

CURRICULUM VITAE

Michael A. Crary, Ph.D.

I. Personal

- A. Present Home Address: 18127 Bellezza Drive, Orlando, FL 32820
- B. Present Position: **Professor**, School of Communication Sciences and Disorders and **Co-Director**, Center for Upper Aerodigestive Functions, College of Health Professions and Sciences, University of Central Florida, Orlando, FL.
- Professor of Medicine**, Department of Internal Medicine, College of Medicine, University of Central Florida, Orlando, FL.

II. Education

State University College of New York (Plattsburgh Campus) Major: Hearing and Speech Science	B.A. 1974
Ohio University Major: Speech Pathology Minor: Audiology	M.A. 1976
Ohio University Major: Hearing and Speech Science Minor: Neuropsychology Special Education	Ph.D. 1978
University of Florida College of Medicine M.S. in Clinical Investigation	M.S. 2004

III. Professional Experience

- 11/15 - Professor of Medicine, Department of Internal Medicine, College of Medicine, University of Central Florida.
- 8/15 - Professor, Speech-Language Pathology, School of Communication Sciences and Disorders, College of Health and Public Affairs, University of Central Florida

- 8/15 - **Co-director** Center for Upper Aerodigestive Functions, University of Central Florida
- 8/05 - 8/15 **Director**, Swallowing Research Laboratory, University of Florida Health Science Center
- 8/01 – 8/15 Professor of Speech-Language Pathology, Department of Speech, Language and Hearing Sciences, College of Public Health and Health Professions, University of Florida Health Science Center
- 6/97 – 7/05 **Director**, Florida Dysphagia Institute, A Type III Center at the University of Florida Health Science Center.
- 3/96 – 8/01 **Chairperson**, Department of Communicative Disorders, College of Health Professions, University of Florida Health Science Center
- 4/95- 3/96 **Interim Chairperson**, Department of Communicative Disorders, College of Health Professions, University of Florida Health Science Center
- 9/91-4/95 **Chief of Speech-Language Pathology Division**, Department of Communicative Disorders, College of Health Professions, University of Florida Health Science Center
- 8/93 Professor of Communicative Disorders at the University of Florida Health Science Center.
- 8/84-8/93 Associate Professor at University of Florida Health Science Center. Adjunct status with Department of Neurology, JHMHC; Department of Audiology and Speech Pathology, Gainesville VAMC; and Department of Communication Processes and Disorders, University of Florida.
- 8/80-8/84 Assistant-Associate Professor at Southern Illinois University-Carbondale. (Promoted 1982) Consultant to VAMC, Marion, IL. Consultant to Home Health Agency, Carbondale, IL
- 8/78-8/80 Assistant Professor at Central Michigan University.
- 9/75-8/78 Research and Teaching Assistant at Ohio University.
- 2/76-3/77 Language Development Specialist at Gallipolis State Institute, Gallipolis, Ohio. (Consultant)
- 2/75-9/75 Speech Pathologist at Sunland Developmental Center, Ft. Myers, Florida.

IV. Professional Services

A. Professional Associations

1. American Speech-Language-Hearing Association
 - Honors of the Association 2016
 - MARC Mentor, 2014-2015, 2020-2021
 - Fellow - November 1998
 - Dysphagia Special Interest Division Advisory Council 1998-2000
 - Associate Director: 1999-2000
 - Task Force on Knowledge and Skills Statement Development for Endoscopic Swallowing Assessment: 1995-2001
 - Dysphagia Functional Outcome Task Force 1996-97
2. Florida Network for Neurogenic Communication Disorders (Founder 1986, President, 1987, Board Member till 2002)
3. Florida Association Speech-Language Pathologists and Audiologists:
 - Vice President - Convention - 1989 - 1990
 - Chair: Speech-Language Standards - 1990-1991
 - Clinical Achievement Award - 1994
 - Ethical Practice Committee - 1994-1995
 - Health Care Reform Committees:
 - Voice Practice Parameters - 1994 -1995
 - Treatment Outcome Study - 1994 - 1995
4. Academy of Neurogenic Communicative Disorders and Sciences (1989-2001)
 - Chair: Meetings Committee 1989-1990
 - Member-At-Large: Executive Board 1996-1997
 - Member: Education and Standards Committee 1996-1997
5. Dysphagia Research Society: 1993 – present
 - Program Committee: 2001-2002; 2008; 2010
 - Scientific Review Committee: 2009
7. Childhood Apraxia of Speech Association of North American (CASANA)
 - Advisory Board: 2001 to 2019
7. American Heart Association / American Stroke Association 2004 - 2010
 - Council on Stroke 2004 - 2010

B. Board Certifications

1. Certificate of Clinical Competence (CCC-SLP): American Board of Examiners in Speech Pathology and Audiology (1979).
2. Adult Neurogenic Disorders of Communication (BC-NCD): Academy of Neurogenic Communicative Disorders and Sciences (1994 - 2002).

