia** (1889) upheld it under the police power. Medical practice acts defined medicine broadly, the weapon used against chiropractors and others. Morris Fishbein campaigned against medical cults. **Basic science laws** from the mid 1920s required all healers to pass exams set mainly by physicians and scientists; chiropractors and naturopaths passed at much lower rates; the laws were repealed from the 1960s to the 1980s. Chiropractic licensure ran from Kansas (1913) to Louisiana (1974), but exclusion from hospitals, insurance and referrals continued.

The 1957 AMA **Principle 3** barred physicians from associating with unscientific practitioners. The **Committee on Quackery** (1963 to 1974) saw its prime mission as containing and eliminating chiropractic; a 1966 resolution called chiropractic an unscientific cult; documents leaked in 1975. In **Wilk v. AMA**, filed in 1976 under the Sherman Antitrust Act, a 1981 jury found for the AMA, an appeals court ordered a new trial, and in 1987 Judge Susan Getzendanner found an unlawful conspiracy and issued a permanent injunction (affirmed 1990; the Supreme Court declined review). She explicitly did not rule on effectiveness; the AMA failed to show patient care was its dominant motive or that a total boycott was the least restrictive means. Gains: Medicare coverage enacted 1972, CCE recognition 1974, a 1975 federal research conference and the 1994 AHCPR acute low back guideline listing manipulation and advising against bed rest.

Chronic disease, Engel's 1977 **biopsychosocial model** and patient demand revived holistic care. A 1993 survey found about a third of US adults used an unconventional therapy, often without telling their doctors. **Alternative** means instead of, **complementary** means along with, **integrative** means coordinated under shared evidence and safety standards. The NIH Office of Alternative Medicine (1991) became a center in 1998 and **NCCIH** in 2014. Evidence based medicine (early 1990s; a systematic review collaboration founded 1993) applies to everyone. The opioid crisis brought nondrug first line care (2016 opioid guideline, updated 2022; 2017 internal

medicine guideline; 2018 hospital standards), and VA and military systems expanded chiropractic. Collaboration runs parallel, consultation, referral, co-management, integrated team. Safety: St. John's wort induces CYP3A4 and weakens contraceptives, anticoagulants, HIV and transplant drugs; ginkgo and high dose fish oil may add to bleeding risk. Osteopathy merged into medicine (single residency accreditation by 2020); chiropractic kept a distinct drugless license.



Approximate counts of US medical schools. 160 to 76 is a fall of about 53%.

The schools roughly halved. The decline began before 1910 as the AMA rated schools, and the Flexner Report, licensing boards and foundation money accelerated it. Quality rose, but most schools for Black and women physicians and nearly all sectarian schools closed.

LOCK THESE IN

- Humoral theory: four humors; heroic medicine depleted them (bleeding, calomel, emetics, blistering).
- AMA 1847; homeopathic society 1844 was first. Licensing repealed in the 1830s and 1840s.
- Homeopathy: like cures like; 30C = 10^{60} dilution; no effect beyond placebo.
- Flexner Report 1910: Carnegie Foundation, Abraham Flexner (an educator), 155 schools.
- Schools: about 160 (1904), 85 (1920), 76 (1930). Two of seven Black medical schools survived.
- Dent v. West Virginia 1889 upheld licensure. Basic science laws from the mid 1920s.
- Committee on Quackery 1963 to 1974; Wilk ruling 1987, affirmed 1990; not about effectiveness.
- Alternative: instead of. Complementary: along with. Integrative: coordinated under evidence and safety.

