

THE AAO

FORUM FOR OSTEOPATHIC THOUGHT

JOURNAL



A Publication of the American Academy of Osteopathy

TRADITION SHAPES THE FUTURE

VOLUME 14, NUMBER 2, JUNE 2004

Tony, my idea for the cover is to use some of the pictures of the old hospitals (in a collage-type setting) for the cover. Either printing them in black and white or an antique looking color (can't think of the proper name)

What do you think? The Archives article has some great pictures.

Let me know. I can have UN Printing create a cover and send it to you.

Diana

Instructions to Authors

The American Academy of Osteopathy® (AAO) Journal is a peer-reviewed publication for disseminating information on the science and art of osteopathic manipulative medicine. It is directed toward osteopathic physicians, students, interns and residents and particularly toward those physicians with a special interest in osteopathic manipulative treatment.

The AAO Journal welcomes contributions in the following categories:

Original Contributions

Clinical or applied research, or basic science research related to clinical practice.

Case Reports

Unusual clinical presentations, newly recognized situations or rarely reported features.

Clinical Practice

Articles about practical applications for general practitioners or specialists.

Special Communications

Items related to the art of practice, such as poems, essays and stories.

Letters to the Editor

Comments on articles published in *The AAO Journal* or new information on clinical topics. Letters must be signed by the author(s). No letters will be published anonymously, or under pseudonyms or pen names.

Professional News of promotions, awards, appointments and other similar professional activities.

Book Reviews

Reviews of publications related to osteopathic manipulative medicine and to manipulative medicine in general.

Note

Contributions are accepted from members of the AOA, faculty members in osteopathic medical colleges, osteopathic residents and interns and students of osteopathic colleges. Contributions by others are accepted on an individual basis.

Submission

Submit all papers to Anthony G. Chila, DO, FAAO, Editor-in-Chief, Ohio University, College of Osteopathic Medicine (OU COM), Grosvenor Hall, Athens, OH 45701.

Editorial Review

Papers submitted to *The AAO Journal* may be submitted for review by the Editorial Board. Notification of acceptance or rejection usually is given within three months after receipt of the paper; publication follows as soon as possible thereafter, depending upon the backlog of papers. Some papers may be rejected because of duplication of subject matter or the need to establish priorities on the use of limited space.

Requirements for manuscript submission:

Manuscript

1. Type all text, references and tabular material using upper and lower case, double-spaced with one-inch margins. Number all pages consecutively.

2. Submit original plus three copies. Retain one copy for your files.

3. Check that all references, tables and figures are cited in the text and in numerical order.

4. Include a cover letter that gives the author's full name and address, telephone number, institution from which work initiated and academic title or position.

5. Manuscripts must be published with the correct name(s) of the author(s). No manuscripts will be published anonymously, or under pseudonyms or pen names.

6. For human or animal experimental investigations, include proof that the project was approved by an appropriate institutional review board, or when no such board is in place, that the manner in which informed consent was obtained from human subjects.

7. Describe the basic study design; define all statistical methods used; list measurement instruments, methods, and tools used for independent and dependent variables.

8. In the "Materials and Methods" section, identify all interventions that are used which do not comply with approved or standard usage.

Computer Disks

We encourage and welcome computer disks containing the material submitted in hard copy form. Though we prefer Macintosh 3-

1/2" disks, MS-DOS formats using either 3-1/2" or 5-1/4" discs are equally acceptable.

Abstract

Provide a 150-word abstract that summarizes the main points of the paper and its conclusions.

Illustrations

1. Be sure that illustrations submitted are clearly labeled.

2. Photos should be submitted as 5" x 7" glossy black and white prints with high contrast. On the back of each, clearly indicate the top of the photo. Use a photocopy to indicate the placement of arrows and other markers on the photos. If color is necessary, submit clearly labeled 35 mm slides with the tops marked on the frames. All illustrations will be returned to the authors of published manuscripts.

3. Include a caption for each figure.

Permissions

Obtain written permission from the publisher and author to use previously published illustrations and submit these letters with the manuscript. You also must obtain written permission from patients to use their photos if there is a possibility that they might be identified. In the case of children, permission must be obtained from a parent or guardian.

References

1. References are required for all material derived from the work of others. Cite all references in numerical order in the text. If there are references used as general source material, but from which no specific information was taken, list them in alphabetical order following the numbered journals.

2. For journals, include the names of all authors, complete title of the article, name of the journal, volume number, date and inclusive page numbers. For books, include the name(s) of the editor(s), name and location of publisher and year of publication. Give page numbers for exact quotations.

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Third-class postage paid at Carmel, IN. Postmaster: Send address changes to American Academy of Osteopathy®, 3500 DePauw Blvd., Suite 1080, Indianapolis, IN., 46268.

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A Publication of the American Academy of Osteopathy

TRADITION SHAPES THE FUTURE • VOLUME 14, NUMBER 2, JUNE 2004

A PEER-REVIEWED JOURNAL

The Mission of the American Academy of Osteopathy® is to teach, advocate, and research the science, art and philosophy of osteopathic medicine, emphasizing the integration of osteopathic principles, practices and manipulative treatment in patient care.

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2004 Calendar of Events

JUNE

4-6 *Clinical Jones Strain-Counterstrain I for the Spine and Rib Cage;*
Indianapolis, IN

JULY

23-25 *Still Technique (Applications of a Rediscovered Technique),*
WVSOM, Lewisburg, WV

AUGUST

19-22 *14th Annual OMT Update;*
Walt Disney World®
Lake Buena Vista, FL

SEPTEMBER

30 - Oct 2 *Emotional Diagnosis and Release (Barral Approach);*
San Diego, CA

OCTOBER

3- 5 *Unlocking the Cranial Sutures (The Face)*
San Diego, CA

NOVEMBER

6 *Modifying Delivery of OMT in an Allopathic Environment;*
San Francisco, CA

7-11 AOA / AAO Convention;
San Francisco, CA

12-14 *Prolotherapy: Below the Diaphragm*
UNECOM, Biddeford, ME

DECEMBER

4-5 *Facilitated Positional Release*
NUSOM; Ft. Lauderdale, FL

TOURO UNIVERSITY COLLEGE OF OSTEOPATHIC MEDICINE

THE DEPARTMENT OF OSTEOPATHIC MANIPULATIVE MEDICINE OF TOURO UNIVERSITY COLLEGE OF OSTEOPATHIC MEDICINE IS SEEKING A FULL-TIME CLINICIAN EDUCATOR. THIS POSITION WILL PROMOTE OMM THROUGHOUT THE CONTINUUM OF OSTEOPATHIC MEDICAL EDUCATION. THE POSITION REPORTS DIRECTLY TO THE CHAIR OF THE OSTEOPATHIC MANIPULATIVE MEDICINE DEPARTMENT.

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THIS POSITION OPENS JULY 1, 2004

Please respond with CV to:
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Vallejo, CA 94592
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Wither the Osteopathic Hospital

During the early years of the 20th Century, hospital practice for osteopathic graduates was a source of tension regarding the issue of control. During the American Osteopathic Association convention of 1920 (Chicago; June 29-July 2), a proposition for principles governing all public institutions was stated as follows:

“Whereas, All institutions and organizations having to do in any way with public health that are supported in whole or in part by public funds should be so administered that all schools of practice possessing virtually equal educational qualifications should be subject to the same rules and regulations; and,

“Whereas, Organized medicine, through its influence and pressure is dictating such rules in hospitals which are exempt from taxation throughout the country that they will not permit any patient to enter them if he should choose to have an osteopathic physician to attend him; and,

“Whereas, The courses of study in an osteopathic college during the four years of professional training average the same, or greater, number of hours in the principal subjects, including surgery, as is required in the average of the best medical schools; and,

“Whereas, Such osteopathic physician after graduation takes the same rigid examination before the State Board of Examiners as does the medical graduate, before being licensed to practice; and,

“Whereas, such rank discrimination takes from the American citizen and taxpayer his just rights and liberties; and,

“Whereas, The osteopathic profession has repeatedly been denied the privilege of serving the afflicted because they have been excluded from American Red Cross emergency hospitals in recent epidemics of influenza, especially at Springfield, Missouri, during the spring of 1920, and in other instances cited; therefore be it

“Resolved, That we urge the citizens of the country to contribute liberally to such funds as may be raised in their defense so that proper legislation or legal procedure may be successfully taken to restore their American rights before State medicine is forced upon the American people under the pretext of public protection.”

Thirty years later, in 1950, a court decision in Audrain County, MO established the right of DOs to practice as complete physicians and surgeons in a county hospital. Following this decision, a number of other legislative and regulatory bodies moved to provide full practice rights to DOs within their jurisdictions. Full practice rights in 50 states and the District of Columbia was realized in 1973. Also occurring in 1950, the passage of the Hill-Burton Act enabled more rapid

establishment and growth of osteopathic hospitals. By the closing years of the 20th Century, licensure, practice opportunities, and social acceptance continued to flourish, while the presence of osteopathic hospitals as such apparently withered. Various factors associated with sweeping changes in the economic climate of medical practice contributed to the latter. Since July of 1999, the form of Osteopathic Graduate Medical Education (OGME) has been given expression through Osteopathic Postdoctoral Training Institutions (OPTIs). One or more colleges of osteopathic medicine accredited by the American Osteopathic Association’s Bureau of Professional Education, and one or more hospitals accredited by the AOA Bureau of Healthcare Facilities Accreditation comprise an OPTI. Utilizing community-based training consortia, an OPTI structure seeks to meet the demands of managed care. Seeking also to use health care resources in a more cost-effective way, an OPTI structure promotes partnerships and collaborations among the designated community’s health care facilities. Will the osteopathic philosophy of postdoctoral education and training flourish better in this new ground?

Anthony G. Child D.O., F.A.O.

Contributors

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Component Societies'

CME Calendar

and other Osteopathic Affiliated Organizations

June 19-23

*Basic Course in Osteopathy
in the Cranial Field*

Doubletree Columbia River Complex
Portland, OR

Hours: 40 Category 1A anticipated

The Cranial Academy

Contact: The Cranial Academy
317/594-0411

June 20-23

*Experiencing Osteopathy: An
Introduction to Continuum
Movement*

The Cranial Academy

Doubletree Columbia River Complex
Portland, OR

Hours: 24 Category 1A anticipated

Contact: The Cranial Academy
317/594-0411

June 24-27

Annual Conference

The Cranial Academy

Doubletree Columbia River Complex
Portland, OR

Hours: 21 Category 1A anticipated

Contact: The Cranial Academy
317/594-0411

June 27-29

*Biodynamic Approach to the Fluid
Body*

The Cranial Academy

Doubletree Columbia River Complex
Portland, OR

Hours: 16 Category 1A anticipated

Contact: The Cranial Academy
317/594-0411

August 2-6

*Basic Cranial Course: The Expanding
Osteopathic Concept*

Osteopathic Center for Children

San Diego, CA

Hours: 40 Category 1A anticipated

Contact: OCC
619/583-7611

August 13-15

*The Laughlin Approach to Still
Functional Techniques*

Edward G. Stiles, DO, FAAO

Indiana Academy of Osteopathy

Indianapolis, IN

CME: 20 Category 1-A (anticipated)

Contact: IAO
317/926-3009

August 19-21

Musculoskeletal Medicine

BELOW the Waist

Faculty: Thomas Ravin, MD and

Mark S. Cantieri, DO, FAAO

AAMM

Denver, CO

Hours: 18.25 Category 1A anticipated

Contact: AAMM
303/331-9339

August 21-22

Ligamentous Articular Strain Technique

Dallas Osteopathic Study Group

Dallas, TX

Hours: 16 Category 1A anticipated

Contact: Conrad Speece, DO
214/321-2673

October 2-3, 2004

Arizona Clinical CounterStrain

Arizona Academy of Osteopathy

Faculty: Edward Goering, DO,

Harmon Myers, DO

OMM Lab at MWU/AZCOM

Hours: 13 Category 1A (anticipated)

Contact: Wm. Devine, DO or
Melissa Shaw
623/572-3350 or
623/572-3351

October 8-10

NeuroFascial Release Conference West

Faculty: Stephen Davidson, DO

Arizona Academy of Osteopathy

Phoenix, AZ

Hours: 24 Category 1A anticipated

Contact: Wm. Devine, DO or
Melissa Shaw
623/572-3350 or
623/572-3351

October 16-17

Advanced NeuroFascial Release

Arizona Academy of Osteopathy

Faculty: Stephen Davidson, DO

OMM Lab at MWU/AZCOM

Hours: 16 Category 1A anticipated

Contact: Wm. Devine, DO or
Melissa Shaw
623/572-3350 or
623/572-3351

October 17-20, 2004

Biodynamics Phase III:

The Long Tide and the Dura

Franconia, NH

CME: 21.5 Category 1A (anticipated)

Contact: James Jealous, DO
207/778-9847

November 1-4, 2004

Biodynamics Phase V:

The Embryological Face

Franconia, NH

CME: 21 Category 1A (anticipated)

Contact: James Jealous, DO
207/778-9847

November 7-10, 2004

Biodynamics Phase III:

The Long Tide and the Dura

Franconia, NH

CME: 21.5 Category 1A (anticipated)

Contact: James Jealous, DO
207/778-9847

November 14-17, 2004

Biodynamics Phase IV: The Midline

Franconia, NH

CME: 23 Category 1A (anticipated)

Contact: James Jealous, DO
207/778-9847

Dig On

Anthony G. Chila, DO, FAAO



College and General Osteopathic Hospitals

History of Osteopathy and Twentieth-Century Medical Practice; E.R. Booth; pages 741-755

The first osteopathic hospital was opened about a block from the American School of Osteopathy, on South Fifth Street, in 1895. Dr. A. T. Still opened a maternity hospital at that time and later added a department of surgery under Dr. William Smith. At the time of the great tornado in Kirksville, in 1899, this was the only hospital in the city, and many victims of the storm were brought for treatment. Later, the building was closed and a three-story building was erected, which was opened in 1906. A fourth story was added in 1914 and the building equipped with the most modern conveniences.

When the new hospital was opened, Frank P. Young, MD, DO, was surgeon-in-chief. George A. Still, MS, MD, DO, very soon became assistant surgeon and in 1907 chief surgeon, which position he held until his death in 1922. He took his degrees of MS and MD from Northwestern University and studied surgery under Dr. John B. Murphy, one of the greatest surgeons of his day; did post-graduate work in Vienna, Berlin, Paris, Berne, London, Edinburgh, and American cities.

Dr. George A. Still took up his surgical work in Kirksville with the idea, as he expressed it, that "Impossible as it seemed some years back, it is inevitable that in time osteopathy and surgery, rationalized and changed much from its average status of today, will align themselves against the fallacies of medicine."

Again he said in the Journal of the American Osteopathic Association,

June, 1919: "I am very glad that I had the confidence to give osteopathy in post-operative cases an early trial and a thorough trial, without being afraid to leave off the drugs. When I took charge of the surgical work at Kirksville, osteopathy was not used in post-surgical treatment... It seemed to me that if osteopathy was good for a case of ordinary non-surgical pneumonia, it should certainly be good for a case of pneumonia that was post-operative... I am proud to announce a one hundred percent success for combined osteopathic treatment in my fourteen years' continuous surgical work." In other words, he virtually revolutionized the practice of surgery by osteopaths, although he wrote: "I give Dr. A. T. Still full credit for originating osteopathy in connection with surgery. I merely apply what he has taught."

John N. Waggoner, MD, DO, who followed Dr. Still as chief surgeon, took his pre-medical work at Harvard and his MD at Yale. After a nine-year connection with the faculty of the American School of Osteopathy and working with Dr. George A. Still, Dr. Waggoner went into private practice. For a number of years he conducted his own hospital at Atlantic City, New Jersey. He returned to the American School of Osteopathy to succeed Dr. George A. Still.

The Bay View Sanitarium, Inc., Aberdeen, Washington, was organized in September 1922, and opened for service, May 15, 1923. This is one of the many small institutions started because of the refusal of hospitals to

treat osteopathic physicians fair. They were shut out of the two older hospitals controlled by the regulars. "That is the principal reason and about the only excuse for its existence." Its present capacity is ten beds. MD's are admitted. Most of the work is surgical or obstetrical, but nothing is barred except contagious diseases. C. F. Smith, DO, MD, is in charge.

The Bondies Sanitarium, 910 Mission Street, South Pasadena, California, was organized in 1916. It is not incorporated but is owned and managed by Wm. C. Bondies, DO, and Olive I. Bondies, DO. It is well supplied with nurses. It specializes in osteopathic treatments, diet, therapeutic gymnastics, and hydrotherapy. Patients of other physicians are admitted but all must have osteopathic treatments.

The Bowling Green Sanitarium and Mineral Water Company, Bowling Green, Missouri, was organized in February, 1923, and was ready for patients June 1. It specializes in osteopathy and hydrotherapy, and has a completely equipped operating room for emergency cases. Capacity – forty patients. It is located on a beautiful, heavily wooded, thirty-two-acre tract valued at \$50,000. C. H. Downing, DO, president; R. H. Williams, DO, secretary and treasurer.

The Bush Sanatorium is a health home at 836 Fourth Avenue, Louisville, Kentucky, founded by Evelyn R. Bush, DO, who took up her work on account of her invalid son, then a child, who was doomed to death or a life of physical and mental invalidism,

according to medical science. With such an incentive to spur her on, she has gone very thoroughly into the various non-medical lines of therapy. The physiological and osteopathic departments are particularly strong. Hydrotherapy, massage, joint movements, and passive and resistive exercises are among the treatments used. Muscle training is the specialty for which the institution is noted.

The Chicago Osteopathic Hospital, 5200 Ellis Avenue, Chicago, Illinois, is the successor of the Littlejohn Hospital founded by the Drs. Littlejohn in 1900, and located on West Monroe Street till the summer of 1918. It is controlled by the Chicago College of Osteopathy Corporation, with Jerome H. Raymond as superintendent. Its capacity is about fifty beds, with equipment and all facilities for osteopathic treatments, surgery, obstetrics, and other specialties. An "out-patient" department is maintained so the students of the college have clinical experience the same as in general practice.