C. Professional Service

1. External to University of Central Florida
 - a. Editorial Consultant – CEFAC Journal, Sao Paulo, Brazil
 - b. Childhood Apraxia of Speech Association of North America Board Member: 2001- 2019
 - c. International Conference on Advanced Digital Technology in Head and Neck Reconstruction: Future Directions. Conference Scientific Advisory Group, 2004 - 2014
 - d. American Heart Association – Local Chapter Volunteer
 - e. State wide course numbering system committee – Florida Department of Education 2000- 2007
2. Internal to University of Central Florida
 - a. Promotion and Tenure/CPE Committee: School of Communication Sciences and Disorders: 2015- 2021
 - b. PhD Program Development Exploratory Committee: 2015-2018
 - c. Curriculum Revision Committee: 2016-2017
 - d. RSD proposal committee – 2019 - 2020
 - e. IRB – 2019 – 2021
 - f. AESP/Academic Affairs: 2019-2021
 - g. Assistant Professor Faculty Search: 2019 - 2020
3. Internal to University of Florida
 - a. Member of Health Science Center Institutional Review Board: 2004-2007
 - b. Member Health Science Center Student Conduct Committee: 2006 – 2009
 - c. Member Deans Advisory Task Force: 2006
 - d. Member : Moffitt Cancer Center- Health Outcomes & Behavior Program – 2010
 - e. Department Growth and Development Committee – Chair 2011
 - f. Student Financial Aid Committee – College 2010 – 2012
 - g. Student Appeals Committee – Department 2011- 2012
 - h. Graduate Admissions Committee – Department 2012 - 2015
 - i. PhD Admissions Committee - Department 2011 – 2015
 - j. PhD Excellence Committee- Department 2014 - 2015
 - k. Department Chair - Search Committee: 2014
 - l. Clinical Financial Restructuring Committee- Department 2014

V. Publications

1. **Books, Sole Author:**

Crary, M.A. Developmental Motor Speech Disorders. San Diego: Singular Publishing Group, (1993), 283 pp.

2. Books, Co-Author:

Crary, M.A. and Groher, M.E. The Introduction to Adult Swallowing Disorders. Woburn, MA: Butterworth-Heinemann. (2003), 216 pp.

Translated into Japanese in 2004.

Groher M. E. and Crary M.A. Dysphagia: Clinical Management in Adults and Children. St Louis, MO: Elsevier/Mosby. (2010), 336 pp.

Second Edition, August 2015, 386 pp.

Third Edition, Fall 2020, 389 pp.

Translated into Japanese in 2011.

Translated into Greek in 2013

Translated in Chinese, 2017

3. Books, Editor:

Crary, M.A. (ed) Phonological Intervention: Concepts and Procedures. College-Hill Press, San Diego, (1982), 118 pp.

Brown, W.S., B. Vinson, and M.A. Crary. Organic Voice Disorders: Assessment and Intervention. Singular Press. (1996), 379 pp.

4. Books, Contributor of Chapter(s), Author(s):

Fucci, D. and Crary, M.A. Oral vibrotactile sensation: State of the art. In: N. Lass (ed), Speech and Language: Advances in Basic Research and Practice. Academic Press, New York, (1979), 28 pp.

Crary, M.A., Voeller, K., and Haak, N. Questions of developmental neurolinguistic assessment. In M. Tramontana and S. Hooper (eds), Assessment Issues in Child Neuropsychology. Plenum, New York, (1988), 40 pp.

Crary, M.A. and Glowasky, A. The immobile vocal fold. In W.S. Brown, B. Vinson, and M.A. Crary (Eds), Organic Voice Disorders: Assessment and Intervention. Singular Press. (1996), 20 pp.

Crary MA. Speech and nonspeech motor performance profiles as diagnostic markers in childhood apraxia of speech. Chapter 5 in Shriberg L and Campbell T (eds), Proceedings of the 2002 Childhood Apraxia of Speech Research Symposium. Carlsbad, California: Hendrix Foundation 2003.