The competing systems

System	Founder and start	Core idea	Later fate
Thomsonianism	Samuel Thomson; patent 1813	Cold causes disease; heat is life	Faded by the 1850s
Eclectic medicine	Wooster Beach; 1820s to 1830s	Select what works; avoid mineral drugs	Last school closed 1939
Homeopathy	Samuel Hahnemann; 1790s (US 1820s)	Like cures like; potentized dilutions	Schools closed after 1910; no effect beyond placebo
Hydropathy	Vincent Priessnitz; 1820s (US 1840s)	Water, diet, fresh air	Hydrotherapy survives in physical medicine
Osteopathy	A.T. Still; 1874	Structural lesions obstruct blood flow	DOs are fully licensed physicians
Christian Science	Mary Baker Eddy; 1875	Illness as an error of mind; prayer	Continuing religious movement
Chiropractic	D.D. Palmer; 1895	Displaced vertebrae interfere with nerves	Licensed in all states
Naturopathy	Benedict Lust; about 1902	Natural living, healing power of nature	Licensed in a minority of states

Legal and policy milestones

Year	Event	Effect
1847	AMA founded; consultation clause	Bars consulting with homeopaths
1889	Dent v. West Virginia	States may require a medical license
1906	Pure Food and Drug Act	Labels for dangerous ingredients
1910	Flexner Report	Science based university model
1957	AMA Principle 3	No association with unscientific practitioners
1963 to 1974	Committee on Quackery	Effort to contain and eliminate chiropractic
1972	Medicare coverage enacted	Manipulation for subluxation
1987	Wilk ruling (affirmed 1990)	Illegal boycott; permanent injunction
1994	AHCPR acute low back guideline	Manipulation listed; bed rest discouraged
2014	NCCIH named	From alternative to integrative

Worked cases

WORKED CASE 1 · THE ARITHMETIC OF A 30C DILUTION

A homeopathic remedy is labeled 30C. How diluted is it, and could it contain even one molecule of the starting substance if you began with one mole?

STEP 1 · FIND THE TOTAL DILUTION

Each C step is 1 in 100 = 10^2. Thirty steps: $(10^2)^{30}$ = $\mathbf{10^{60}}$.

STEP 2 · COMPARE WITH ONE MOLE

A mole holds about 6×10^{23} molecules.

STEP 3 · FIND THE BREAK POINT

12C is $(10^2)^{12} = 10^{24}$. Starting from 6×10^{23} molecules, the expected number left is about 0.6, so beyond about 12C even one molecule is unlikely.

STEP 4 · APPLY IT TO 30C

The expected number at 30C is $6 \times 10^{23} \div 10^{60}$, about 6×10^{-37}: effectively none.

WHAT THE EVIDENCE SAYS

Large reviews find no reliable benefit beyond placebo. The remedies are usually harmless in themselves; the risk is delay or substitution of effective care.

WORKED CASE 2 · MEASURING THE FLEXNER CONSOLIDATION

There were about 160 US medical schools in 1904, 85 in 1920 and 76 in 1930. What share closed or merged by 1930, and was the Flexner Report the only cause?

STEP 1 · FIND THE DROP

160 − 76 = 84 schools.

STEP 2 · FIND THE SHARE

84 ÷ 160 = 0.525, about **53%**, so the number roughly halved.

STEP 3 · CHECK THE TIMING

The decline began before 1910 as the AMA's Class A, B and C ratings took effect; the report accelerated it.

STEP 4 · NAME THE ACTORS

State licensing boards refused graduates of low rated schools, and foundations such as the General Education Board funded the schools that met the model. The report gave a public mandate; it did not close schools by itself.

WORKED CASE 3 · READING WILK V. AMA CORRECTLY

A patient says, "The Supreme Court proved chiropractic works in the AMA case." Correct the statement step by step.

STEP 1 · NAME THE COURT AND RULING

A federal district judge, Susan Getzendanner, ruled in 1987; the appeals court affirmed in 1990, and the Supreme Court **declined** to review it.

STEP 2 · NAME THE LAW

It was an antitrust case under the Sherman Act about a conspiracy in restraint of trade.

STEP 3 · STATE THE HOLDING

The AMA and codefendants had conspired to contain and eliminate chiropractic, a boycott; a permanent injunction followed.

STEP 4 · STATE WHAT IT DID NOT DECIDE

The judge said the case was not about effectiveness. Effectiveness is a question for clinical research, not courts.