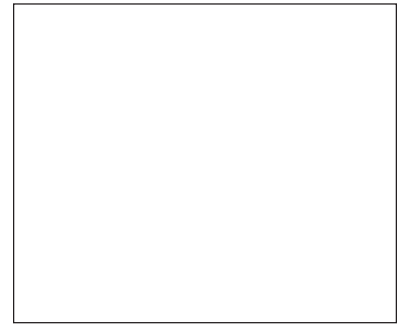
A training school for nurses, registered with the Department of Registration and Education of Illinois in 1923, is connected with it; hence it is well supplied with nurses and interns. As the college and hospital are backed by the osteopathic profession of Chicago, and are capable of all necessary extension, their perpetuity is assured.

The Clark-Blakeslee Osteopathic Hospital, 1116 North Delaware Street,

Indianapolis, Indiana, was opened January 1, 1921. It is beautifully located near the heart of the city but practically away from the noise of the streets. The building was a fine residence, remodeled internally so as to provide strictly modern rooms for obstetrical and orthopedic cases, major surgery, X-ray, and other appliances for diagnosis, nursery, hydrotherapy, electric outfit, nurses' quarters, etc. The institution is strictly osteopathic and uses other proven agencies, such as diet, when indicated.

The Covey School of Health, 633 Congress Street, Portland, Maine, is what its name implies, and is under osteopathic auspices but open to all schools of healing. The International Society for the Prevention of Spinal Curvature has a free clinic in connection with it. It was opened in November 1921, by Florence A. Covey, DO. It cares for all non-communicable diseases, especially the chronic, including such conditions as obesity, anemia, arthritis, hardening of the arteries, etc. Winter and summer sports receive attention in season; and the milk cure, diet, and massage are given as indicated. Corn and wheat are ground in the home mill.

The Crain Sanitarium, 2116 Main Street, Richmond, Indiana, was opened for service, June 1, 1921. It seems to be on a sound financial basis. It is for the care of non-communicable diseases. Minor surgical and obstetrical cases are cared for, and all patients receive



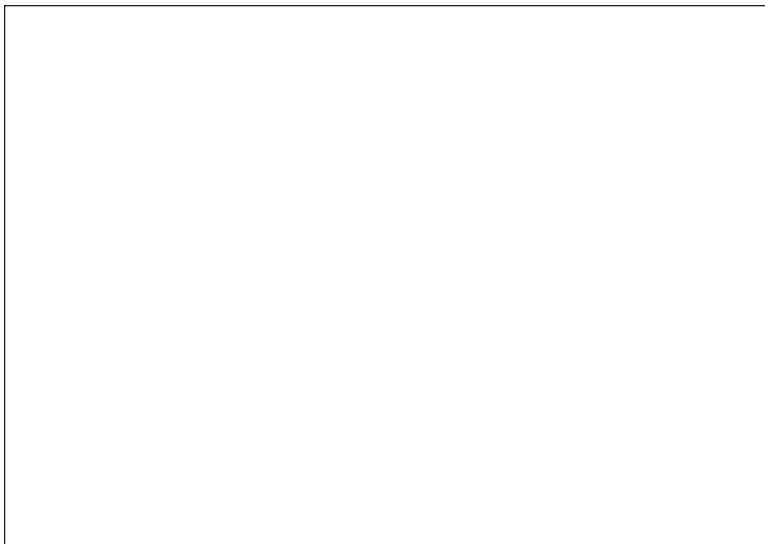
Crain Sanitarium, Richmond, IN

osteopathic attention. Milk and rest cures are emphasized. It is under the control of Drs. C. J. and Elizabeth Crain.

"Crestwood" is located at Tryon, North Carolina, about forty miles south of Asheville. It is a small institution in a retired spot, yet only a short walk from the business section of the town, as well as the deep woods and a creek with beautiful little falls. It is owned and controlled by Mary W. Peery, DO. Her conviction that many cases of illness or depletion require retirement under conditions insuring perfect rest and peace and frequent treatments, caused her to establish this sanitarium where anyone not afflicted with a contagious disease may be received. Special diets, including the milk diet, are given to suit the needs of the individual patient.

The Delaware Springs Sanitarium, Delaware, Ohio, was organized in 1914 and occupied a residence in the heart of the city till it moved to its present location, in 1916. It is incorporated and controlled by a board mostly osteopathic. Its building and fifteen acres of beautiful grounds represent an investment of about \$350,000. It has a capacity for fifty-five patients, with room for expansion. The equipment is in all respects modern and complete. Neither pulmonary tuberculosis nor mental cases are admitted; but surgery and other specialties are amply provided for. Trained nurses and interns are employed. L. A. Burnstead, DO, is general manager.

The Des Moines General Hospital, East Twelfth and Des Moines Streets, was incorporated in 1916 by Drs. S. L. Taylor, Lola D. Taylor, and J. F. Tenery as an eleemosynary corporation. The



Clark-Blakeslee Osteopathic Hospital, Indianapolis, IN

capacity is thirty-five beds. Improvements have been made and additional ground purchased and plans formulated for a large and strictly modern building. It has well-equipped laboratories, operating rooms, etc. Most of the cases are surgical, obstetrical, and orthopedic; but many of them are osteopathic and are treated as such. The interns are selected from the graduating classes of the Des Moines Still College of Osteopathy, with which it is affiliated. S. L. Taylor, AB, DO, MD, is president and surgeon-in-chief.

The Detroit Osteopathic Hospital, ideally located at 188 Highland Avenue, Highland Park, Michigan, was organized in 1919 and formally opened to the public, January 28, 1920. The bed capacity at the time of its inception was thirty-five, including babies; in April 1923, it was increased to forty, and later additions, under construction, should make a maximum of sixty. Its present aim is a one-hundred-bed hospital by 1926, free from financial embarrassment.

The services of the hospital include, besides general clinical work, surgery, obstetrics, laboratory, roentgenology, and outpatient divisions. Special attention is given to diet.

It is governed by a board of trustees, with Herbert Bernard, DO, president, and Rebecca B. Mayers, DO, vice-president, and an executive committee, of which James C. Trimby, DO, is chairman.

Intern service includes three graduate osteopathic physicians who care for outpatients, laboratory work, anesthetics, inpatients, and assist in the operating and delivery rooms. These physicians are directly under the supervision of the chief-of-staff. The nursing staff includes ten nurses registered by the State, including two surgical nurses; one pediatric nurse, one night supervisor, one head nurse, and the balance are on general duty. Through the support of the Detroit Community Union, nursing service has been extended to the patients in the homes who are unable to meet the current expenses of trained nursing service.

Its founder was Mr. Philip H. Gray, an idealist with positive faith in

osteopathy, which he expressed in his generous moral and material support of this institution. His untimely passing on into that higher and fuller life gave a blow to friends and profession from which it was hard to recover. His spirit in the activities of the institution as a fitting memorial to his memory is being perpetuated. It was his desire that osteopathy be made known to the public and then permit it to stand upon its own merit; and that the hospital be kept open as a courtesy to the medical profession. He was seriously impressed with the deficiencies of modern hospital psychology, and pleaded for a more human and less mechanical hospital procedure. Overworked nurses were not to be found in his institutions; properly housed, fed, and work properly regulated formed his trinity for them. These were his cardinal points of operation, and he gave of himself, without stint, in nurturing those factors so fundamental to success and happiness.

Dill-Dilatush Clinic is a small institution established in 1921, in Lebanon, Ohio, a town of less than four thousand inhabitants, within an hour's ride of either of the great cities of Dayton or Cincinnati. Up to about 1913 it was believed by some that the town was not big enough for even one osteopathic physician, much less an osteopathic hospital. H. M. Dill, DO, a graduate in 1913, and F. A. Dilatush, DO, in 1915, both Lebanon boys, had a vision almost from their first acquaintance with osteopathy, and spared no effort to realize it. The clinic is sanitary, well lighted, pleasantly furnished, and fully equipped with everything necessary for a small sanitarium or hospital. Many minor operations are performed. The service is osteopathic, first, last, and all the time, and recognizes the value of proper dietetic and hygienic measures. The Durfur Osteopathic Hospital is situated at Welsh Road and Butler Pike, Ambler, Pennsylvania. It was organized for the purpose of establishing a place in the east for the care and osteopathic treatment of nervous and mental ills. It and the Still-Hildreth Sanitorium, Macon, Missouri, are the only two institutions of the kind in existence.

The basis of all treatment in this hospital is osteopathy: but such other methods as diet, rest, exercise, hydrotherapy, dentistry, and surgery are used whenever they are needed. There is a completely equipped diagnostic laboratory and an up-to-date X-ray laboratory.

It began service in September 1919, in Philadelphia, where it developed a capacity of twenty-five beds. In August 1923, it moved to its present quarters with eighty-five beds and a total capacity of one hundred and forty.

The plant represents an investment of about \$500,000. The hospital owns fifty-three acres of land, all in a high state of artistic development. The beauty of the scenery, fresh air, sunshine, and quiet contribute to the welfare of the patients. It is owned and managed by Dr. J. Ivan Durfur.

Edgehill Sanitarium, Knoxville, Tennessee, is a new institution that will be ready for occupancy early in 1924. The building, under construction at a cost of about \$100,000, will have twenty beds, and can be increased to forty. Every room will have its own bath. It will specialize in osteopathy, diet, hydrotherapy, and physiotherapy, and have nurses to meet all requirements. It will be under the management of R. Lee Miller, DO. It will not take insane, communicable, obstetrical, or operative cases.

Fargo Sanitarium, 1329 Third Avenue, South Fargo, North Dakota, was organized in 1902 for the purpose of giving osteopathic treatment with institutional care. The building was reconstructed and enlarged in 1922, so as to include two sun-parlors and two four-bed wards. It has a capacity of twenty-four beds. The professional service consists of osteopathy, dietetics,

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The Fargo Sanitarium, Fargo, ND

hydrotherapy, and minor surgery. It is under the management of J. E. Cavanagh, DO.

"Glyndon Terrace" is the Dr. Yowells' Rest-Cure Sanitarium, 30 North Crest Road, Chattanooga, Tennessee. It was opened for service December 10, 1921, and is owned and operated by O. Y. Yowell, DO, and Elizabeth Yowell, DO, assisted by a business manager, a dietitian, and nurses. It is beautifully located on ten acres of ground, with flower and vegetable gardens, dairy, and chicken run. No contagious or infectious cases are admitted. Surgery is provided for, and rest, diet, baths, etc., receive attention.

The Harris Sanitarium is located at 1507 Monroe Street, Amarillo, Texas, a city of about fifteen thousand inhabitants. It was opened in December 1921, and is privately owned and managed by M. B. Harris, DO, MD. It has a staff of DOs and trained nurses. The service is principally osteopathy and major surgery, but obstetric and dietetic cases are also provided for. This institution is one among many that grew out of the opposition of the MDs. Dr. Harris had operated in a local hospital for nine years before 1920, when the DOs were refused its use any longer.

The Howell Sanitarium, 200 West Gore Avenue, Orlando, Florida, was organized as a private institution by J. C. Howell, DO, in October 1921, and is under his personal management. Its present capacity is twenty. Osteopathic treatment is given and special attention to milk diet, unfired food and other nontoxic diets, rest cure, sunbaths, and hydrotherapy. Orificial surgery is performed when indicated. No obstetric or general surgical cases are taken. A matron and head nurse with assistants, are in attendance.

The Laughlin Hospital, Kirksville, Missouri, was founded by George M. Laughlin, DO, and was opened for reception of patients, September 1, 1919. It is owned by its' founder, and he expects, ultimately, to deed it to the college, which he and Blanch Still Laughlin, DO, built in 1922. It is a general hospital and equipped for examining, diagnosing, and handling all classes of cases. Its chief specialties,

aside from osteopathic treatment, are general surgery; orthopedic surgery; eye, ear, nose, and throat surgery; genito-urinary surgery; and obstetrics. Its present capacity is thirty-five beds and plans are under way for enlarging it. It has a school of nursing and is amply supplied with trained nurses and interns.

Dr. George M. Laughlin is surgeon-in-chief, assisted by a well-trained corps of specialists.

Liberty Hospital, St. Louis, is a masterpiece of hospital construction. It was opened for service late in 1923, and is equipped for all kinds of cases. Osteopathic physicians, specialists of various kinds, interns and nurses are on the staff. The property represents an outlay of about \$500,000, has all the up-to-date appliances, and a capacity of one hundred and thirty beds. It was established November 11, 1918, with seven beds and has had a steady growth. John H. Crenshaw, DO, the founder, is surgeon-in-chief and manager.

Mercy Hospital, 823 Faraon Street, St. Joseph, Missouri, was organized in March, 1919, under the eleemosynary code of Missouri, and opened for business the following November. It is backed by the osteopathic physicians and their patients in that part of the state. Its capacity is forty-five beds, which can be increased to sixty. Surgery and obstetrics are provided for, and attention is given to the milk diet and such other procedures as are found in a well-equipped general hospital under osteopathic management. Connected with it is a nurses' training school, which supplies the necessary help. It is the only hospital of the three in St. Joseph in which osteopathic physicians are permitted to practice and in which patients can receive osteopathic care.

The Moore Sanitarium, Portland, Oregon, had been in successful operation eight years, and at its present beautiful location, surrounded by two and a half acres of lawn and shrubbery, four years. Its capacity is twenty-five beds. All patients are given osteopathic treatments. Its special features are milk diet and rest. No obstetrical or surgical cases are taken. It is owned and

managed by F. E. Moore, DO, and his wife, who is also a DO.

Monte Sano Sanitarium and Hospital, Glendale Boulevard and Riverside Drive, Los Angeles, California, is incorporated under the laws of the State and governed by a board of directors. This institution, which combines in unique fashion the work of the sanitarium and hospital, was opened for the reception of patients, December 1923. It is under osteopathic management, and uses osteopathic methods rather than medical. It is devoted to osteopathic treatment, diet, obstetrics, surgery, and other requirements in the handling of patients. Only graduate nurses are employed. Monte Sano represents an expenditure of approximately \$150,000, enjoys an unusually beautiful location, and is within easy reach of the heart of the city. It has a capacity of fifty beds and is fully equipped in every respect with the most modern equipment for all kinds of physiotherapeutic treatments and surgery.

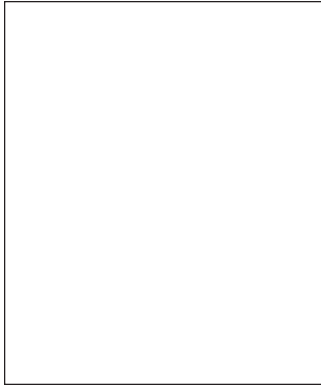
The Nevada Sun-Cure Sanitarium, Reno, Nevada, is for the care and treatment of acute and chronic non-communicable diseases. The building of twenty-two rooms is about two miles south of Reno, surrounded by seven acres of ground. The health-giving power of sunshine, pure air, and pure water are emphasized. Attention is given to the best food indicated in each case, and fasting is required when thought best. Osteopathy and other physical corrective procedures are employed. It was opened for patients in June 1923, in charge of Edward C. Galsgie, MD, DO, who died in 1924. The teaching of mental science, psychology, and auto-suggestion are also utilized.

The New Osteopathic Health Home, 3015 Glencoe Road, Elbow Park, Calgary, Alberta, Canada, is owned and conducted by Dr. M. E. Church, DO; E. D. Plummer, DO, and W. J. Siemens, DO. The building is of stone and amply equipped for hospital and sanitarium purposes, with a capacity of twenty beds. In addition to osteopathic treatment it is equipped for diet, surgery, and other specialties, and keeps a sufficient number of nurses and

interns to insure proper service.

The New York Osteopathic Clinic has been in successful operation many years. It has the hearty cooperation of the city osteopaths and liberal support of prominent friends of osteopathy.

Ottari is an institution for the osteopathic care of non-communicable diseases. Neither does it accept insane nor surgical cases. It is beautifully



*New York Osteopathic
Clinic, New York City, NY*

located on a foothill of the Sunset Range of Mountains, at Asheville, North Carolina. The surroundings are ideal, and the primeval mountain forest is within five minutes' walk of the buildings. Nothing necessary to the maximum of light, air, quiet, comfort, cheerfulness, and efficiency has been overlooked in the construction and equipment of the building. Special attention, in addition to osteopathy, is given to dietetics, and other measures helpful to the inmates. The institution was started in 1911. The original wooden buildings have been replaced by fire-proof concrete tile structures containing rooms for forty-four patients, all of them with private baths, and twenty with private porches.

The entire plant is owned and managed by W. Banks Meecham, DO, and it has been his intention for many years to turn it over in due time to the A. T. Still Research Institute.

The Osteopathic Hospital of Philadelphia was organized in 1899 and chartered in 1911, under the laws of Pennsylvania, "to establish, maintain, and conduct a general hospital for the treatment of the sick and injured, and to conduct a training school for nurses."

In March 1916, a campaign for funds to construct and equip buildings for the college and hospital was carried out and netted about \$60,000. The spacious mansion with a large plot of ground at the southeast corner of Nineteenth and Spring Garden Streets was fitted up for college purposes with laboratories, classrooms, dissecting rooms, etc. A clinical amphitheater was built adjoining the college building. A little later the hospital building was erected running back to Buttonwood Street, with provision for sixty beds, and adequately equipped to care for surgical, maternity, and general cases. A modern x-ray laboratory was installed. Clinic facilities were provided for the free osteopathic treatment of two hundred to three hundred patients daily. Another campaign was begun in December 1919, which was successfully carried out, producing cash and pledges aggregating \$102,110.10. As a result the college and hospital purchased adjoining property and owns good buildings on a corner plot of ground 138 feet by 208 feet.

A training school for nurses is maintained, with a faculty of registered nurses, dietitians, surgeons, and specialists.

The Poplar Bluff Osteopathic Hospital, 123 North Fifth Street, Poplar Bluff, Missouri, a town of about eight thousand inhabitants, was organized and ready for service in 1909, and reorganized and more firmly established in 1921. It can accommodate twenty-four patients. It is in the charge of J. Elliot Smith, DO, and Annie A. Smith, DO, assisted by a competent corps of nurses. Plans are being completed for a two-story-and-basement cement building on property, which has a natural park, fine springs, and beautiful scenery.