Crary MA, Carnaby (Mann) GD. Rehabilitation following treatment for head and neck cancer. In V. Davita, S. Heliman, and S. A. Rosenberg (eds). Cancer: Principles and Practice of Oncology. Philadelphia: Lippincott, Williams, & Wilkins, 2005.

Madhavan A, Haak NJ, Carnaby GD, Crary MA. (2015) Neural Control of Swallowing and Treatment of Motor Impairments in Dysphagia. In R Bahr and S Silliman (eds). *Handbook of Communication Disorders*. New York: Routledge.

Crary MA. (2019). Dysphagia rehabilitation in adults. In J. Damico and M. Ball (eds.), *The SAGE Encyclopedia of Human Communication Sciences and Disorders*. Thousand Oaks, CA: Sage Publications, Inc.

5. **Monographs:**

Parsons, C. and Crary, M.A. (eds) Special issue on Developmental Verbal Dyspraxia. *Australian Journal of Communication Disorders*, 12, 1984.

6. **Refereed Publications**

1. Fucci, D., Crary, M.A., Wilson, H., and Curtis, A.P. Vibrotactile and temperature sensory interaction in the human tongue. *Perceptual and Motor Skills*, 45, 1976, 263-266.
2. Fucci, D., Crary, M.A., and Telage, K. Lingual clamping procedures for measuring oral vibrotactile thresholds: II. Effects of using a lower clamping disc. *Bulletin of the Psychonomic Society*, 10, 1977, 437-459.
3. Telage, K. Fucci, D., and Crary, M.A. Lingual clamping procedures for measuring oral vibrotactile thresholds: I. Effects of using a free surround disc. *Bulletin of the Psychonomic Society*, 10, 1977, 347-349.
4. Fucci, D., Crary, M.A., Warren, J., and Bond, Z.S. An interaction between auditory and oral sensory feedback in speech regulation. *Perceptual and Motor Skills*, 45, 1977, 123-129.
5. Crary, M.A., Fucci, D., and Bond Z.S. Timed auditory interruption during speech. Oral sensory and temporal articulatory changes. *J. Phonetics*, 7, 1979, 335-345.
6. Crary, M.A. and Fokes, J. Inference formulation by children: Developmental considerations, *Ohio Speech and Hearing Journal*, 14, 1979, 160-166.
7. Crary., M.A., Fucci, D. Petrosino, L., and Bond, Z.S. Oral sensory and temporal articulatory changes as a result of lateralized auditory interruption during speech. In: Wold, J. and Klatt, D. (eds) *Speech Communication Papers Presented at the 97th Meeting of the Acoustical Society of America*, Acoustical Society of America 1979, New York.

8. Crary, M.A. and Fokes, J. Phonological processes in apraxia of speech: A systematic simplification of articulatory performance. Aphasia-Apraxia-Agnosia, 1 1980, 1-13.
9. Crary, M.A. A clinician's introduction to phonological process analysis. Michigan Journal of Speech and Hearing, 16, 1980, 46-57.
10. Crary, M.A., Fucci, D., and Bond, Z.S. Interaction of sensory feedback: A child-adult comparison of oral sensory and temporal articulatory function. Perceptual and Motor Skills, 53, 1981, 979-988.
11. Crary, M.A. and Comeau, S. Phonologically based assessment and intervention in spastic cerebral palsy: A case analysis. S Afr J Commun Disor., 28, 1981, 30-37.
12. Crary M. A., Welmers, T., and Blache, S. A preliminary look at phonological process suppression in normal children. Proceedings of The Second International Congress For The Study of Child Language. American University Press 1982.
13. Crary, M.A., Towne, R., Comeau, S., and Korte, S. Is verbal apraxia a phonological disorder? Proceedings of the Symposium for Research on Child Language Disorders. University Wisconsin-Madison Press 1982.
14. Crary, M.A. The influence of sample size on phonological process analysis. Journal of Communication Disorders, 10 1982, 15-22.
15. Crary, M.A., and Hunt, T.L. Sounds vs. patterns: A case comparison of approaches for articulation therapy. Australian Journal of Communication Disorders, 10, 1982, 15-22.
16. Crary, M.A., and Hunt, T.L. CV to CVC: A case report of a child with open syllables. Topics in Language Disorders, 3, 1983, 157-170.
17. Crary, M.A., Landess, S., and Towne, R. Phonological error patterns in developmental verbal dyspraxia. Journal of Clinical Neuropsychology, 6, 1984, 157-170.
18. Crary, M.A. A neurolinguistic perspective on developmental verbal dyspraxia. Communicative Disorders, 9, 1984, 33-49.
19. Crary, M.A. and Towne, R.L. The asynergistic nature of developmental verbal dyspraxia. Australian Journal of Communicative Disorders, 12, 1984, 27-38.