TRAPS PEOPLE FALL INTO

- **Calling Flexner a physician or the AMA the sponsor.** Flexner was an educator; the Carnegie Foundation sponsored the report, with the AMA cooperating.
- **Saying the report closed schools by itself.** It accelerated a decline already underway; licensing boards and funders enforced it.
- **Saying Wilk proved chiropractic works.** It was an antitrust ruling about a boycott; the judge did not rule on effectiveness.
- **Saying the Supreme Court decided Wilk.** The Supreme Court declined review; the appeals court affirmed in 1990.
- **Mixing up alternative and complementary.** Alternative replaces conventional care; complementary is used along with it.
- **Dating the AMA before homeopathy's society.** The homeopathic society (1844) was the first national medical association; the AMA came in 1847.
- **Reading homeopathy's cholera record as efficacy.** It did no harm while bleeding and purging worsened dehydration.
- **Forgetting the equity costs of reform.** Only two of seven schools for Black physicians survived, and most women's colleges closed.

Chapter 10 self-test · ten items

1. Why did bloodletting and purging seem logical to an early nineteenth century physician?

A. Controlled trials had shown they worked
B. Germ theory called for removing microbes
C. They fit the theory of disease as excess
D. Patients reported feeling better at once

C. They fit the theory of disease as excess If illness came from too much blood or vascular excitement, removing fluid should restore balance, and visible effects seemed to confirm it.

2. What was calomel?

A. A botanical stimulant from cayenne
B. A plant bark extract used for malaria
C. An antimony emetic used for vomiting
D. A mercury purgative that poisoned

D. A mercury purgative that poisoned Calomel is mercurous chloride, given as a purgative until salivation, a sign of mercury poisoning.

3. Which founder is matched correctly with his system?

A. Samuel Thomson: heat and lobelia
B. Vincent Priessnitz: native plants
C. Wooster Beach: like cures like
D. Samuel Hahnemann: cold water baths

A. Samuel Thomson: heat and lobelia Thomson taught that cold causes disease and heat is life. Beach founded eclectic medicine, Priessnitz hydropathy and Hahnemann homeopathy.

4. During cholera epidemics, homeopathic patients often fared better than those treated by regulars. Why?

A. The diluted remedies killed the cholera bacteria
B. The remedies did no harm; depletion did
C. The law of similars matched the cholera symptoms
D. Homeopaths gave their patients intravenous fluids

B. The remedies did no harm; depletion did Cholera kills by dehydration. Bleeding and purging made it worse, while highly diluted remedies left patients to rest and drink.

5. Who sponsored and who wrote the 1910 report on medical education?

A. Carnegie Foundation; John Nugent, a chiropractor
B. Rockefeller Foundation; Simon Flexner, an educator
C. The AMA; Abraham Flexner, a pathologist
D. Carnegie Foundation; Abraham Flexner, an educator

D. Carnegie Foundation; Abraham Flexner, an educator The Carnegie Foundation sponsored it and Abraham Flexner, an educator rather than a physician, wrote it after visiting 155 schools.

6. Which was an unintended consequence of the Flexner era reforms?

A. Rural areas gained many new physicians very quickly
B. The number of medical schools roughly doubled
C. Five of seven schools for Black physicians closed
D. Homeopathic schools expanded rapidly in number

C. Five of seven schools for Black physicians closed Flexner recommended keeping two of the seven, and only those survived, contributing to a lasting shortage of Black physicians.

7. How did basic science laws restrict chiropractors?

A. They added a science exam many failed first
B. They required a medical degree for licensure
C. They limited chiropractors to treating children
D. They banned chiropractic schools outright

A. They added a science exam many failed first Candidates had to pass basic science exams, set mostly by physicians and scientists, before the chiropractic board. Pass rates for chiropractors were much lower.

8. What did the court decide in Wilk v. AMA in 1987?

A. The AMA's boycott was entirely lawful
B. The AMA ran an illegal antitrust boycott
C. Chiropractic is effective for back pain
D. Chiropractors may now prescribe medicines

B. The AMA ran an illegal antitrust boycott The ruling found an unlawful conspiracy under the Sherman Act and issued a permanent injunction. It did not rule on effectiveness.

9. A patient refuses chemotherapy and takes herbs instead. How is this use classified?

A. Alternative
B. Evidence based
C. Integrative
D. Complementary

A. Alternative Alternative means instead of conventional care, which carries the greatest risk when the condition is serious and treatable.