The Rocky Mountain Hospital, 2221 Downing Avenue, Denver, Colorado, has been rendering service since 1919. It first occupied what was formerly the children's hospital building, which soon became too small, and it was remodeled and an addition made in 1922. It has twenty-six beds and is looking forward to increasing its capacity. It has facilities for hospital care, and has fully equipped surgical

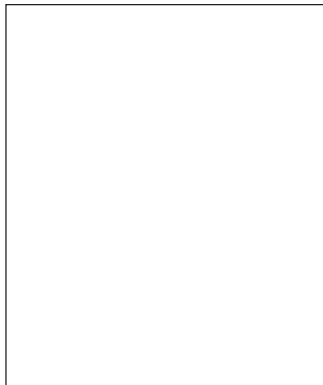
and obstetrical departments, with complete laboratory apparatus. No one is refused admission, and any licensed physician and his patients have the privilege of using it. The staff is composed of osteopathic physicians of Denver, with G. W. Perrin, DO, president, and C. C. Reid, DO, secretary. The free clinic, with its outpatient department, has averaged two thousand dollars' worth of charity work per year. The specialties such as eye, ear, nose, throat, and foot are fully provided for. Case histories, osteopathic diagnosis and treatment are emphasized, and "post-operative osteopathic treatment" is its slogan. The institution is operated upon a strictly non-profit basis.

The Rydell Hospital, Minneapolis, Minnesota, was started in 1907. It is owned and managed by its founder, John S. Rydell. The present equipment consists of two hospital buildings at 1700-1710 Third Avenue South. It has twenty-five beds, is licensed as a general hospital, including maternity care, and specializes in milk diet, having its own dairy farm where milk is produced that is suitable for therapeutic purposes.

The Southwestern Osteopathic Sanitarium, Blackwell, Oklahoma, a town of a little more than seven thousand people, was organized in May 1912, and began operations in a sixteen-room residence. In July 1915, these quarters having been outgrown, the present building was occupied. This is a four-story brick and terra-cotta structure, seventy-five by one hundred feet ground dimensions. The institution is classed "A" by the Oklahoma Department of Charities and Corrections. The property is valued by this department at \$100,000. The maximum capacity for patients is thirty-four beds. This is an osteopathic institution conducted solely by osteopathic physicians and surgeons. It is incorporated under the laws of Oklahoma as an organization "Not for Profit." All kinds of hospital cases, including surgical and obstetrical, are accepted, but no mental or communicable diseases are admitted. The institution has in connection with it a training school for nurses, which is accredited by the State Nurses' Examining Board.

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The Pauly Hospital, Kahoka, Missouri, is owned and managed by W. F. Pauly, OphD, DO. It is a general hospital and seems to be well adapted to meet the demands of a small city in a rural community. The building is undergoing construction and, when completed, will have all modern



Pauley Hospital, Kahoka, MO

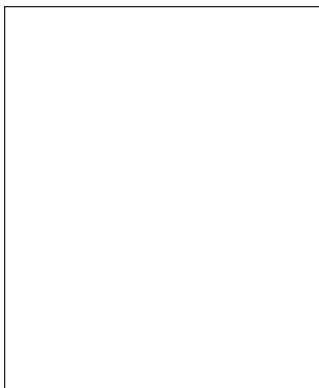
conveniences and capacity for about thirty patients. It is an osteopathic institution, with specialization in eye, ear, nose, and throat troubles. Milk of goats and cows and fresh vegetables are abundant.

Still-Hildreth Osteopathic Sanatorium, Macon, Missouri, is devoted to the care and treatment of nervous and mental cases. The buildings were erected, in 1900, on a tract of over four hundred acres of rich farmland. There are two buildings. The larger, absolutely fireproof, has offices, treatment rooms, laboratories, and staff quarters on the first floor, a large sun parlor on the second floor, and rooms for patients on the second and third floors. The smaller building is for cases requiring closer confinement and observation-a

ward for each sex. There are commodious dining rooms, central heating plant, and admirable service equipment. It can care for one hundred and thirty patients and has plenty of room to expand.

There are artificial ponds, a bathing house, boating facilities, a large greenhouse, and a dairy. This institution was built for a boys' military school, and was planned and equipped regardless of expense. The plant is very attractive and in excellent physical condition. It was converted to its present use in 1914.

The Wayne-Leonard Sanitarium, 130 South Maryland Avenue, Atlantic City, New Jersey, was organized, in 1919, with twenty-two rooms available for patients. It is owned by a stock company; controlled by osteopathic physicians. Surgery and obstetrics are not provided for. Practically all other cases are admitted, and special attention is given to diet and other proce-



Wayne-Leonard Osteopathic Sanitarium, Atlantic City

dures of proven efficiency. L. H. English, DO, is the physician in charge. Only graduate nurses are employed.

The Western Carolina Sanitarium,

Inc., 74 Oakland Road Asheville, North Carolina, is for tubercular cases only, strictly modern, sanitary, homelike, and comfortable. It was opened for patients in February 1923, and has been limited to twenty-one patients. The capacity attendance indicates a demand for the osteopathic care of patients of that class in the climate of Asheville. Osteopathic treatments, careful nursing, suitable diet, and necessary rest are stressed. W. B. Rannells, DO, is president of the corporation and physician in charge. Patients of MDs are admitted, but recognition is refused DOs in other tubercular sanitariums in Asheville.

The Wheaton Health Resort is located at Wheaton, Illinois, forty-five minutes from Chicago. It is managed by Louise Agnes Standish, DO, and a competent corps of nurses and assistants. There are thirty beds. Diet, light, and hydrotherapy receive due attention. The treatment of eye troubles, especially cataracts, is the specialty and has been remarkably successful. An office is maintained in Chicago where most of the diagnosing is done.

The Wood Hospital is located at 330 North Twenty-second Street, Bethany, Missouri, in a town of about two thousand people. All of the doctors are DOs. Drs. E. L. and Eva Wood are in charge, the latter specializing in diseases of women and children. For other specialties they secure the services of Drs. G. M. Laughlin, F. L. Bigsby, and A. C. Hardy, from Kirksville. It has modern equipments, X-ray, and flouroscope, etc., and is prepared for major and minor surgery and obstetrics. Osteopathic treatments, baths, and milk diet are made use of as indicated.r



Wood Hospital, Bethany, MO

14th Annual OMT Update at Walt Disney World®

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The program anticipates being approved for 22.5 hours
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This Academy program was designed to meet the needs of the physician desiring the following:

- **OMT Review - hands-on experience and troubleshooting**
- **Integration of OMT in treatment of clinical cases**
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- **Preparation for AOBNMM (American Osteopathic Board of Neuromusculoskeletal Medicine) certifying/licensing boards**
- **Information on CODING for manipulative procedures**
- **Good review with relaxation and family time**

PREREQUISITES: Functional Anatomy; One Level II course

PROGRAM TIME TABLE:

Thursday, August 19	5:00 pm - 10:00 pm
Friday, August 20	7:00 am - 1:30 pm
Saturday, August 21	7:00 am - 1:30 pm
Sunday, August 22	7:00 am - 1:30 pm

(Each day includes (2) 15 minute breaks)

REGISTRATION RATE

ON OR BEFORE 7/22/04 AFTER 7/22/04

AAO Member	\$630	\$730
Intern/Resident	\$530	\$630
AAO Non-Member	\$835	\$935

COURSE LOCATION:

Disney's Contemporary Resort

HOTEL INFORMATION:

Disney's Contemporary Resort

4600 World Wide Drive

Lake Buena Vista, FL 32830

1-407-824-3869 (Reservation line)

Reservation Deadline: July 21, 2004

Room Rate: \$159.00 single/double

\$25.00 each additional person

(Identify yourself as attending

American Academy of Osteopathy®'s Conference)


For Registration Information, please contact:
Christine Harlan, Membership Services Coordinator
American Academy of Osteopathy®
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Indianapolis, IN 46268
Phone: 317/879-1881
Fax: 317/879-0563
E-mail: charlan@academyofosteopathy.org
Register on line: www.academyofosteopathy.org

TESTIMONIALS:

- The instructors were all very knowledgeable and demonstrated many novel techniques which will be beneficial to my patients.
- Well formulated, nice balance of broad, yet specific new material, good techniques.
- Nice ratio of hands-on to didactic and table trainers to participants.
- Excellent review. I will be back to continue my OMM review.

Letters to the Editor

Dear Editor,



I take exception to Mr. Terence Vardy's letter titled "Osteopathic Development Internationally" (The AAO Journal, vol. 13, no. 4, Winter 2003). I am not qualified to comment about the Australian scene, but I would like to pick up on his remarks regarding John Martin Littlejohn's teaching of osteopathy. He seems to have formed the opinion that J. Martin Littlejohn was not teaching osteopathy!! And he asks the question, "Do his graduates practice osteopathy"?

It is true, as Mr. Vardy states in his letter, that Dr. Still and Dr. Littlejohn clashed over the teaching of osteopathy. Dr. Still was primarily an anatomist and Dr. Littlejohn a physiologist. Reading between the lines of this historic disagreement, how much of it was Still himself who strongly objected to Dr. Littlejohn's intention of broadening the osteopathic curriculum at Kirksville or how much was the influence of the ASO board over Still in this matter, one will never know. After all, Dr. Still directly appointed Dr. Littlejohn to teach physiology and allied subjects at the ASO whilst Dr. Littlejohn was still a patient of Dr. Stills. Furthermore, Dr. Still appointed Dr. Littlejohn as professor of physiology and first Dean of the faculty, all within two years of these two great men meeting. I think this shows substantial evidence that in Dr. Littlejohn, Dr. Still recognised a highly educated man who brought with him a subject matter, i.e. physiology, which would prove to be a large part of the foundation of our work. Dr. Littlejohn taught his students that the beginning of all disease conditions was to be found in the perversion of physiological process and that the basis of all pathology is in hyper-physiology.¹ He would often say to his students that "physiology was the gateway by which this immense field of osteopathy is to be

entered."² Therefore, Dr. Littlejohn's teaching of osteopathy was not in opposition to Dr. Still's, but rather an advancement in Dr. Still's concept of osteopathy and within the keeping of the Universal Principle of Osteopathy, that of "adjustment".

No, I believe this was not so much a clash between Dr. Still and Dr. Littlejohn but between Dr. Littlejohn and the Board of Trustees of the ASO at that time.

From my personal studies of the documented evidence, not once did Dr. Littlejohn write directly to Dr. Still. All his letters were addressed to the ASO board. This, I am convinced, was because Dr. Littlejohn respected Dr. Still, not only for the man he was, but for the concepts of osteopathy Dr. Still taught.

Mr. Vardy fails to mention that when Dr. Littlejohn left Kirksville, he went to Chicago and, along with his two brothers, formed the Chicago College of Osteopathy. Therefore, this was an American college, teaching American students, graduating American osteopaths from Dr. Littlejohn's influence and teaching. My point is, there were also many American osteopaths, and not just British, who had direct teaching of osteopathy under Dr. Littlejohn.

One such person was Dr. E.S. Comstock who graduated from the Chicago College of Osteopathy, later became Secretary of the college, and was quite an eminent figure in our profession at the time.

Writing in the *Journal of the American Osteopathic Association* in 1928, he had this to say about his student days in Chicago:³

"During my college course, I had the good fortune to drink at the Fountain of Knowledge of John Martin Littlejohn, than whom there have been few, if any in our profession who have a more comprehensive concept of osteopathy. At the time I was a student under him he was almost severely criticised by the

majority of the profession, being several years in advance in thought of this majority. It has been indeed interesting to note the change that has been taking place and how today the generally accepted principles are those he taught his students back in 1905 to 1910. They were his interpretations of the principles set forth by the "Old Doctor" and as I have studied the Principles and Philosophy of Osteopathy since then, I am forced to the same conclusions that Dr. Littlejohn gave us. In all these years since my graduation, I have never found it necessary to deviate from those principles, but through study and thought, I have come to recognise and understand a larger application of what we were taught. In 1911, I had the pleasure of writing an article that was printed in the Journal of the American Osteopathic Association setting forth these principles as Dr. Littlejohn had given to us and on which I received no little criticism from numbers of the leaders in the profession at that time. Many of these are still at the fore in the profession and the majority are now proclaiming the very principle that they criticised in those days."

In the scheme of things today under the nomenclature of osteopath, I am not convinced that any of us, and I include American osteopaths in this, are teaching or practising the true principles of osteopathy as enunciated by Drs. Still and Littlejohn. When you read Dr. Littlejohn's work it is a different osteopathic language than anything I have come across today and, I believe, much has been lost.

I was advised a few years ago by John Wernham DO, a direct student of Dr. Littlejohn (whom I respect and admire and who probably has not got the recognition in the osteopathic world today that he deserves) that you can't just read Littlejohn you have to study his writings.

To Dr. Still and Dr. Littlejohn, the

universal principle of osteopathy is that of "adjustment".

Do we teach it in our curriculum? Do we practice it? Are our curriculum's truly osteopathically orientated or are we grasping at the tail of the allopathic kite?

Maybe these simple questions could be a starting point for discussion at an international level for future organisational development.

Paul Masters DO
United Kingdom

1. Personal notes from lectures given by Mr. John Wernham, DO
2. *The Life and Times of John Martin Littlejohn - A biography*
3. *The Life and Times of John Martin Littlejohn - A biography* by John Wernham, DO



Dear Editor,

In response to Mr. Masters letter relating to John Martin Littlejohn's teaching of Osteopathy.

Firstly, may I suggest that Mr. Masters duly read the references quoted in my original letter. The "The Littlejohns vs. Arthur Hildreth" article is available from the A. T. Still Museum at Kirksville College of Osteopathy and to quote directly from this article - "When they (the Littlejohns and Smith) were unable to obtain satisfaction from the Board of trustees (which at that point consisted of A. T. Still, his four children, and Arthur Hildreth), the Littlejohns and Smith resigned." This would seem to indicate that Dr. Still was less than satisfied with the Littlejohns in their capacity to teach osteopathy as Dr. Still understood osteopathic teaching. Moreover, to claim that Littlejohn did not write to Dr. Still when in fact Dr. Still was on the Board of Trustees is quite incorrect and misleading. I quote the Museum as it is a reasonably independent historical source.

The second reference was from *The Lengthening Shadow of Dr. Andrew Taylor Still*. As Dr. Arthur Becker says in the foreword "Of the many thousands of students who have been

attracted to osteopathy, I know of no man who more surely understood and appreciated the fundamental principles enunciated by our great leader than Dr. Hildreth." This was undoubtedly one of the reasons that Dr. Hildreth was chosen by Dr. Still to take over as dean of the college. In Dr. Hildreth's words this is the account he gave - "There were four men on the faculty at that time who were graduates of the allopathic school of medicine. Their opinion was that I was ultra-osteopathic and would tolerate none other than the strictest adherence to the teaching of osteopathy in the way Dr. Still himself had taught it for a number of years. A written protest was sent to Dr. Still, his sons and family, and to myself, all of whom were members of the Board of Trustees. It was signed by the four graduates in allopathic medicine, and said that they refused to serve as members of the teaching staff of the American School of Osteopathy if I were to be retained as dean."

"The students took up the matter and a very large majority of them were loyal to Dr. Still and osteopathy. Such men as Drs. McConnell, Proctor, Hazzard, W. M. Clark, Will Loughlin - infact nearly the entire faculty of the college went to Dr. Still and demanded that the medical influence be eliminated."

"With the majority of the students taking the same attitude, or at least throwing their influence with the osteopathic teachers in the college, the only thing these four men could do was to retire."

"Through it all, Dr. Still and his family stood firmly by the teaching of osteopathy in its purity."

As to Mr. Masters' comments that "I am not convinced that any of us, and I include American osteopaths in this, are teaching or practicing the true principles of osteopathy ...", I can only comment that I practiced osteopathy in England for three years. During that time I had a number of occasions where patients attended my practice who had previously had "osteopathic" treatment from English osteopaths. One lady in particular had spent thousands of pounds on "osteopathic" treatment

without success for a cervical complaint. Understandably, she was pleasantly surprised to gain relief from pain and complete range of movement after 4 treatments. She and the other patients were not very impressed that they had been treated "osteopathically" without success.

I do not quote these instances as verification that I in any way treat as well as Dr. Still and his students. Upon reading various texts by Hazzard, Hullett, McConnell, etc. one can only hope to somewhat emulate these fine practitioners. However, there are fine teachers available today in America who do teach very effective "osteopathy". Indeed, it seems that there is a real revival in publication of osteopathic texts and teaching workshops. While some of the recent masters have passed on such as Jones, Johnson, Yates, Fulford etc., there are still fine teachers available in Drs. Chila, Stiles, Ward, Crow, Kuchera, Frymann, English, Ettlinger, Wallace to name but a few.

In respect of this, I do not think that Dr. Still's principles or practicing methods are necessarily lost to all in the osteopathic profession. Dr. Richard Van Buskirk would no doubt even argue that he is reintroducing the "Still" techniques of manipulation.

I respect that there are usually two sides to an argument and that the perspectives of Drs. Martin Littlejohn and John Wernham may differ from those recorded by others. However, there does seem to be overwhelming evidence on behalf of Dr. Hildreth.

I do partially agree with Mr. Masters' comments regarding the practise of osteopathy today. I think it is well recognized that there were "25 lost years" in American osteopathy. In spite of the maintenance of "osteopathy" in teaching and practice by a number of the osteopathic profession, it is sad that today of the 40,000 osteopathic physicians in America only some 1400 are members of the American Academy of Osteopathy and an even fewer number in the Rehabilitation membership of the American Osteopathic Association. That there are only this number who practice "10 fingered

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Osteopathy” must surely encourage the profession to make even greater efforts to foster and teach “osteopathy”.

Do you require full medical practice rights to practice osteopathy? This has been a bone of contention for some time. I believe that provided the osteopathic practitioner is safe in terms of a comprehensive diagnosis embracing standard osteopathic and orthopaedic examinations and this is coupled with an acceptable level of anatomical and physiological education, then the practitioner well-trained in osteopathic philosophy and technique is well equipped to treat a person osteopathically. If we revisit the times of Dr. Still and Dr. Hildreth, they did not use drugs. In fact they were directly

opposed to such substances yet they provided extremely effective osteopathic treatment. One may argue that they became so effective because they relied only on their osteopathic skills. Many osteopathic practitioners in countries where osteopaths do have full practice rights are in this same situation. These practitioners refer patients where there is the requirement for additional diagnostic evaluation such as pathology services or ultrasound, MRI etc. Also, by referring to MD’s for such services should there be an absolute need for drug medication this can also be afforded to the patient.

I would respectfully refer anyone to “An Imaginary Talk with Dr. Still - 1994” by Dr. Martyn E. Richardson,

AAO Journal, Spring, 1994. This provides an excellent summation of “Osteopathy” in modern times vs. the early days.