20. Crary, M.A. Phonological characteristics of developmental verbal dyspraxia. Seminars in Speech and Language, 5, 1984, 71-83.
21. Crary, M.A., Hardy, T., and Williams, W.N. Aphemia: With dysarthria or apraxia of speech? Proceeding of the Clinical Aphasiology Conference 1985. BRK, Minneapolis: 1985.
22. Crary, M.A. and Kertesz, A. Evolving error profiles during aphasia syndrome remission. Aphasiology, 2, 1988, 67-78.
23. Crary, M.A. and Heilman, K. Letter imagery deficits in a case of pure apraxic agraphia. Brain and Language, 34, 1988, 147-156.
24. Towne, R.L., and Crary, M.A. Verbal reaction time patterns in aphasic adults: Consideration for apraxia of speech. Brain and Language, 35, 1988, 138-153.
25. Crary, M.A., and Haak, N.J. One perspective on recovery prognosis and treatment in aphasia. Journal of the National Student Speech and Hearing Association, 16, 1988, 76-92.
26. Crary, M.A. and Rothi, L.G. Predicting the Western Aphasia Battery aphasia quotient. Journal Speech Hearing Disorders, 54, 1989, 163-167.
27. Crary, M.A., and Haak, N.J. Preliminary psychometric evaluation of an acute aphasia screening protocol. Aphasiology, 3, 1989, 611-618.
28. Williams, W., Hanson, C., Crary, M., and Wharton, P. Human pinch force discrimination. Percept Motor Skills, 73, 1991, 663-672.
29. Crary, M.A., Wertz, R.T., and Deal, J.L. Classifying the aphasias: cluster analysis of WAB and BDAE results. Aphasiology, 6, 1992, 29-36.
30. Williams, W., Coffey, J., Turner, G., Crary, M., Capen, R., and Wharton, P. Level of accuracy and degree of precision in attempting to maintain steady levels of biting force. Journal of Oral Rehabilitation, 19, 1992, 655 - 662.
31. Crary, M.A. and Tallman, V. Production of linguistic prosody by normal and speech disordered children Journal of Communicative Disorders, 26, 1993, 245 - 262.
32. Crary, M.A., Butler, M.K., and Baldwin, B.O. Objective distance measurements from videofluorographic swallow studies using computer interactive analysis: Technical note. Dysphagia, 9, 1994, 116-119.

33. Haak, N.J. and Crary, M. A. Balint's syndrome: A case study of the influence of non-language deficits on aphasia test performance. Florida Speech-Language and Hearing Journal, 14, 1994, 10-12.
34. Crary, M.A. and Santini, C.S. Um programma de terpiafonoaudiologica para pacientes com disfagia decorrente de acidente vascular cerebral de tronco. Topicos em fonoaudiologia (Brazil), 2, 1995, 83 - 91.
35. Crary, M.A. A direct intervention program for chronic neurogenic dysphagia. Dysphagia, 10, 1995, 6 - 18.
36. Crary, M. A. Clinical evaluation of developmental motor speech disorders. Seminars in Speech and Language, 16, 1995, 110 - 125.
37. Cotter, C. S., Avidano, M. A., Crary, M. A., Cassisi, N. J., and Gorham, M. M. Laryngeal complications after type I thyroplasty. Otolaryngology - Head Neck Surgery, 113, 1995, 671 - 673.
38. Crary, M.A., Kotzur, I., Gauger, J., Gorham, M., and Burton, S. Dynamic magnetic resonance imaging to study vocal tract configuration. J Voice, 10, 1996, 378-388.
39. Sapienza, C., Crary, M. A., Gorham, M. Laryngeal aerodynamic aspects of patients with adductor spasmodic dysphonia. Arch. Otolaryngology - Head & Neck Surgery, 112, 1996, 385-388.
40. Crary, M. A. and Glowasky, A. L. Using botulinum toxin A to improve speech and swallowing function following total laryngectomy. Arch. Otolaryngology - Head & Neck Surgery, 122, 1996, 760-763.
41. Crary, M.A. (Re)training practicing clinicians: Clinical education/Clinical Competencies. The Florida Journal of Communication Disorders, 16, 1996, 42-44.
42. Sutter, J.L. and Crary, M.A. Clinical implications of motor speech disorders in elementary school-age children. The Florida Journal of Communication Disorders, 16, 1996, 8-13.
43. Crary, M.A. and Baldwin, B.O. Surface electromyographic correlates of swallowing in dysphagic adults following brainstem stroke. Dysphagia, 12, 1997, 180-187.
44. Gorham, M.M., Avidano, M., Cotter, C., Crary, M. A., and Cassisi, N.J. Laryngeal recovery following type I thyroplasty. Archives of Otolaryngology - Head and Neck Surgery, 124, 1998, 739-742.