10. A 26 year old who relies on the pill for birth control mentions she began an herbal mood supplement, St. John's wort. Why does this matter?

A. It has no known interactions with any drug
B. Enzyme induction may weaken the pill
C. It causes bleeding only alongside fish oil
D. Enzyme blockade may raise hormone levels

B. Enzyme induction may weaken the pill St. John's wort induces liver enzymes, especially CYP3A4, and can weaken oral contraceptives, anticoagulants, HIV drugs and transplant drugs.

Cram sheet

Everything from chapters 9 and 10 in one place. Cover the right column and see if you can rebuild each row.

Dates and people

Date	Event	Who or what
1790s	Homeopathy begins	Samuel Hahnemann
1813	Thomsonian patent	Samuel Thomson
1844 / 1847	First national medical association / AMA	Homeopaths / regular physicians
1874 / 1892	Osteopathy announced / Kirksville school	A.T. Still
1875	*Science and Health*	Mary Baker Eddy
1889	Dent v. West Virginia	State licensing upheld
1895	Lillard adjustment; x-rays	D.D. Palmer; Roentgen
1897	First chiropractic school	Davenport, Iowa
About 1902	Naturopathy named	Benedict Lust
1906	Pure Food and Drug Act; UCA	Federal labeling; legal defense fund
1907	Morikubo acquitted	La Crosse, Wisconsin; attorney Tom Morris
1910	Flexner Report; spinography; *The Chiropractor's Adjuster*	Carnegie Foundation; B.J.; D.D.
1913	Kansas license; D.D. dies	First chiropractic licensing law
1924 / 1926	Neurocalometer / ICA	B.J. Palmer
1930 / 1963	NCA / renamed ACA	Broad scope tradition
1957 / 1963 to 1974	Principle 3 / Committee on Quackery	AMA
1972 / 1974	Medicare coverage / Louisiana and CCE	Last state; accreditation
1984	Reform association	Rejects subluxation as disease cause
1987 / 1990	Wilk ruling / affirmed	Judge Susan Getzendanner

Date	Event	Who or what
1991 / 2014	Office of Alternative Medicine / NCCIH	NIH
1993	About a third of adults use unconventional therapy	National survey
1994	AHCPR acute low back guideline	Manipulation listed; bed rest discouraged

Numbers and rules

Item	Value or rule	Note
Palmer's claim	About 95% of disease from displaced vertebrae	Not supported
Root in the IVF	About a third to a half of the foramen	1973 cadaver study
PART	Two of four; one must be A or R	Medicare documentation
Subluxation reliability	Kappa often below 0.4	Pain provocation better
US chiropractors	About 70,000; about 1 in 10 adults visits yearly	Low back pain most common
DC training	At least 90 semester hours, then about 4 years, about 4,200 hours	CCE accredited
Acute LBP effect	About 1 point on a 10 point scale	2017 meta-analysis
30C dilution	10^{60}; beyond about 12C no molecule likely	Avogadro about 6×10^{23}
Schools	About 160 (1904), 131 (1910), 95 (1915), 85 (1920), 76 (1930)	Roughly halved
Black medical schools	Two of seven survived	AMA apology 2008
Civil War	About two thirds of deaths from disease	Before germ theory took hold
Herb interactions	St. John's wort induces CYP3A4; ginkgo, fish oil add bleeding risk	Ask every patient

Rules that are not equations

Topic	The rule
D.D. versus B.J.	D.D. built the theory; B.J. built the institutions and instruments.
Still versus Palmer	Still: the artery. Palmer: the nerve.
Spectrum	Objective straight, straight, mixer, reform; ask what each says chiropractors do and what subluxation is.
Two subluxations	Medical: partial dislocation, often a reason not to manipulate. Chiropractic: proposed functional lesion.
Theory versus treatment	Manipulation helping back pain does not support subluxation as a cause of disease.
Flexner	Accelerated reform already underway; boards and funders enforced it.
Wilk	An antitrust boycott ruling, not a ruling on effectiveness.
Words	Alternative: instead of. Complementary: along with. Integrative: coordinated under shared standards.

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