What does the future hold for our profession? In the spirit of providing education to our fellow practitioners wherever they may be we share the belief that osteopathy holds the best key to successful treatment of human ailments. May we dare to hope that we can share our knowledge for the benefit of practitioners and patients worldwide and take any opportunity to further this objective.

Fraternally Yours,
Terence C. Vardy D.O. M.App.
Sc.(Musculoskeletal Management)

The Littlejohns vs. Arthur Hildreth

In the fall of 1899, “on account of the growth of both the Infirmary and the School” (J. of Ost. 1899 Oct.), Dr. Hildreth returned to the American School of Osteopathy to serve as dean of the college and a member of the Infirmary staff. Hildreth, a member of the first ASO class and a longtime friend of A. T. Still and his sons, had been practicing in St. Louis since January 1899 and had recently been elected president of the American Osteopathic Association.

Dr. Hildreth’s return caused a controversy that resulted in the resignations of four faculty members: the three Littlejohn brothers (J. Martin, J.B., and David) and Dr. William Smith. Smith, also a member of the first ASO class, had taught at the school on and off since its founding; the Littlejohns had joined the ASO faculty in 1898. The four clashed frequently with Hildreth over philosophical issues. Hildreth (evidently backed by A. T. Still) held to “pure” osteopathy, while the others advocated a broader approach that would include many aspects of allopathic medical practice except the use of drugs. In addition, the Littlejohns, who all held several degrees from British and American schools, considered Hildreth’s educational background inadequate for a faculty member.

In January 1899, when C.M.T.

Hulett, DO, resigned his post as dean, the ASO Board of Directors chose J. Martin Littlejohn to replace him. Littlejohn served until June, then went to Europe with his brother J.B. for the summer. In their absence, A. T. Still summoned Hildreth back from St. Louis to take over as dean. The Littlejohns and Smith protested.

“We beg to intimate to the Trustees that Arthur Hildreth has made himself objectionable to us in many ways. He is in the School in violation of a contract made with us last term, and in spite of the distinct statement that he was to have nothing at all to do with the Faculty he has been installed without our consent, being even asked as our superior in the office of Dean; . . . we decline to associate with him as teachers because we believe it detrimental to the School, to our reputation, and the good name of Dr. A. T. Still, our President . . . Nov. 23, 1899 [D 345]”

When they were unable to obtain satisfaction from the Board of Trustees (which at that point consisted of A. T. Still, his four children, and Arthur Hildreth), the Littlejohns and Smith resigned. The Littlejohns continued to battle with the ASO over salary owed them and similar issues, and eventually took legal action, which was finally

settled out of court in 1902.

After leaving the ASO, the Littlejohns went to Chicago and founded the American College of Osteopathic Medicine and Surgery, which evolved into today’s Midwestern University/Chicago College of Osteopathic Medicine (MU/CCOM). J. B. was associated with the Chicago School until his death in 1947. David made a career as a public health administrator in West Virginia and Michigan. J. Martin returned to England in 1913, founded the British School of Osteopathy in 1917, and remained an active and influential figure in osteopathic education, research, and practice.

Arthur Hildreth served as ASO dean only until 1900. He continued as a strong influence in the profession, leading legislative battles in several states, serving again as AOA president (1910), and founding (1914) and directing the Still-Hildreth Osteopathic Sanatorium.

The Museum’s Littlejohn collection includes 48 letters between the brothers and the ASO during the period 1899-1913, most having to do with the contract controversy. Hildreth presented his side of the story in his 1938 book, *The lengthening Shadow of Andrew Taylor Still*.x

The Still Technique

Applications of a Rediscovered Technique of Andrew Taylor Still, MD

July 23-25, 2004

Lewisburg, West Virginia

Richard L. Van Buskirk, DO, PhD, FAAO

Program Chair and **author of *The Still Technique Manual: Applications of a Rediscovered Technique of Andrew Taylor Still, MD***

The program anticipates being approved for 20 hours of AOA Category 1-A CME credit pending approval by the AOA CCME.

COURSE DESCRIPTION: LEVEL II

Innovative approach using combined (indirect-direct) techniques in the treatment of common clinical somatic dysfunction.

PREREQUISITES: Functional Anatomy; One Level I course or equivalent

LEARNING OBJECTIVES:

By the end of this course the attendee will know:

- the history of the Still technique, its loss and recovery;
- the underlying method;
- segmental diagnostic techniques that are shared by this technique with HVLA and muscle energy techniques as well as those unique to the Still technique, and
- specific applications of the technique to the cervical, thoracic, and lumbar spine, ribs, pelvis, extremities, muscles, and tendons.

PROGRAM TIME TABLE:

Friday, July 23 8:00 am – 5:30 pm
Saturday, July 24 8:00 am – 5:30 pm
Sunday, July 25 8:00 am – 12:30 noon

(Friday & Saturday include (2) 15 minute breaks and a (1) hour lunch; Sunday includes a 30 minute break.)

COURSE LOCATION:

West Virginia School of Osteopathic Medicine
400 N. Lee Street, Lewisburg, WV 24901

HOTEL ACCOMMODATIONS: located near WVSOM

General Lewis Inn: 304/645-2600
Brier Inn: 304/645-7722
Days Inn: 304/645-2345
Super 8: 304/647-3188
Budget Host/Fort Savannah: 304/645-3055

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Register on-line at: www.academyofosteopathy.org

Health Promotion and Disease Prevention (HPDP) Programs of Osteopathic Hospitals: A Comparative Analysis Abstract

Tony Sinay and Simon Geletta

Abstract

The availability of HPDP services in osteopathic hospitals was compared to a national and local control groups that matched to osteopathic hospitals by location (MSA), bed size, system, nonprofit and teaching status. The main purpose of the paper is to demonstrate that osteopathic hospitals are more likely to provide HPDP services than allopathic hospitals due to the philosophy of osteopathic medicine.

The data came from the American Hospital Association that included 50 osteopathic and 50 matching hospitals, and about 4,131 national controls. Sets of odds ratios with confidence intervals were computed for statistical comparisons. Overall osteopathic hospitals are more likely to offer HPDP services than hospitals in the national sample. When compared to local matching controls, osteopathic hospitals' dominance in HPDP services becomes less apparent. Primary care services are about four times more likely to be offered by osteopathic hospitals than allopathic hospitals whereas retirement housing is about 70 percent less likely to be offered by osteopathic facilities. Although osteopathic and allopathic facilities show equivalent likelihood to provide HPDP services, interestingly

both groups are more likely to provide HPDP services than those in a national sample.

Introduction

In recent years, a significant number of health care organizations have incorporated health promotion and disease prevention (HPDP) programs into their service mix. Although several reasons and benefits have been cited for the shift of focus from inpatient care to preventive care such as socio-demographic trends, government policy, efficacy and cost-effectiveness, justification of not-for-profit status, and managed care and capitation, not all hospitals and health care delivery systems placed a significant amount of resources into HPDP programs.¹ Despite the benefits of HPDP programs, only 17 percent of U.S. hospitals have a complete set of HPDP services.²

The hospital remains at the center of rapidly changing health economy and serves as the backbone of health system integration in recent years. Hospital care dominates total health care spending, with more than \$390 billion spending in 1999, one third of national health care spending.³ Hospitals often are categorized by 4 criteria: length of stay, type, ownership, and size. The length of stay defini-

tion places hospitals into two groups: short stay (less than 30 days) and long term stay. The community hospital is the type with which the general public is most familiar. Community hospitals consist of all nonfederal general hospitals that provide acute, short-term care and many are also teaching hospitals. Hospital ownership can be private or public (federal, state, county or local), and the former category consists of nonprofit and proprietary hospitals. Non-profits dominate the hospital industry with an about 81 percent share of short-stay nonpublic hospitals.

The focus of this paper is the group of facilities that distinguish themselves as osteopathic hospitals. Although the classification is provided in the American Hospital Association Annual Survey of US Hospitals (AHA), research that compares these providers to other type of hospitals is rather limited or nonexistent. There is anecdotal evidence that osteopathic hospitals located in 31 states with more than 25,000 beds; about 825,000 patient admissions; 6.3 million patient days; 3.1 million outpatient visits to hospital's outpatient departments each year for emergency and other ambulatory care, but the year of the above statistics was not specified in an American Osteopathic

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Association (AOA) brochure.

The AOA Directory serves as a more reliable source for statistics at these facilities.⁴ In 1999, there were about 141 facilities (not all hospitals) listed as osteopathic health centers, but the AHA reports 54 hospitals with AOA accreditation in 1999. There is a great overlap between the philosophy of osteopathic medicine and the HPDP programs due to the emphasis on preventive care and less invasive solutions, osteopathic hospitals are more likely to provide HPDP services as compared to allopathic hospitals. This study profiles the HPDP services of osteopathic hospitals nationwide and compares their performance to two control groups: (1) a national sample and (2) local matching controls that are selected from allopathic hospitals. Osteopathic hospitals are identified in the 1999 AHA data and later matched to local allopathic hospitals with respect to location, bed size, system, not-for-profit, and teaching status. Twenty HPDP programs are analyzed in the study, using odds ratios.

The study may have important policy implications in two fronts: (1) the American Osteopathic Association (AOA) and local chapters may be interested in financially supporting osteopathic hospitals with a significant investment in HPDP services because such a commitment helps achieve the mission of the AOA, and (2) osteopathic hospitals could serve as a market leader in their local communities in providing HPDP services, which would signify the importance of osteopathic hospitals in local communities, especially in rural areas. Financially supporting osteopathic hospitals would not only improve the delivery of HPDP services in these communities, but also strengthen the primary care programs and increase the supply of physicians into rural communities. A recent study reported that about 20 percent of osteopathic medical school graduates practice in underserved communities.⁵

Literature Review

Traditionally, health care providers relied on acute inpatient care to keep people healthy, but there has been a shift away from such a traditional stance to the “health promotion and disease prevention approach.” Several studies cited numerous reasons for this shift, which included innovativeness,^{6,7} government tax policy,⁸ the advent of the HMOs and the PPOs,^{9,10} consumer demand,^{8,11} market advantages,^{12,14} and demographic trends.¹⁵ The need for health care reform to improve health status and population health rather than only to improve the delivery of medical care have been emphasized by hospitals,^{8,17-19} managed care,^{9,15} and purchasers and citizens.¹¹ A recent study documented the effectiveness of 32 HPDP programs and proposed to broaden the definition of health promotion to improve the long-term outcomes while reducing health care costs.²⁰

Instead of displaying the patterns of adaptation and/or diffusion of HPDP practice into the U.S. health care system, past literature provided anecdotal descriptions of what hospitals are, or should be doing to improve health of their local population.^{21,24} A pioneer study on HPDP showed the lack of empirical focus in the literature on HPDP and highlighted the patterns of adaptation of HPDP by health care providers.² This investigation revealed the existence of nationwide disparities between hospitals in the adaptation of the HPDP strategy. For example only 17 percent of hospitals reported offering all HPDP services. The most HPDP programs are offered by church affiliated, not-for-profit hospitals and MHS network affiliated hospitals. Governmental and for-profit hospitals were the least likely to have HPDP services.

Osteopathic Philosophy and Research Foundations

The science of osteopathy dates back to 1874 when Dr. Andrew Taylor Still first laid out the foundations of osteopathic medicine, which pioneered the concept of “wellness” with a focus on preventive care medicine. He studied the attributes of good health by evaluating each person’s health risks such as smoking, high blood pressure, excessive cholesterol levels, stress and other life-style factors.²⁵

Osteopathic medicine is a distinctive primary-care centered approach to medical, surgical, obstetrical, and other health services which focuses on the whole body and comprises five major points:^{26,27,28}

- unity of the body,
- the healing power of nature,
- somatic components of disease,
- structure-function concept, and
- manipulative theory.

The body functions as a unit with existing interrelationships among all body systems and possess self-regulatory mechanisms that have an inherent capacity to health and repair itself. Osteopathic philosophy points out that structure and functions of body are not separable in understanding human physiology, and musculoskeletal system is similar to a machine, serving a common function. All parts must be operable, anatomically and physiologically for body to be healthy to fully function.

Transforming the osteopathic theory to osteopathic practice, the bones, muscles, tendons and connective tissue can be manipulated to improve the range of motion and promote blood flow through tissues to enhance the body’s own healing powers.⁵ Due to the emphasis on preventive care and less invasive solutions to medical problems, osteopathic physicians and hospitals may deliver a cost efficient and/or cost effective care. Andersson and his friends showed that osteopathic manual care

and standard medical care have similar clinical results in patients with subacute low back pain; however, the use of medication and physical therapy was greater with the standard care and the differences in costs were significant.²⁹ In light of this information, we expect that osteopathic hospitals are more likely to emphasize HPDP services more than allopathic hospitals.

Osteopathic Hospitals

The literature does not distinguish osteopathic hospitals as a separate group of hospitals, but the American Hospital Association (AHA) Annual Survey of US Hospitals suggests otherwise. Osteopathic hospitals are accredited by the American Osteopathic Association (AOA)-Healthcare Facilities Accreditation Program—whereas allopathic hospitals are accredited by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO). The requirements for accreditation by the AOA and the JCAHO are similar in most respects. Both require licensed medical staff, which includes nurses and physicians; patient care standards regarding treatment and privacy; organizational structure involving leaders of each department with a hospital CEO, and emergency plans for natural disasters or utility failures. Although the educational background of the medical staff varies, both the AOA and the Joint Commission emphasize continuing education. Additionally, the AOA requires an osteopathic physician(s) on staff, performing an osteopathic musculoskeletal examination at the osteopathic hospital, and a committee called “Utilization of Osteopathic Methods and Concepts Committee” to promote effective methods for osteopathic diagnoses and treatments. This committee is expected to hold meetings regularly.

Methods

Design and Matching Process

The study has two parts. In the first part of the study, osteopathic hospitals are identified from the 1999 AHA data and are compared to a national sample, which excluded federal government and specialty hospitals. In the second part, osteopathic hospitals are matched to allopathic hospitals with respect to the following criteria (see Table 1):

- have approximately the same number of staffed beds,
- be in the same Metropolitan Statistical Area (MSA),
- have the same type of ownership, for-profit or not-for-profit,
- have the same system affiliation status as the osteopathic hospital, and
- have the same teaching status.

To control for market effects, most studies used several, randomly selected hospitals as controls for ongoing operational changes emanating from the environment. In studies where controls were selected from representative hospitals nationwide, additional variables to account for local environmental influences that pertain to each control hospital were added to the model. Because of the limitations imposed by a small sample size in this study, an alternative strategy to control for environmental differences was adopted in

the second part of the analysis.

We started the matching process by classifying hospitals into different bed-size categories. For this purpose the AHA bed-size classification system was used which included eight size classes. The largest osteopathic hospital had 325 beds and the smallest had 12 beds. Since the largest osteopathic hospital had 325 beds, only 6 of the 8 bed-size classes were relevant for the study (Size 7 and 8 are hospitals with more than 400 beds). We started out with 54 osteopathic hospitals and 6,602 allopathic hospitals nationwide. One osteopathic hospital was automatically dropped from the sample due to being a specialty hospital. About 1,350 specialty and federal government hospitals were discarded from the national sample. A total of 4,702 allopathic hospitals were potential matches to 53 osteopathic hospitals on the basis of bed-size. A computer program is utilized to obtain perfect matches for osteopathic hospitals, which included five control factors: bed size, Metropolitan Statistical Area (MSA), ownership, system and teaching status. A total of 4,465 non-osteopathic hospitals were dropped from the sample for random matching. (see Table 1 for more information). There were 18 osteopathic facilities for which a local matching hospital could not be found in the same MSA. For those facilities

Table 1. Matching Process for Osteopathic and Non-Osteopathic Hospitals

Bed Size group	Number of osteopathic hospitals	Number of possible non-osteopathic matches by bed size	Within the same MSA or CMSA, similar ownership, system and teaching status
1 - 25 beds	3	355	5
26-50 beds	10	825	113
51-100 beds	10	973	48
101-200 beds	23	1194	62
201-300 beds	6	603	8
301-400 beds	1	141	1
401 and over	—	611	—
Total	53	4,702	237

matching allopathic hospitals were sought by expanding their MSA to the Consolidated Metropolitan Statistical Areas (CMSA). Matches were found for 15 of the 18 osteopathic facilities within the same CMSAs. Other three facilities for which a match was not found within the same CMSA were discarded from the analysis. The final one-to-one matching was performed by randomly selecting 50 matches from the list of 237 non-osteopathic candidates. Since there was only one non-osteopathic within the 300 - 399 bed-size group, the non-osteopathic match for this bed-size class was automatic without random selection.

Samples and Study Variables

Approximately 4702 hospitals were included in the study as a national control, but due to missing data national statistics are reported for about 4131 hospitals. Data for the analysis were obtained from the AHA Annual Survey of U.S. Hospitals. The sample originally included all osteopathic hospitals that were a member of the AHA in 1999, but 3 hospitals were dropped from the sample due to not finding a matching hospital and another hospital due to its specialty status that resulted in 50 general acute care hospitals with osteopathic accreditation and another 50 hospitals with allopathic designation.

To assess the level of adaptation of the HPDP programs by both osteopathic and allopathic hospitals requires the identification/definition HPDP services first. Health promotion is defined as all activities that educate, guide, and motivate the individual to take personal actions which improve the likelihood of sustained good health and increase the appropriateness of use of medical services.²⁰ While such a general definition is useful as a framework, it does not provide adequate basis for empirical appraisal, as it does not outline the salient components of HPDP. A re-

cent study outline five “overlapping” components of HPDP as “clinical preventive services, health data systems, community-based services” to improve the health of specific individuals, population based services to improve the health of an entire specific population, and public policy to improve health.³⁰ These components have been utilized by prior research as a guide to operationalize the concept of HPDP.^{2,14,31}

The AHA data reports 20 HPDP services that can be classified into 5 categories: These are: (1) hospital-based patient services, (2) primary wellness, (3) elderly services, (4) hospital commitment to community

health and (5) screening services. Table 2 reveals these 20 HPDP services and their definitions.