45. Crary, M.A., Sapienza, C., Cassisi, N.J., and Moore, G.P. Treatment of contact granuloma with steroid injection. American Journal of Speech-Language Pathology: A Journal of Clinical Practice, 7, 1998, 92-96.
46. Crary, M.A. and Groher, M.E. Surface electromyographic biofeedback as an adjunct in dysphagia therapy. American Journal of Speech-Language Pathology, 9, 2000, 116-125.
47. Crary MA, Classen S, Johnson W. Setting the bar in clinical research? Comments on selected recent dysphagia literature. Dysphagia, 19, 2004, 58-59.
48. Crary, M.A., Carnaby-Mann, G.D., Groher M.E., and Helseth, E. Functional outcomes of dysphagia therapy with adjunctive sEMG biofeedback. Dysphagia, 19, 2004, 160-164.
49. Crary MA, Carnaby (Mann) GD, Groher ME. Initial psychometric evaluation of a functional oral intake scale for dysphagia in stroke patients. Archives of Phys Med Rehab, 86, 2005, 1516-1520.
50. Carnaby, G, Crary, M.A. Pill swallowing by adults with dysphagia. Archives of Otolaryngology, 131, 2005, 970-975.
51. Crary MA, Carnaby (Mann) GD, Groher ME. Biomechanical correlates of sEMG signals obtained during swallowing by healthy adults. Journal Speech Language and Hearing Research, 49, 2006, 1-8.
52. Crary MA, Carnaby GD, Miller L, Antonios N, Silliman S. Dysphagia and nutritional status at the time of hospital admission for ischemic stroke. Journal of Stroke and Cerebrovascular Disease. 15, 2006, 164- 171.
53. Crary MA, Groher ME. Reinstating oral feeding in tube fed patients with dysphagia. Nutrition in Clinical Practice. 21, 2006, 576-586.
54. Groher ME, Crary MA, Carnaby (Mann) GD, Vickers Z, Aguilar C. Comparing clinical and instrumental swallowing examinations. Dysphagia, 2006; 21:218-25.
55. Crary MA, Carnaby G, Groher M. Identification of Swallowing Events from sEMG Signals Obtained from Healthy Adults. Dysphagia. 2007; 22:94-99.
56. Crary MA, Carnaby G, Faunce A. Electrical stimulation for the treatment of dysphagia: Descriptive results of two surveys. Dysphagia, 2007; 22:165-73.

57. Yoshida M, Groher ME, Crary MA, Carnaby-Mann GD, Akagawa Y. Comparison of surface electromyographic (sEMG) activity of submental muscles between the head lift and tongue press exercises as a therapeutic exercise for dysphagia. Gerodontology. 2007;24:111-116.
58. Carnaby-Mann GD, Crary MA. Examining the evidence on NMES for swallowing: A meta-analysis. Arch Otolaryngology. 2007; 133:1-8.
59. Carnaby-Mann GD, Lenius K, Crary MA. Update on assessment and management of dysphagia post-stroke. Northeast Florida Medicine. 2007;58:31-34.
60. Carnaby-Mann GD, Crary MA. Adjunctive NMES in the treatment of treatment-refractory dysphagia. Ann of Otolaryngology. 2008;117:279-87.
61. LaGorio L, Carnaby-Mann GD, Crary MA. Cross system effects of dysphagia treatment on dysphonia: a case report. Cases Journal. 2008;1:67.
62. Lenius K, Carnaby-Mann GD, Crary MA. The relationship between lingual-palatal pressure and submental surface electromyographic signals. J Oral Rehabil. 2009;36:118-123.
63. Antonios N, Carnaby-Mann GD, Crary MA, Hubbard H, Miller L, Hood K, Sambandam R, Xavier A, Silliman S. Analysis of a physician tool for evaluating dysphagia on an inpatient stroke unit: The Modified Mann Assessment of Swallowing Ability. Journal of Stroke and Cerebrovascular Disease. 2010;19:49-57.
64. LaGorio L, Carnaby-Mann GD, Crary MA. Treatment of bowed vocal folds with adjunctive NMES. Arch Otolaryngology Head Neck Surgery. 2010;136:398-403.
65. Carnaby-Mann GD, Crary MA. McNeill Dysphagia Therapy Program (MDTP): A case control study. Arch Phys Med Rehabil. 2010;91:743-749.
66. Carnaby-Mann GD, Crary MA, Schmalfuss I, Amdur R. "Pharyngocise": Randomized controlled trial of preventative exercises to maintain muscle structure and swallowing function during head-and-neck chemoradiotherapy. International Journal of Radiation Oncology, Biology, Physics. 2012;83:210-219.
67. Sia I, Carvajal PJ, Carnaby-Mann GD, Crary MA. Linear distance measurements from fluoroscopic swallow studies: variability, error, and reliability. Dysphagia. 2012;27:192-197.