Measures

We computed and compared what percentage (proportion) of osteopathic, allopathic and national control hospitals offered each HPDP service in 1999. Using odds ratios, the proportion of osteopathic hospitals offering each HPDP service is compared to the national sample first and to the allopathic matching controls second. Odds ratios were computed to evaluate the probability of a hospital having or not having a particular health

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Table 2. Health Promotion and Disease Prevention Programs of Hospitals

HPDP Services	Description
Hospital-Based Patient Service	
Community outreach	Does the hospital provide community outreach?
Hospital OP care	Does the hospital provide hospital-based OP care/center?
Mammography	Does the hospital provide breast cancer screenings or mammograms?
Patient education center	Does the hospital provide a patient education center?
Health information	Does the hospital provide a health information center?
Nutrition program	Does the hospital provide nutrition programs?
Support group service	Does the hospital provide support groups?
Social work services	Does the hospital provide social work services?
Primary Wellness	
Teen outreach	Does the hospital provide teen community outreach services?
Primary care	Does the hospital provide a primary care department?
Psychiatric education	Does the hospital provide psychiatric education?
Child wellness programs	Does the hospital provide child wellness programs?
Elderly services	
Meals on wheels	Does the hospital provide meals on wheels?
Retirement housing	Does the hospital provide retirement housing?
Hospital Commitment	
Mission	Does the Hospital's mission statement include a focus on community benefits?
Long-term plan	Does the hospital have a long-term plan for improving the health of its community?
Resources for community benefits	Does the hospital have resources for its community benefit activities?
Screening Services	
Home health	Does the hospital provide home health services?
Health fair	Does the hospital provide health fairs?
Health screening	Does the hospital provide health screenings?

promotion and disease prevention program is significantly related to whether or not the hospital is an osteopathic or allopathic facility. For matched pairs, the odds ratio is calculated by taking into account the ratio of discordant pairs. To illustrate this, let r represent the number of pairs in which an osteopathic hospital has an HPDP program and an allopathic hospital does not. Further, let s represent the number of pairs in which the allopathic hospital has a particular HPDP program, but the osteopathic counterpart does not. The relative odds of osteopathic hospitals having an HPDP program versus the allopathic counterparts having such a program are estimated by

$$OR = \frac{r}{s} \quad (1)$$

If the null hypothesis (that the odds of finding a HPDP program among the two type of hospitals is equal) is true, r and s should be approximately equal. To make inference using these point estimates, we calculated interval estimates (95% confidence intervals) around the odds ratios. Then, the standard error of estimation is:

$$se[\ln(OR)] = \sqrt{\frac{r+s}{rs}} \quad (2)$$

If the difference between r and s is large, we would reject the null hypothesis of no association between

hospital type (osteopathic/allopathic), and the probability of having or not having an HPDP program.

Results

The results of HPDP analyses are reported on Table 3 and Table 4. Overall, osteopathic hospitals perform better than those in the national sample. Out of 20 HPDP services osteopathic hospitals are more likely to provide 16 services over national hospitals. In 4 cases, osteopathic hospitals have significantly greater odds than the overall control hospitals that are (1) outpatient services, (2) health information center to benefit the community, (3) primary care services in the facility and (4) the availability of

Table 3. HPDP Services of Osteopathic Hospitals and National Controls in 1999

Service	Percent of Osteopathic hospitals with service (N=50)	Percent of national sample with service*	Odds ratios	95% lower boundary	95% upper boundary
Hospital-Based Patient Services					
Community outreach service	64.0%	58.4%	1.26	0.71	2.26
Outpatient services	84.0%**	63.4%	3.04	1.42	6.49
Mammography Service	84.0%	76.6%	1.60	0.75	3.42
Patient education services	58.0%	50.1%	1.38	0.78	2.42
Health information center	60.0%**	41.9%	2.07	1.18	3.67
Nutrition program	66.0%	58.6%	1.37	0.76	2.47
Support group service	58.0%	57.8%	1.00	0.57	1.77
Social work service	84.0%	77.4%	1.54	0.72	3.28
Primary Wellness					
Teen outreach service	14.0%	18.1%	0.74	0.33	1.64
Primary care services	52.0%**	36.6%	1.88	1.08	3.29
Psychiatric education service	42.0%	31.4%	1.58	0.90	2.79
Child wellness programs	22.0%	21.9%	1.00	0.51	1.97
Elderly Services					
Meals on wheels	22.0%	23.1%	0.94	0.48	1.84
Retirement housing	10.0%	10.4%	0.96	0.38	2.42
Community focused mission	100.0%	97.2%	N/A		
Long-term plan to improve community	85.4%	84.9%	1.04	0.47	2.34
Resources for community benefits	97.9%	89.9%	5.28	0.73	38.41
Screening Services					
Home health service	62.0%	62.3%	0.99	0.56	1.75
Health fairs	74.0%	66.7%	1.42	0.75	2.68
Health screening service	82.0%**	67.2%	2.22	1.07	4.58

* does not include federal government and specialty hospitals and N ranges from 4181 to 3325.
 ** significant at the 5% level.

health screening. For instance, outpatient services are 3 times; health information center and health screening are about twice as likely to be offered by osteopathic hospitals as compared to an average hospital nationwide. Significant emphasis on the primary and outpatient care within the osteopathic facility is consistent with the philosophy of osteopathic medicine and osteopathic principles.

Table 4 reveals the results of the comparative analysis between osteopathic hospitals and their local controls. Seven of the 20 HPDP programs are more likely to be offered by osteopathic facilities whereas the other 13 are more likely to be offered by allopathic hospitals, but none of

these differences are statistically significant except for 2 programs. Therefore, we conclude that the proportional differences are due to chance except for the primary care service area, where the *odds* indicate that osteopathic facilities are about 4 times as likely to have the service as compared to their allopathic counterparts whereas retirement housing is about twice as likely to be offered by allopathic hospitals.

There is no specific pattern observed in the way HPDP services offered by osteopathic and allopathic hospitals. For instance, three out of eight hospital-based patient services are more likely to be offered by osteopathic hospitals than the allopathic

hospitals. These services are outpatient services, patient education and health information center for patients. The other hospital-based HPDP services - nutrition program, mammographies, support groups and social work service - are more likely to be offered by allopathic hospitals. In the primary wellness area, osteopathic hospitals display greater odds of offering only primary care services included in this category (see Table 4).

Although matching allopathic hospitals are not statistically compared to the national sample, greater percentage of matching control hospitals offers HPDP programs than those in the national sample. Eighteen out of

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Table 4. HPDP Services of Osteopathic and Matching Allopathic Hospitals in 1999

Service	Percent of Osteopathic hospitals with service (N=50)	Percent of allopathic hospitals with service (N=50)	Odds ratios	95% lower boundary	95% upper boundary
Hospital-Based Patient Services					
Community outreach service	64.0%	74.0%	0.67	0.28	1.58
Outpatient services	84.0%**	68.0%	4.33	1.51	12.43
Mammography Service	84.0%	88.0%	1.00	0.44	2.28
Patient education services	58.0%	50.0%	1.75	0.84	3.63
Health information center	60.0%	56.0%	1.43	0.64	3.21
Nutrition program	66.0%	72.0%	0.92	0.46	1.82
Support group service	58.0%	66.0%	0.73	0.34	1.56
Social work service	84.0%	92.0%	0.83	0.31	2.26
Primary Wellness					
Teen outreach service	14.0%	22.0%	0.56	0.22	1.39
Primary care services	52.0%	42.0%	1.70	0.88	3.27
Psychiatric education service	42.0%	44.0%	0.90	0.42	1.92
Child wellness programs	22.0%	26.0%	0.90	0.42	1.92
Elderly Services					
Meals on wheels	22.0%	26.0%	0.90	0.42	1.92
Retirement housing	10.0%**	24.0%	0.30	0.10	0.88
Hospital Commitment					
Community focused mission	100.0%	95.7%	2.00	0.27	15.00
Long-term plan to improve community	85.2%	91.58%	0.57	0.20	1.60
Resources for community benefits	97.9%	91.5%	4.00	0.64	25.17
Screening Services					
Home health service	62.0%	80.0%	0.50	0.25	1.02
Health fairs	74.0%	80.0%	0.80	0.37	1.75
Health screening service	82.0%	80.0%	1.60	0.63	4.09
** significant at the 5% level.					

20 HPDP programs are more likely to be offered by matching allopathic hospitals. The existence of osteopathic hospitals in small communities (markets) may have urged allopathic hospitals to compete with their counterparts on the basis of HPDP services that may have resulted in better odds of offering HPDP services in their local communities. Another possible reason for the better performance of osteopathic and matching controls could be related to public hospitals (non-federal) included in the national sample that are known as low providers of HPDP services. Nonetheless, the study shows that osteopathic hospitals and their matching controls serve their communities well, making HPDP programs widely available in their communities.

Discussion

The study profiled the HPDP services of osteopathic hospitals nationwide and, then compared their performance to control hospitals. The sample included 50 osteopathic hospitals and their matching controls that are members of the AHA. The analysis shows that both types of health care service outlets show equivalent likelihood to provide HPDP services to their customers. Differences are statistically insignificant except for primary care services and retirement housing. Investigation in to this area should continue to show if there is any change in this pattern over time. This is no surprise to osteopathic physicians that primary care services have much better odds of being offered at osteopathic facilities than allopathic facilities since the 60 percent of graduates of osteopathic medical schools select generalist fields.⁵

Dr. Still who is the founder of osteopathic medicine and profession studied the attributes of good health by evaluating each person's health risks such as smoking, high blood pressure, excessive cholesterol levels,

stress and other life-style factors, and emphasized wellness in his writings.²⁵ We found that holistic and patient-centered approach of osteopathic medicine reflect on the number and intensity of HPDP services offered by osteopathic hospitals that are accredited by the American Osteopathic Association. It is also noteworthy to mention that the majority of osteopathic hospitals are located in rural areas. The lack of funding along with financial stress in these communities may have had a negative impact on the ability of osteopathic hospitals to offer HPDP services; however, it was found in this study that this was not the case.

We reemphasize the importance of financially supporting all hospitals with a significant focus on HPDP programs, but particularly mid-to small-sized hospitals that may lack resources including osteopathic hospitals. The majority of osteopathic physicians practice at osteopathic hospitals and we encourage the American Osteopathic Association (AOA) and local AOA chapters to financially support osteopathic hospitals that made significant investment into HPDP programs. A number of osteopathic hospitals can be selected based on predetermined criteria for this financial support. The availability of full set of HPDP services at osteopathic hospitals could be added in the accreditation standards for additional financial support if the AOA chooses to support osteopathic hospitals pioneering in HPDP.

Although this is not directly related to osteopathic medicine and hospitals, the other stakeholders involved in promoting HPDP services - federal, state and local governments - should allocate additional funds for Medicaid and Medicare beneficiaries who are receiving medical care at facilities where HPDP services have a higher priority in the treatment of patients (and keeping them healthy). Providing financial support to high

providers of HPDP services such as osteopathic hospitals would help increase the overall commitment to cost effective health promotion and disease prevention programs. Additional financial support for extra effort among hospitals could be incorporated into Medicare, and perhaps Medicaid payment systems for additional incentives. Osteopathic medicine and osteopathic hospitals could benefit from such a change in the hospital reimbursement and continue their tradition in the United States.

Statistics on several other controls - occupancy rate, case mix index, and cost indicators are not included in the initial matching process, which may provide additional information about osteopathic hospitals and their counterparts. If occupancy rates were significantly higher (lower) between osteopathic hospitals and their matching controls, this would suggest differences in the initial demand conditions and evidently differences in the financial well being of these hospitals. Furthermore osteopathic hospitals may have different reimbursement and cost structures, and often deliver more care to the poor and indigent. Future research should target the above areas for further understanding of osteopathic hospitals, their management styles and cost structures.

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CME QUIZ

The purpose of the quiz found on the next page is to provide a convenient means of self-assessment for your reading of the scientific content in the article, *Health Promotion and Disease Prevention (HPDP) Programs of Osteopathic Hospitals: A Comparative Analysis Abstract*, by Tony Sinay and Simon Geletta.

For each of the questions, place a check mark in the space provided next to your answer so that you can easily verify your answers against the correct answers that will be published in the September 2004 issue of the *AAOJ*.

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1. The changing face of medical economics in recent years has contributed to:

- ___A. Expansion and growth in numbers of osteopathic hospitals
- ___B. Restriction of expansion and growth because of difficulty in achieving/maintaining accreditation
- ___C. Increasing examples of partnering activities in the formation of community consortia for health care
- ___D. None of the above

2. Health promotion and disease prevention (HPDP) programs have gained popularity in recent years because:

- ___A. HMOs and PPOs emphasize HPDP programs
- ___B. Hospitals, managed care organizations and community health centers have increasingly offered HPDP programs
- ___C. Governmental tax policy favors the offering of HPDP programs
- ___D. All of the above

3. Which of the following is not a HPDP program:

- ___A. Community Outreach
- ___B. Long-Term Care
- ___C. Health Screening
- ___D. Health Education

4. Which of the following does not support osteopathic philosophy in patient management:

- ___A. Emphasis on wellness, with a focus on preventive care
- ___B. Seeking to enable the patient to regain command of the clinical situation
- ___C. Omitting the utilization of OMT in facilitating patient wellness
- ___D. When prudent, seeking to modify/reduce excessive use of pharmacologic agents

5. The results of this study indicate that, nationwide, osteopathic and allopathic hospital provision of HPDP programs is:

- ___A. Greater in osteopathic hospitals
- ___B. Greater in allopathic hospitals
- ___C. Approximately equal
- ___D. Not able to be determined from the information provided

Answer sheet to June 2004 AAOJ CME quiz.

Wave Phenomena in Movements of Intracranial Liquid Media and Primary Respiratory Mechanism

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Introduction

Movements of liquid media – arterial, venous blood and cerebrospinal fluid, changes of their volumes and pressures, balance between them and their periodicity, were established and widely published starting at the second part of 19th Century (Magendie, 1843, Quincke, 1872; Hill, 1896; Sepp, 1928 et al). It is necessary to emphasize, that Dr. A. T. Still, founder of osteopathic medicine, was one of the first, who noticed the importance of these movements for the practice and who have made the step forward to understanding the principle of function relations between cerebrovascular and CSF systems. However, the accentuation on meaning of periodicity of fluctuation of intracranial media has been made some decades later, only at 30 Years of 20th Century, by Dr. W. Sutherland.

It is significant, why Dr. W. Sutherland, but nobody else besides him, could do it, although this information was available for 40-50 years? It may be supposed that it should follow from some personal features of Dr. Sutherland. Firstly, he was a person without primary medical education, with wide circle of interests, including medicine. He was free from medical routine, because specialists, involved in practice up to the present

time classified slow fluctuations as a sort of interferences, which disturbs some manipulation. Of course, such position was not good stimulus for the study of this phenomena. Therefore, he was expressed by movements of open brain, which he observed during neurosurgery. Secondly, he had an analytical type of mind and began to find a way for the study these movements. Third, he possessed extraordinary finger sensitivity, and he used this feature for investigations and could realize it by observation of these movements through the skull. The result of this new conception of before unknown type of respiration, which he named as “Primary Respiratory Mechanism (PRM)” was declared and published at 1939. Follow to Dr. Sutherland’s statements; PRM includes a number of structural elements - brain, CSF, blood vessels, brain membranes. The special anatomical organization of the skull is responsible for the articular mobility of cranial bones and reciprocal tensions of membranes. Also, inside cranium there is the source of the special physical forces, which initiate cranial rhythmic impulse and, as a consequence, skull bones motions.

More than 60 years passed after formulation by Dr. W. Sutherland’s PRM conception, but during the period of time only one significant im-

proving might be concerned - studies of fundamental basis of PRM and skull bone motions (Magoun, 1976, Frymann, 1971). However, generally slow wave phenomena of intracranial origin was out of field of interests of investigators in cerebrovascular and circulatory physiology during that period of time, and only recently became attractable again. However, osteopathic medicine saved its interest to these phenomena continually. As a result of all of this, the next PRM conception is accepted now by specialists in osteopathic medicine, which represents the comparatively small branch on “the tree of medical specializations”. Therefore, medical specialists generally are not familiar with PRM conception, and up to the present time the term is not included into main medical dictionaries or textbooks.

However, recently a number of analytical summarizations, based on experimental data concerning functioning of cerebrovascular control system (Moskalenko et al, 1989) and functioning of CSF circulatory system (Rosenberg, 1989), have been published, which may be base for understanding of functional role and fundamental background of PRM. Revision of PRM conception from these positions could now attract at-

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tention to this interesting statement, and especially, because during the last decade of 20th Century some publications were appeared, which supported the most important proposition of Dr. Sutherland's PRM conception by the new facts about the presence of periodical skull bone motions (Zanakis, 1996; Moskalenko et al, 1999; Moskalenko et al, 2000) and their possible physiological background (Moskalenko et al, 2001).

The development of main statements of osteopathy in the cranial field could be to summarize as a scheme (Figure 1), which demonstrates that at the present time it is real to return to analysis of PRM conception from point of view of modern physiology, with purpose to make clear its physiological organization, and functional role, and to find out its place among other physiological

mechanisms, responsible for brain homeostasis. In other words, purpose of the present paper, as a consequence of scheme (Figure 1), is to show, how PRM conception looks at the beginning of 21st Century, taking into account statements of modern physiology.

This includes:

- Explanation of the mechanism of initiation of periodical fluctuations of physical and chemical indices of intracranial media and evaluation of real physical forces, which could be responsible for skull bone motion,
- Creation of methods and instrumentation for monitoring of PRM, and establishing of major indices, reflecting PRM activity and their variations under different conditions,
- Comparing changes of PRM indices with slow periodical processes in cardiovascular and respiratory systems and exposing of physiological role of PRM.

tems and exposing of physiological role of PRM.

Key words:

Slow fluctuations of liquid media inside cranium, physiological background of wave phenomena and skull bone motions, indices of activity of PRM, quantitative monitoring.

Fundamental Background of PRM: Materials for Consideration

PRM, if it belongs to category of physiological mechanisms, should be characterized by their own functional and structural organization, source of energy for functioning and autonomous functional goal. Therefore, for recognition of PRM as "physiologi-

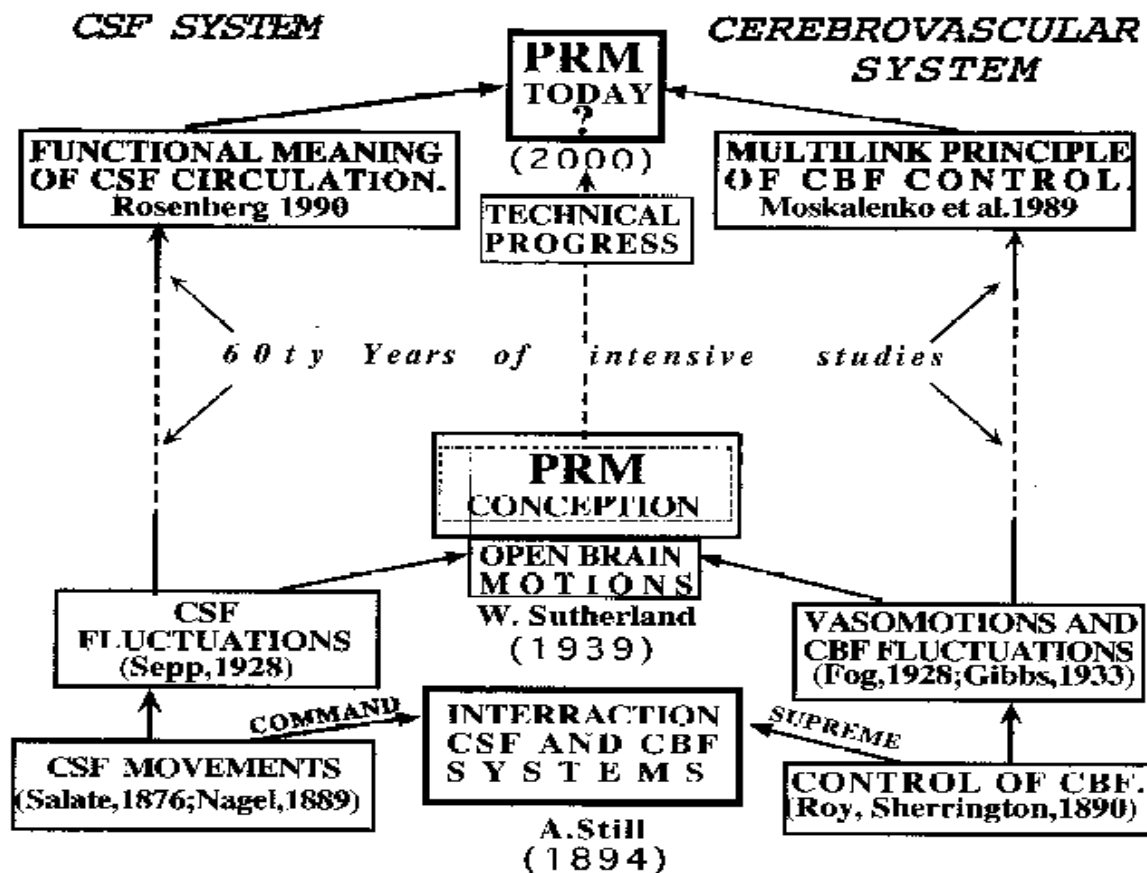


Figure 1. Schematic representation of the developing of knowledge of liquid dynamics in the skull and PRM during XX Century.

cal mechanism” it is necessary to analyze how all above-mentioned features, are specific for PRM.

Firstly, it is important to classify principles of it’s functioning and evaluate structural elements, which are involved for this purpose. As it follows from PRM conception, created by W. Sutherland, it should be composed by complex of physiological processes, which are localized inside cranium and expressed as periodical movements of structural intracranial, which evoke similar skull bone motions. The main of them are the brain itself, cerebrovascular and CSF systems, membranes, including dura mater. Between the media, filled the cranial cavity, is only one, which could move actively, having contractile elements. Between all known structural units, composed cranial cavity only one - blood vessels which include contractive elements - smooth muscles, which could change lumen of vessels against arterial pressure.

The other media inside cranium could move or change their volumes only passively – by water accumulation and releasing. First of all it is important that basically the hydration of brain tissue – is the eve of brain edema developing. However, some of brain cells, especial neuroglia, could change freely their volume due to potassium ions changes (Roitback, 1993). These volume changes are very slow processes, which take for their developing at least not shorter, than a few minutes. One more possibility as W. Sutherland suggested, is the changes of tension of the brain membranes. Nevertheless, the possibility of changes of brain membrane tension is questionable up to the present time, because this process has not been demonstrated experimentally and there are no reasonable indirect or theoretical suggestions, which support the presence of these phenomena.

Therefore, it is reasonable to conclude, that the most acceptable factor as a source of fluctuations inside cra-

nium, which could be responsible for skull bone motions, are constriction and relaxation of the muscles of wall of cerebral arteries, which initiate periodical fluctuations of brain blood volume in different regions of cerebrovascular tree. These blood volume fluctuations inside of closed cranium with strictly limited internal volume are closely related with CSF volume. This does mean that the most important relations, which may be significant for fundamental basis of PRM are relationships between volumes and pressures of liquid media - blood and CSF - inside the joint craniospinal cavity.

Relationships between cerebrovascular and CSF circulatory systems inside cranial cavity.

Numerous experimental and clinical observations demonstrate, that relations between main parameters, specific for cerebrovascular and CSF systems, are rather complicated (Moskalenko and Khilko, 1984; Moskalenko et al, 2001; Moskalenko et al, 2003). Background of this is based on the fact, that cerebral vascular (CV) and cerebrospinal fluid (CSF) circulations represent the different circulatory systems, which are characterized by some common features - they both represent liquid media and both are responsible for brain circulatory homeostasis, which are the base for their close relationships. They are also characterized by significantly different features. The most important difference between CV and CSF circulatory systems is their structure of channels for circulation. CV system is characterized by channels with definite structure - tubes, with the blood moving inside to strictly particular direction, depending on blood pressure gradient determined by heart activity. CSF system has no special individual structures for circulation and moves freely through system of channels inside brain, though extra-cellular spaces of brain tissue and gaps on brain

surface in subarachnoidal space. The definite direction of CSF movements inside brain ventricles and connecting channels, initiated by CSF secretory pressure, is taken place. On the surface of the brain and inside brain tissue direct and reverse movements, initiated, mainly by local and regional changes of brain blood volume, could be observed... It is important that chemical compositions of blood and CSF are significantly different: CSF is characterized by very low level of concentration of chemical products, lower than in both blood and nervous cells. This means, that CSF could absorb and transfer the gases and chemical compounds, supporting both brain metabolism, and elimination of products of brain metabolism or, in other words, wastes.

Differences of CV and CSF systems, on one hand and their close relations, on other hand, permit to declare, that as functionally these two systems are the supplements each other, and this is the base for supporting of brain tissue homeostasis under different living situations. This suggestion is followed by number of statements:

- Due to interaction of CV and CSF system optimal consume of heart stroke volume energy takes place. Indeed, during systolic phase of heart beat, volume of large brain arteries, which is localized mainly in basement of skull, increase. As a result, some volume of the CSF replaces to the upper part of skull, compresses brain veins, and promotes blood outflow from the skull. As it follows from mathematical simulation (Moskalenko et al, 1980), this process permits to save about 30% of stroke energy.

- By means of relations of CV-CSF systems, CSF is continuously moving inside the cranium and between cranial and spinal cavities and through brain tissue. Because concentration of chemical compounds in CSF is poor, CSF is the best media for convec-

tional transport of oxygen and metabolites from capillaries to brain cells and carbon dioxide and wastes from brain cells to capillaries. Fluctuating movement of CSF are optimal for realization of such mechanism, because such type of CSF movements is the best for process of washing out of brain tissue homeostasis. Therefore, every one of these systems has its own functional goal: CV system transport gases and metabolites from external environment up to wall of microvessels. Energy for this functional goal supplied by heart activity. Transport of these products between vascular wall of microvessels and brain cells is a separate functional goal, which realized by CSF system. Energy of the latter functional goal is supplied by fluctuations of brain blood vessels. Thus, CV and CSF circulatory systems represent as separate physiological units, functional roles of which are strictly different. Indirect data have shown, that transport of gases and other elements in extra-cellular spaces is twice higher, than process of diffusion (Tomita et al 1993). Physiological mechanism of fluctuations of tone of cerebral vessels is responsible also for fluctuations of intracranial pressure and CSF movements. Nature of this, as well as of any fluctuating process in living system, is based on interaction of two or more separate influences on the system, which are characterized by individual mobility or different time constants. Therefore, practically, every physiological process has some fluctuating component. Good example for this is central arterial pressure, which is carefully controlled by a number of control circuits with different time constants. Slow fluctuations of central arterial pressure have been described in publications more than a Century before, but theoretical explanation if their background, based on serious mathematical analysis, have been published comparatively recently (Guyton, 1976; Miyakawa, 1984; Koepchen 1984).

Similar situation should be special for the cerebral circulatory system,

which is also controlled by a number of control links (Moskalenko et al, 1989; Moskalenko et al. 2001, and irregular periodical fluctuations of tone of brain blood vessels were also known a long time ago. Control links, responsible for brain circulatory homeostasis, is directed to maintain simultaneously two main parameters metabolic supply of brain tissue and supporting its water balance. Time constant for control links responsible for metabolic brain tissue homeostasis is 1-3s, and for control links, responsible for water balance of brain tissue 5-8s (Moskalenko et al 1996; Moskalenko et al.1989). Fluctuations of vascular tone of cerebral vessels, accompanied by similar blood volume fluctuations, were found to be different in a number of human brain regions with distance a few mm (Moskalenko et al, 1980), and even for intracellular elements (Vern, 1997).

These local fluctuations are integrated for total intracranial blood volume and intracranial pressure fluctuations. Mechanism of this integration is based on the fact, that brain itself is soft (like jelly) tissue, which could change, in some limits, its form without damage of brain cellular elements. This "soft" brain tissue deformation permits to transmit local volume fluctuations to other regions of cranium and, therefore, integrate volume and pressure changes to some "averaged" for whole cranial cavity fluctuations. The presence inside brain and at subarachnoid spaces movable extra-cellular liquid and CSF promotes this process of integration of pressure and volume fluctuations. Because of soft brain tissue deformation and replacements of liquid media is characterized by some inertia, frequency of global cranial volume and pressure fluctuations should be slow if to compare with local processes. This fact is supported by simultaneous recordings of intracranial pressure, brain blood volume, and oxygen availability under experimental and clinical conditions. (Moskalenko et al, 1964; Moskalenko and Khilko, 1984).

These data demonstrate, that frequencies of slow fluctuations on global level are 5-15 c/min. Amplitude of slow fluctuations of intracranial origin, expressed by comparative units, are for brain blood volume fluctuations 0.4 - 0.6 of the amplitude of pulsatile fluctuations initiated by heart activity (Moskalenko et al, 2001), and for intracranial pressure - 0.1-0.3 of its averaged level (Moskalenko, Khilko 1984).

It is important to emphasize, that these frequencies are specific namely for fluctuations of intracranial origin. Indeed, the special observations with simultaneous recordings of fluctuations of intracranial origin, similar fluctuations of systemic arterial pressure and chest respiratory movements (Moskalenko et al, 2001, Moskalenko et al 2003) have shown, that for systemic arterial pressure they are more slow (2-4 c/min) than for chest movements (15-25 c/min). The responses of all these fluctuations to inhalatory functional test (hypercapnic - 7.5% CO₂ and hypoxic - 5% O₂ in air) demonstrate, that character of changes of main frequency of these fluctuations is different. The latter permits to conclude, that physiological backgrounds for all mentioned kinds of fluctuations are different.

Connection of slow periodical fluctuations of global pressures and volumes inside cranial cavity with Cranial Rhythmic Impulse and Primary Respiratory Mechanism.

The data, collected up to the present time, demonstrate, that intracranial pressure fluctuations are the most acceptable reason for articular skull bone motions. However, it is necessary to establish that these fluctuations are strong enough to initiate palpable skull bone motions. In other words, to ply the role in Cranial Rhythmic Impulse and represent the activity of Primary Respiratory Mechanism, accepted by palpation. First of all, it is necessary to

mention, that skull bones are strong and for their mechanical deformation it should be applied sufficient forces, much stronger, than might arise as a result of fluctuations of intracranial pressure. Therefore, it is reasonable to analyze cases, which are not concerned with real skull bone deformation, but could change configuration or pattern of skull. Because the skull is composed by a number of bones, in fact the acceptable case may be of articular or comparative mobility of particular skull bones take place. Calculations, using a simple geometrical model, show that change of distance between opposite points of temporal bones by 1mm corresponds to change of intracranial volume by 18-20 ml, and it makes change of comparative position of bones at their joint connection (sagittal suture) about 1 geometric degree. Mathematical simulation of volume-pressure relations inside closed cranium demon-

strates, that total value of slow fluctuations of human brain blood volume should be about 12-15 ml. (Moskalenko et al, 1980). Examination of this suggestion has been realized by the special observations during clinical angiographic procedure, when 20 ml of x-ray contrast solution were injected in internal carotid artery at 1 sec. For analyzing a serial (4 pictures before, 8 during X-Ray contrast injection and 4 after) have been taken from results of investigations of 6 patients, who demonstrate no brain vascular pathology. The results received have shown that detectable skull bone motions start, practically simultaneously with injection of x-ray contract solution, reaches their maximal value - about 0.8-1.0 mm - in 0.5 s after injection, and in 1.5 s during the next period returned to previous level (Moskalenko et al, 1999). Taking into account the above mentioned real values of slow volume fluctua-

tions, the changes of comparative position of temporal bones should be limited by 0.3-0.6 mm, equal to 10-15 ml of intracranial volume fluctuations. These data correspond with a number of investigations, which used different methodology and demonstrated, that value of slow fluctuations of skull bone are in limits 0.2-0.6 mm for temporal bones (Frymann, 1971; Adams, 1989; Moskalenko et al, 1996).

The data obtained demonstrate, that periodical slow fluctuations of intracranial pressure, accompanied by similar fluctuations of brain blood volume, could be a cause for palpatory detected skull bones fluctuations, named as PRM. Schematically, the process of realization of skull bones motion is presented in Figure 2, where the principle of mechanism of initiation of slow fluctuations of tone of cerebral vessels is shown as inter-

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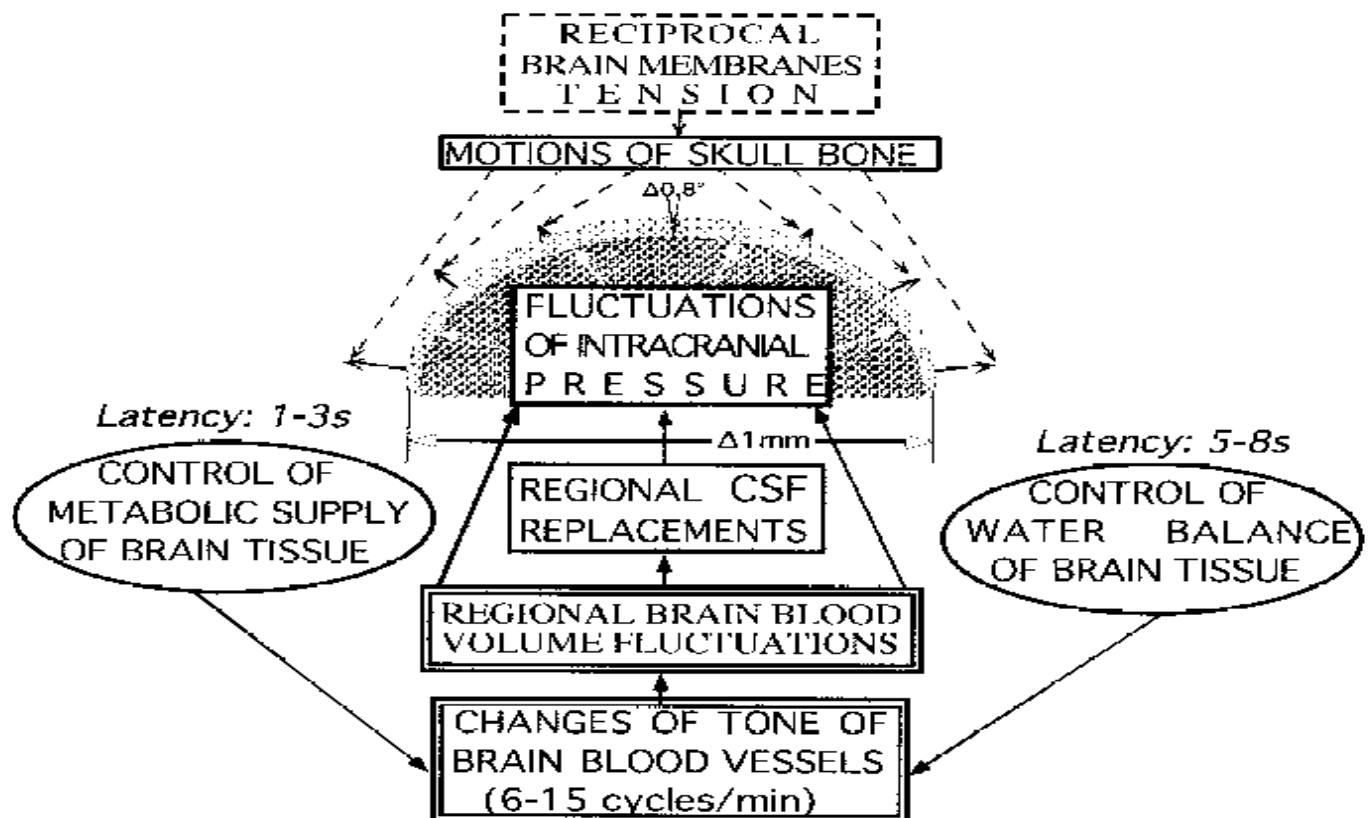


Figure 2. Representation of volumes and pressures relations of liquid media inside skull, which should be responsible for skull bone motion.

action of two kinds of control links, responsible for brain blood supply, principle of integration of local and regional changes up to the global cranial fluctuations of brain blood volume and intracranial pressure.

However, the analysis of fundamental background of PRM seems to be impossible to accept as sufficient without analyzing of the role at PRM of reciprocal brain membrane tension. Therefore, the scheme, Figure 2, includes as a special separate element, the reciprocal brain membrane tension - conception, which have been used by Dr. W. Sutherland for explanation of the nature of PRM. At the present time, when real source of physical forces, responsible for brain bone motion becomes clear, it is important to find a real position of brain membrane reciprocal tension - either is it plays some particular role its the functioning of PRM as its special element, or Dr. W. Sutherland's suggestion lost its meaning now. From point of view of modern physiology it is necessary definitely declare, that reciprocal brain membrane tension have taken important position in functioning of PRM, but not as source of physical forces for skull bone motion, because these structures include no contractive elements. However, peculiarities of connections of brain membrane with skull bones permit to suggest, that such mechanical construction plays the role as a passive modulator, which determines directions of skull movements and as a result - the reciprocal character of skull bone movements. This important role of brain membranes was firstly declared by Dr. Sutherland more than 60 Years ago, and now this proposition should be corrected by addition of source of physical forces for skull bone motion, which, how it was demonstrated above, is determined by periodical fluctuation of tone of brain blood vessels.

Thus, at the present time it is possible to conclude that the most questionable problems, connected with

PRM is the source of physical forces, which may lay at base of wave phenomena of movements of liquid media inside cranium and are responsible for skull bone movements. So, the mechanism of initiating of slow fluctuations and the role of reciprocal brain membrane tension - now are positively solved on the base of modern physiology. These data give a reason for measurement of indices of Rhythmic Cranial Impulse and activity of the Primary Respiratory Mechanism, which will be described at the next section of the paper.

Principles of monitoring of indices, reflecting activity of primary respiratory mechanism and their informational meaning

Materials, concerning the physiological background of PRM, show that its activity could be quantitatively described by measurements of amplitude and frequency ranges of fluctuations, representing the slow fluctuations of intracranial origin. However, it is not a simple task for three reasons.

- Firstly, fluctuations of intracranial origin, representing PRM, are characterized by complex nature, because they represent the result of interaction of two different circulatory systems. Therefore for their comparative full description it is necessary to record simultaneously two parameters, one of which would reflect blood volume, and the second - to give information, concerning CSF replacements inside cranial cavity.

- Secondly, for the study of indices of PRM, the dynamic methods should be used, which will permit to describe slow periodical intracranial processes without distorts This does means, that time constant (or inertion) of methods used should be about 1-2s.

- Thirdly, methods, used for the

study of wave intracranial phenomena, should be noninvasive and simply applied to wide range of patients without their disturbance or inconvenience.

The consideration of modern methods for the study of cerebrovascular and CSF circulation problems shows that at the present time the optimal methodology, from point of view of the mentioned positions, should be based on simultaneous application of bioimpedance and transcranial dopplerography, with using of modern computer technology for analyzing of data received (Moskalenko, 2000). The additional processes, such as ECG and chest movement, should be also recorded.

The above mentioned main methods have both significant positive features and some disadvantages, which should be carefully analyzed and taken into account during investigations of indices, reflecting activity of PRM.

Application of Bio-Impedance method for the study of PRM.

Principle of bioimpedance (B-Imp) method is based on measurement of high frequency (60-80 Kc/s) electrical impedance between plate (2-3 cm²) electrodes, disposed on the head skin. Biophysical analysis of this method (Moskalenko, Weinstein 1983, Moskalenko, Khilko, 1984; Jenkner, 1987, Bodo et. al., 2001) show, that if distance between electrodes is long enough, changes of electrical resistance will be determined by fluctuations of volume contents of liquid media in region of cranial cavity where electrical current between electrodes is distributed. Principle of dependence of electrical resistance between electrodes with changes of volume of liquid media, as well as change of volume distribution between blood and CSF inside investigated brain region is based on the fact, that specific electrical resistances of CSF, blood and brain tissue are proportional to ratio 1:2:10. This means, that when total

volume of liquid media or corporative increase of CSF volume due to diminishing blood volume in investigated brain region increase, electrical resistance between electrodes will decrease, and vice versa. Besides CSF, blood, brain and a number of other components - skin, soft tissues, skull bones and others, which are characterized by some electrical resistance. They also can conduct some amount of electrical current. Therefore, with B-Imp, method it is possible to obtain only some changes of volume of liquid media inside investigated brain region, measured by some comparative units. There are routine indices, calculating on the base of B-Imp pulse fluctuations, which help indirectly to monitor blood volume of resistive brain vessels and change their tone. For evaluation of particular changes - if total liquid volume or only redistribution between blood and CSF is happened - the additional information is needed, which could be received by some other method. Nevertheless, B-Imp method has incomparably important advantages - it is noninvasive, dynamic enough to record pulse fluctuations inside cranium, comparatively simple in use and does not disturb sufficiently the patient. Therefore, B-Imp method could be applied for monitor of amplitude parameters of PRM, but informational meaning of received data is limited due to the fact, that B-Imp method permits to receive data, concerning changes of regional brain blood and CSF volume in complex.

Application of Ultrasonic Transcranial Dopplerography for the study of PRM.

TCD method is based on measurements of shift of ultrasonic beam frequency, focused inside blood vessel. Due to Doppler effect, frequency of reflected signal will depend on linear velocity of blood flow in vessel, where

ultrasonic beam is focused. Therefore, TCD method, which now widely used in neurology and neurosurgery, permits to measure in absolute units steady level and pulse fluctuations of linear blood flow inside major brain arteries. By TCD method it is possible to calculate coefficient, proportional to peripheral resistance of vascular tree of investigated arteries.

Significance of simultaneous recordings of TCD and B-Imp for the study of PRM.

Success of combination of TCD and B-Imp methods is determined by two points: Firstly, It is necessary to recognize that both TCD and B-Imp methods are regional. So it is important perfectly select investigated region of cranium, where boards of operation of both methods are the same. For this it is important to select right positions of TCD probe and electrodes for B-Imp. For general purpose, it is optimal to measure linear blood velocity in the base of Middle Cerebral Artery (MCA) - segment M1, with using fronto-mastoid position of B-Imp electrodes, - this permits to monitor impedance variations in brain region, supplied by MCA vascular tree. It is possible also to measure blood flow in Vertebral Artery, in coupling with occipital-mastoid electrode position. Secondly, comparative analyzing of TCD and B-Imp data requires a select optimal time interval, which is determined by methods of analyzing of received data. If pattern or phase-type of analyzing is used, it is reasonable to select a time interval, which corresponds to one cardiac cycle. During such short period of time, the role of active processes in the cerebrovascular system is minimal. Therefore, during one cardiac cycle cerebrovascular and CSF circulatory systems are represented as poorly passive elastic units.

Under such conditions the increase of linear velocity in arteries on base-

ment of skull will correspond to increase of its volume and as a consequence - local increase of pressure of surrounding CSF, which initiates replacement of CSF to regions in cranial cavity, where CSF pressure is lower. In other words, pulsations of TCD indirectly reflect pulsatile changes of intracranial pressure in basement of skull, and their comparative analysis with simultaneously recorded pulsations of B-Imp makes the possibility to evaluate the index, which reflects replacements of CSF during cardiac circle, and this obviously corresponds to mobility of CSF. As it follows from received data, such index may be time interval between peaks of TCD and B-Imp. Pulse waves (Moskalenko, 2000, Moskalenko et al, 2003). This suggestion is confirmed by direct observation for a group of healthy persons, for athletes and for patients with intracranial hypertension (Moskalenko et al, 2003).

Similar changes are possible to observe during comparative short periods of time at the same subject, using some functional tests, which could change brain vascular volume. One of such functional tests may be short duration (20-40s) voluntary respiratory arrest, when increased arterial CO₂ dilates the brain blood vessels (Lassen 1978).

During respiratory arrest the mobility of CSF sufficiently decreases, because the possibilities for its replacement diminishes due to increase of total brain blood volume. Consequence is the diminishing of time interval between maximal values of B-Imp and TCD pulse and difference of their pattern, represented by phase diagram, although amplitude of B-Imp pulsation increase (Figure 3). The last is determined by arterial relaxation and, possibly, by increase of redistribution between arterial and venous blood inside cranium during pulse cycle. This example demonstrates difference be-

tween mobility of CSF and amplitude of B-Imp pulse and confirms the suggestion, that B-Imp method gives only complex data, but informational meaning of B-Imp method may be increased by its coupling with TCD.

Exposition of indices, reflecting the activity of PRM.

As well it is follow by PRM conception, its activity is characterized by some amplitude and frequency parameters, which initiates Cranial Rhythmic Impulse. For evaluation of amplitude of CRI it is the best to record slow fluctuations of intracranial pressure. However, this parameter can be monitored, with invasive methods only - implantation into human skull of pressure transducer, or by punction of CSF cisterns. Unfortunately, both of them are unacceptable for the study of PRM and its monitoring in the process of osteopathic treatment. Therefore, for this purpose it is reasonable to use indirect methods.

The complexity of the origin of intracranial slow fluctuations, which are composed by interaction of two different circulatory systems, forces to apply simultaneously two different methods: in particular, situation of the study of CV and CSF systems – combination of TCD and B-Imp methods. Taking into account -peculiarities of functioning of these system and aim of the present paper, for analyzing of received data it is necessary to apply spectral analyzing of 40 – 60s fragments of recordings (without interferences) for determination of main parameters of PRM, and pulse-pattern and pulse phase types of data analyzing for evaluations of indices of CSF mobility.

The use of spectral analyzing of B-Imp recordings permits to receive group of spectral components, which are special for intracranial processes. For evaluation of spectral components of slow fluctuations of intracranial origin it is reasonable to use

comparative values, and the value of the heart pulsations were taken as a value unit. It is convenient, because all interferences, which are specific for B-Imp method also influence on amplitude of heart pulsation. So, comparisons of any other fluctuation with the pulsatile spectral components permits to exclude interferences, which are follow from biophysical basis of B-Imp method. Investigations of healthy group of subjects (n=18) using standard instrumentation for bio-impedance recording (RG4-02, manufactured in Russia) have shown, that maximal value of spectral components, special for slow fluctuations of intracranial origin under rest conditions, which should be proportional to amplitude of PRM is 0.47 ± 0.14 of pulse amplitude. Smaller values indicate or some decrease of CSF mobility. Increased values indicate on the problems with CSF circulation between cranial and spinal spaces. More de-

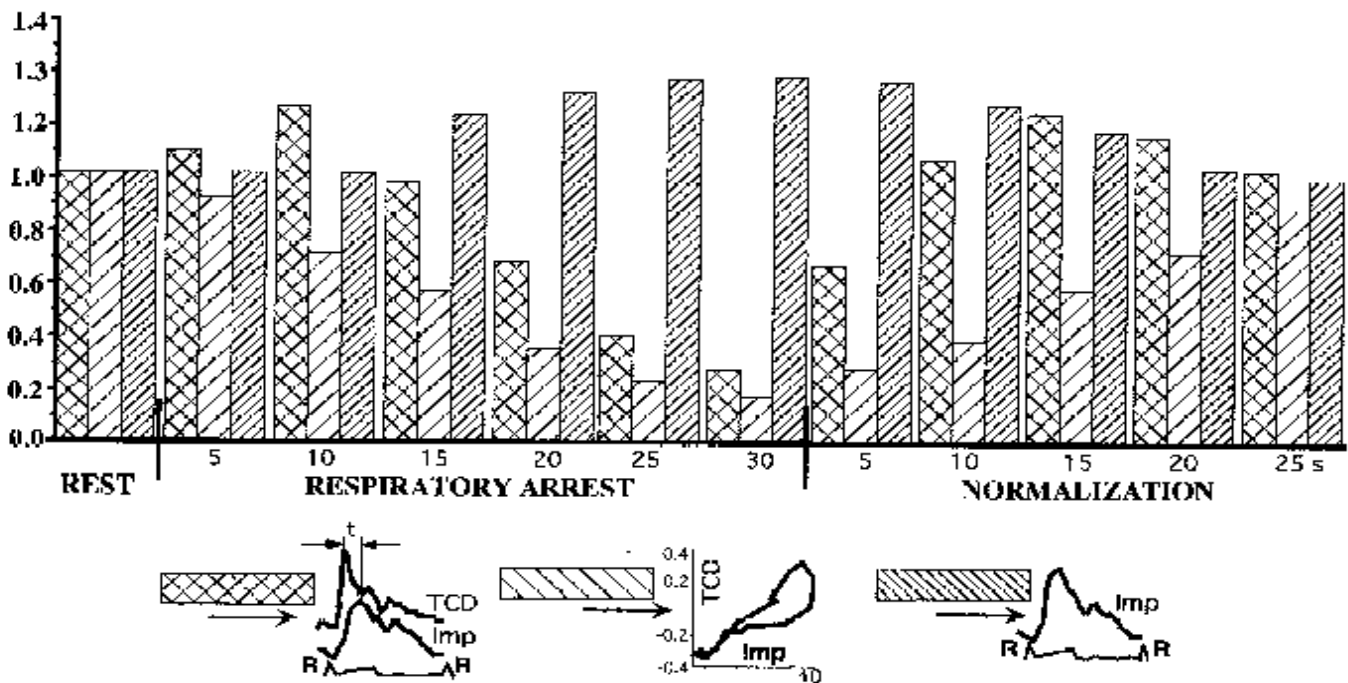


Figure 3. Changes of results of pattern and phase analysing of TCD and B-Imp pulsation-evaluation time difference between peaks of pulse waves of TCD and B-Imp., area of two dementional phase diagram and maximal amplitude of B-Imp. Pulse – during 30s voluntary respiratory arrest.

tailed information could be obtained by using of CSF dynamic functional tests (Moskalenko et al, 2003).

The changes of amplitude of slow fluctuations as a result of osteopathic treatment may have the most valuable informational meaning and could be used for optimization of osteopathic treatment in the cranial field. However, amplitude of slow fluctuations is determined by two factors - changes of tone of brain blood vessels or blood volume and the mobility of CSF. Therefore, if together with increase of amplitude of slow fluctuation, recorded by B-Imp, the increase of time interval between maximal values of pulse waves of TCD and B-Imp also observed, that increase of amplitude of slow fluctuation of B-Imp is determined by increase of CSF mobility. Additional data follow from phase type of analyzing: area of two-dimensional figure should be also increased. If increase of amplitude slow fluctuations of B-Imp. Is not accompanied by increase of time interval between TCD and B-Imp pulse peaks, it testify that this increase is determined mainly by decrease of tone of brain blood vessels. These examples reflect only extreme situations, because purpose of this suggestion is to demonstrate the necessity of recording of two parameters simultaneously for comparative full evaluation of real nature of change of values of slow fluctuations, recorded by B-Imp method.

Under real conditions there are a number of intermediate cases. It is very important to clear up such cases, but it should take additional information, and the perspective way to receive them is based on application of CSF and blood circulatory functional tests. This takes the special careful analyzing and detailed describing. This is the aim of separate paper.

Frequency of PRM

Optimal way for evaluation of frequency parameters of PRM is based

on spectral type of analyzing, which gives the possibility to separate single frequency components, which are composed slow fluctuations and determined CRI. Spectral analysis of slow fluctuations of intracranial origin, recorded by B-Imp, demonstrates that for healthy persons maximal frequency of slow fluctuations is 8 ± 1 cycle/min.

Frequency of fluctuations is determined, as it was described above, by interaction of two groups of control links responsible for control of brain blood supply, and they are characterized by different time responses: - for control of metabolic supply the latency is shorter, than for links, responsible for maintenance of water balance of brain. This determines informational meaning of the parameter, which reflects the peculiarities of interaction of brain circulatory control links. If the main frequency of slow fluctuation is higher, than 8 cycles/min, this means, that metabolic control links have taken dominate in this particular situations. This indicates the presence of some problems with metabolic supply of brain tissue or may be some compensated brain ischemia. Decrease of main frequency of slow fluctuations permits to suspect some increase of the level of brain hydration or some increased intracranial pressure. Changes of main frequency of slow fluctuations of intracranial origin should have the similar informational meaning, if they observed as result of osteopathic treatment. It is necessary to emphasize, that this important for practice of osteopathy statement should be carefully examined by comparison of shift of main frequency of PRM with measurements of parameters, which indicate change of water maintenance in brain tissue. Data at this direction, which might be accepted as preliminary, have been received by comparison of absolute values of reactive component of brain tissue electrical impedance measured on low and high

frequency of electrical current, and changes of waveforms of B-Imp pulsations (Weinstein, Vorobiev 1989).

Thus, evaluation of frequency shift of PRM could give important information, concerning peculiarities of activity of control mechanism, responsible for brain blood supply, and this might give a reason to suppose some brain blood or CSF changes, which could be developed in some pathological situations.

In practice, it is important to select carefully the changes of fluctuations namely of intracranial and extra-cranial origin. For this aim it is necessary to record simultaneously with brain B-Imp also chest respiratory movements and fluctuations of extra-cranial origin by TCD method. Such approach could permit to separate slow fluctuations of intracranial origin due to respiratory chest movements, because in some cases frequency of respiration is high and close to PRM. It may be useful also in the cases, when there are the sufficient increase of fluctuations of central arterial pressure, these frequencies may also increase and become close to fluctuations of intracranial origin.

Comparison of changes of PRM indices with changes in cardiovascular and respiratory systems as a result of osteopathic treatment in cranial field

Final goal of any fundamental investigation is generally focused on decision of some practical problems. Following such position, practical meaning of PRM is based on its fundamental approaches and could be used as a way for objective suggestion concerning results of osteopathic treatment in some particular patient. At this direction it will be useful to monitor its frequency shift and change of amplitude of PRM parameters as a result of osteopathic treat-

ment. For this purpose it is important to compare parameters of PRM, taken just before and after the treatment. The meaning of such investigation follows from Figure 4 and Figure 5, where single and statistical data of investigations are shown in patients with consequences of brain injury, treated by Venus sinus drainage technique.

As it follows from Figure 4, results of complex analyzing of TCD and B-Imp show that after application of VS technique, sufficiently increase time interval "t" between maximal values of B-Imp and TCD pulsations. Increase of "t" corresponds to about twice increasing of area of phase diagram (two-dimensional data representation). These data, together with increase of amplitude of slow fluctuations of B-Imp, definitely demonstrate the sufficient; increase of CSF mobility. Slope of pulse curve, expressed in geometric degrees shows that slope of anacrota of pulsations slightly increases, which indicates to some decrease of tone of brain blood vessels. These data correspond to in-

crease of amplitude of pulsation of B-Imp and increase of blood flow velocity, measured by TCD method. Therefore, all evaluated parameters correspond each other and demonstrate increase of mobility of CSF inside cranium and increase of brain blood flow.

Spectral analyzing shows, that amplitude of slow fluctuations of intracranial origin increase from 0.35 to 0.6 in compare with heart pulsation, considered as an unit, which corresponds to data, demonstrating the mobility of CSF. So, amplitude of PRM increases mainly due to increase of mobility of CSF. Frequency of fluctuations become slowly (from 9.5 cycles/min before treatment up to 7.0 cycles/min after treatment.). Decrease of main frequency of PRM shows, that metabolic supply of brain tissue should be normalized, due to increase of cerebral blood flow (results separate analyzing of TCD and B-Imp). So indeed, amplitude of PRM increases mainly due to increase of mobility of CSF, increase of brain

blood supply reflects some decrease of frequency of PRM. It is important to emphasize, that most of indices, presented above, correspond each other. This is increase of informational meaning of received data, because for evaluation of efficacy of osteopathic treatment the indirect units were used which corresponds to data, received by different way, and this increases their informational meaning. Therefore, it is possible to conclude, that all changes in TCD and B-Imp recordings might be used as indicators of efficacy of the treatment.

Single example, presented on Figure 4 generally corresponds to statistical data (Figure 5), received from group of patients (n=16) with intracranial hypertension: increase of amplitude and frequency of slow fluctuations of B-Imp, as well time interval between maximal values of TCD and B-Imp pulse and area of phase diagram, are statistically valid. The Increase of averaged blood flow, together with decrease of pulse coefficient of TCD, indicates that brain

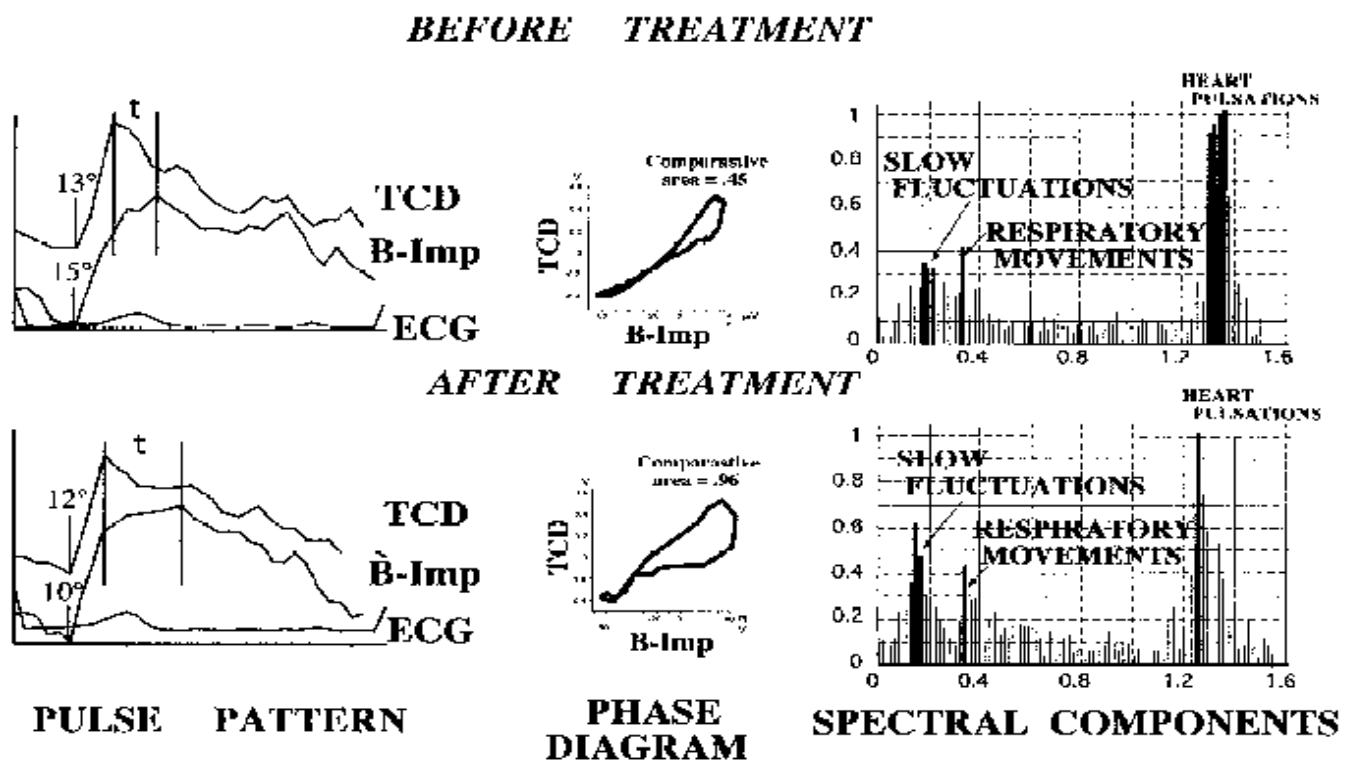


Figure 4. An example of result of application of VS-technique to patient with consequent of brain injury

blood supply increase after VS technique application also. Changes in cardiorespiratory system after treatment are statistically invalid.

Thus, it is possible to conclude, that monitoring of efficacy of osteopathic treatment using as example comparatively the most often used VS technique, should be definitely evaluated; by combination of TCD and B-Imp techniques with their complex and separate analyzing. Of course in the future, some important peculiarities of the above-demonstrated indices will be investigated. This is optimistic for perspective application of complex of TCD and B-Imp methods to the evaluation of osteopathic treatment.

Conclusion

All data and suggestions shown below, demonstrate, that wave phenomena inside cranial cavity is based

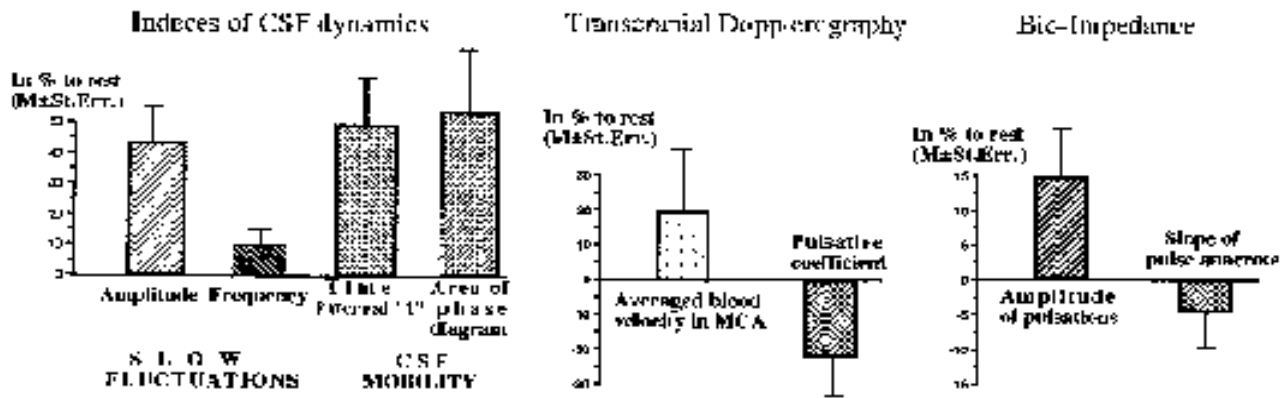
of proper physiological data. Physiological mechanism of wave phenomena is based on interaction of control links, responsible for support brain metabolism and support of its water balance. Source of physical forces for wave phenomena are periodical fluctuations of tone of brain blood vessels, because only blood vessels are provided by contractile elements – smooth musculature. Other structural units of cranium have no possibility for active contraction and could play passive role only, but one of them brain membranes, due to special anatomy relations bones and brain membranes – could passively modulate skull bone motions. All this permits to suggest that PPM belongs to the category of physiological mechanism, if we use the terminology of the first part of XX Century. From point of view of modern physi-

ology it is possible to declare that PRM is independent physiological system with definite structural and functional organization and clearly formulate functional goal as a link chain of physiological systems, responsible for brain functioning. Source of physical forces for PRM functioning is determined by periodic activity of CV system. Manifestation of PRM: is realized as skull bone periodical motions.

Modern methodology of the study of CV and CSF systems permits to present instrumentation complex, which includes two different methods with adequate computer analyzing of the received data. At the present time combination of TCD and B-Imp methods with pattern and phase analyzing of pulse fluctuations curves, recorded simultaneously, as well as spectrum analyzing, looks optimal.

Б

CEREBROVASCULAR AND CSF CIRCULATORY SYSTEMS



CARDIO-RESPIRATORY SYSTEM

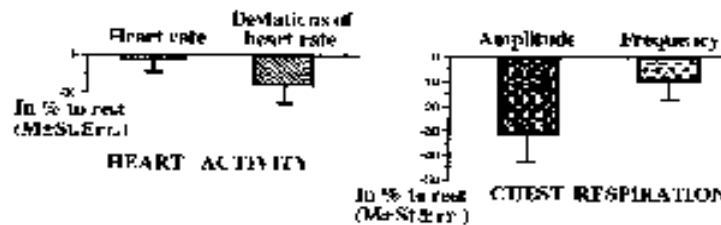


Figure 5. Statistical results of SV-technique application to SCF mobility and central hemodynamics, recorded by TCD and B-Imp. methods.

Separate routine analyzing data, received by both methods, are also very useful. On the base of such instrumentation it becomes possible to monitor the efficacy of osteopathic treatment in cranial field.

Thus, it is real to say, that osteopathy comes in to XXI Century with conception of PRM. As a functionally important physiological system, which, after 60 years it's declaring, was slightly corrected from point of view of physiology of the end of XX Century. Conception of PRM, based on intracranial wave phenomena, looks perspective for future developing of conceptions of cranial osteopathy and should take its place among physiological sciences.

Acknowledgement

This study is supported by the Cranial Academy, USA.

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Book Review

Reviewer: Anthony G. Chila

Silent Waves: Theory and Practice of Lymph Drainage Therapy

Bruno Chikly, MD

pp. 419, incl. Glossary and Index. 1st Edition, (c)2001; IHH Publishing, 28607 N 152nd St, Scottsdale, AZ 85262-6939 USA; This book (Item No. PR 1950) may be purchased through the AAO Book Store; Phone: 317/879-1881 or on-line at www.academyofosteopathy.org; \$65.00

The reading and appreciation of a major text requires time, and such is the case with this volume. The author graduated from the medical school at Saint Antoine Hospital (France). His doctoral thesis addressed the lymphatic system, its historical evolution and manual lymphatic drainage technique. This effort received a Medal of the Medical Faculty of Paris, VI, this being a prestigious acknowledgment for the depth and scientific merit of the presentation. He has engaged in extensive study of osteopathic techniques and other manual modalities. Professionally, he has been responsible for the establishment of a school of Manual Lymphatic Therapy (Europe), and the development of a Lymph Drainage Therapy curriculum (USA).

The text is intended to explore applications for lymphedema, chronic pain and inflammation. The depth and scope of basic and clinical knowledge implied in these considerations is underscored by the various organizational components of the text. Six major sections are represented:

- * The Lymphatic System and the Lymphoid Organs
- * Lymphatic Drainage Therapy (LDT) and its Applications
- * Edema-Lymphedema
- * Management of Lymphedema
- * Current Applications of Lymph Drainage Therapy and Other Possibilities to Be Investigated
- * Elements of Basic Science: Water, the Cell, and Body Tissues

Numerous references are given for each of the chapters of the various sections, offering the reader ample opportunity for further exploration of literature appropriate to the lymphatic system.

A representative review of the various sections would be an exhaustive effort. It is more feasible to offer a synopsis of a single chapter, in this case the author's opening chapter. The history of the recognition of the lymphatic system as an entity is represented in Chapter 1. The information contained therein is an excellent demonstration of the author's comprehensive and thorough appreciation of medical progress. The reader is made aware of medicine's evolutionary characteristic in the concise panoramic representation of responsible individuals and various cultures. The chapter is enhanced by inclusion of the author's paper *Who Discovered The Lymphatic System?* (*Lymphology*, Dec. 1997, 30, 4: 186-193). Of particular note is the concluding section of this chapter, addressing *Development Of Manual Techniques For The Lymphatic System*. The chronology can be said to represent the contributions of practitioners from 1813 to the present time, given in order: Ling, Mosengel, Esmarch and Kuhlenskampf, Alexander of Winiwarter, Still, Millard, Vodder, Asdonk, Chikly.

This text is a major reference which enhances the practices of many disciplines which utilize manual approaches. Osteopathic theory, methods and practice benefit from this contribution.

Hands On: A Clinical Companion

Simon Browning DO Cert Ed

pp. 224. tfm Publishing Ltd., Castle Hill Barns, Harley, Nr Shrewsbury, Shropshire, SY5 6LX, UK. 2004.
USA and CANADA: tfm Publishing Ltd, c/o MPHIC, 870 Market Street, Suite 720, San Francisco, CA
94102. Tel: 1-800-658-8820, Fax: 1-415-362-2333. \$45.00

Conciseness, experience and synthesis properly characterize this handbook. The text is intended to help instill confidence in musculoskeletal diagnosis by “drawing together into one place information from a wide range of medical, orthopaedic and anatomical textbooks”. The author presents material based on 25 years of experience in treating a wide range of musculoskeletal injuries. Recently returned to teaching, as a lecturer and clinic supervisor at the London School of Osteopathy, he maintains a private practice. In order to appreciate the skill with which material has been selected and presented, it is important to note the kind of information the text is designed NOT to provide:

- * A detailed description of every cause of every symptom possible
- * All the specific signs and symptoms of common musculoskeletal problems
- * The full range of special tests that can be used to determine tissue causing symptoms

It is properly stated that such expanded information is to be found in numerous specialty texts. Further, the reader, student or practitioner, is asked to cultivate a list of such additional texts according to preference. Three sections comprise the text: Section I-Case History, Red Flag Issues, Physical Assessment; Section II-Individual joint, unit or functional area; Section III-Overview of symptoms from various disease processes. This text is an excellent adjunct to practice and basic or expanded teaching.

Healing Outside the Margins: the Survivor's Guide to Integrative Cancer Care

Carole O'Toole (with Carolyn B. Hendricks, MD, Medical Advisor)

pp. 318, incl. Index. LifeLine Press (A RegneryPublishing Company), One Massachusetts Avenue NW (Suite 600), Washington, DC 20001. 2003 (LifeLine Press (A RegneryPublishing Company), One Massachusetts Avenue NW, Washington, DC 20001. 2003 ((c) 2002 by Carole O'Toole).

“Complementary therapies saved my life”. In 1994, the author was diagnosed with extremely aggressive inflammatory breast cancer and given 18 months to live. Being so confronted, she “began her seven years of intensive research on complementary techniques, which continue to support her physically, emotionally, and spiritually to this day.” In the course of this journey, the following guidelines were developed:

- * How to construct your own “action plan” for choosing complementary therapy
- * How to find exceptional practitioners
- * What to expect from treatment sessions
- * How to determine which therapies work for you

Among the 25 healing techniques reviewed, the chapter on Osteopathy should be of interest to readers of AAOJ. The author provides a balanced statement of the profession's philosophy and place in contemporary health care. Osteopathic practitioners will recognize the names of Harold Goodman, DO, Lisa Chun, DO and Michael Porvaznik, DO. The attitudes and methods employed by each practitioner exemplify the profession's traditional views of capacity for self-healing, structure-function interrelationship and holistic treatment.

The value of the author's contribution can best be represented in her own words:

“Healing Outside the Margins is not a rose-colored endorsement of complementary therapy. I welcomed and valued all of my allopathic care, and would recommend that all patients seek out the best conventional treatment they can find for themselves. But at the same time, I saw the value of complementary therapy in meeting certain needs of cancer patients that allopathic medicine cannot fill. I believe that both saved my life, and feel extremely blessed to have chosen a more integrative form of care. So while I certainly found that there were challenges in developing an integrated treatment plan, in the end my healing felt whole.”

Elsewhere in Print

The Other Half of the Brain

Scientific American: Volume 290, Number 4, April 2004; 54-61

Fields, RD (The author is chief of the Nervous System Development and Plasticity Section at the National Institute of Child Health and Human Development and adjunct professor in the Neurosciences and Cognitive Science Program at the University of Maryland)

Overview/*Glia*.

- For decades, neuroscientists thought neurons did all the communicating in the brain and nervous system, and glial cells merely nurtured them, even though glia outnumber neurons nine to one.
- Improved imaging and listening instruments now show that glia communicate with neurons and with one another about messages traveling among neurons. Glia have the power to alter those signals at the synaptic gaps between neurons and can even influence where synapses are formed.
- Given such prowess, glia may be critical to learning and to forming memories, as well as repairing nerve damage. Experiments are getting under way to find out.

“Mounting evidence suggests that glial cells, overlooked for half a century, may be nearly as critical to thinking and learning as neurons are. Glia and Neurons work together in the brain and spinal cord. A neuron sends a message down a long axon and across a synaptic gap to a dendrite on another neuron. Astrocyte glia bring nutrients to neurons as well as surround and regulate synapses. Oligodendrocyte glia produce myelin that insulates axons. When a neuron’s electrical message (action potential) reaches the axon terminal, the message induces vesicles to move to the membrane and open, releasing neurotransmitters (signaling molecules) that diffuse across a narrow synaptic cleft to the dendrite’s receptors. Similar principles apply in the body’s peripheral nervous system, where Schwann cells perform myelination duties. Astrocytes regulate signaling across synapses in various ways. An axon transmits a signal to a dendrite by releasing a neurotransmitter, e.g. glutamate. It also releases the chemical ATP. These compounds then trigger an influx of calcium into astrocytes, which prompts the astrocytes to communicate among themselves by releasing their own ATP. Astrocytes may strengthen the signaling by secreting the same neurotransmitter, or they may weaken the signal by absorbing the neurotransmitter or secreting proteins that bind to it, thereby preventing it from reaching its target. Astrocytes can also release signaling molecules that cause the axon to increase or decrease the amount of neurotransmitter it releases when it fires again. Modifying the connections among neurons is one way the brain revises its responses to stimuli as it accumulates experience - how it learns. In the peripheral nervous system, Schwann cells surround synapses. Glial cells respond to chattering neurons. It has been demonstrated that glia tap into neuronal messages all along lines of communication and not just at synapses where neurotransmitters are present.”

The work of various groups (Barres, et al, Stanford University; Lichtman et al, Washington University; Le Tian, Thompson et al, University of Texas-Austin) clearly shows that glia help to determine where synaptic connections form. William G. Sutherland, DO, passed on in 1954. One of the tenets of his original concept, the Primary Respiratory Mechanism, referred to the inherent motility of the brain and spinal cord. The electron microscope became available to investigators in 1955, and continuing sophistication in technology has permitted increasingly refined study of ultrastructures.

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