68. Crary MA, Carnaby-Mann GD, LaGorio L, Carvajal P. Functional and physiological outcomes from an exercise-based dysphagia intervention program: MDTP. Arch Phy Med Rehabil. 2012;93:1173-1178.
69. McCullough, G.H., Kamarunas, E., Mann, G., Schmidley, J.W., Robbins, J.A., Crary, M.A. Effects of Mendelssohn maneuver on measures of swallowing duration post-stroke. Topics in Stroke Rehabilitation. 2012;19:230–239
70. Lan Y, Ohkubo M, Berretin-Felix G, Carnaby-Mann G, Crary M. Improved physiologic timing of swallow following MDTP. Ann Otolaryngology Head/Neck Surg. 2012;121:525-532.
71. Crary MA, Humphrey J, Carnaby-Mann GD, Miller L, Sambandam R, Silliman S. Dysphagia, nutritional status, and hydration in acute stroke. Dysphagia. 2013;28:69-76.
72. Crary MA, Sura L, Carnaby GD. Validation and demonstration of an isolated acoustic recording technique for estimation of spontaneous swallowing frequency. Dysphagia. 2013;28:86-94.
73. Shivashankar H, Rossen B, Crary MA, Lok B. Constructionism of virtual humans to improve perceptions of conversational partners. CHI'12: CHI Conference on Human Factors in Computing Systems Proceedings. May, 2012.
74. Sura L, Madhavan A, Carnaby GD, Crary MA. Dysphagia in the elderly: management and nutritional considerations. Clinical Interventions in Aging. 2012;7:287-298.
75. Carnaby GD, Crary MA. Development and validation of a cancer specific swallowing assessment tool: MASA-C. Supportive Cancer Care. 2014;22:595-602.
76. Skowronski M, Crary MA, Shrivastav R. Acoustic discrimination of healthy swallows from upper airway movements. J Acoust. Soc Am. 2013;134:EL127-32.
77. Crary MA, Carnaby G, Sia I, Sura L, Khanna A, Waters M. Spontaneous swallowing frequency has potential to identify dysphagia in acute stroke. Stroke. 2013;44:3452-3457.

78. Sia I, Carvajal P, Lacy A, Carnaby G, Crary MA. Hyoid and laryngeal excursion kinematics: Magnitude, duration, and velocity changes following successful exercise-based dysphagia rehabilitation: MDTP. J Oral Rehabilitation. 2014;42:331-339.
79. Berretin-Felix G, Sia I, Crary MA, Carnaby G. Immediate effects of transcutaneous electrical stimulation amplitude on physiological swallowing effort in older versus young adults. Gerodontology. 2016;33:348-355.
80. Crary MA, Carnaby GD, Sia I. Spontaneous swallow frequency compared to clinical screening in the identification of dysphagia in acute stroke. Journal of Stroke and Cerebrovascular Disease. 2014;23:2047-2053.
81. Crary MA, Carnaby GD. Adoption into clinical practice of two therapies to manage swallowing disorders: exercise based swallowing rehabilitation and electrical stimulation. Curr Opin Otolaryngol Head Neck Surg. 2014;22:172-180.
82. Shivashankar H, Sia I, Crary M, Lok B. Virtual agent constructionism: experiences from health professions students creating virtual conversational representations of patients. Proceedings of the IEEE 14th International Conference of Advanced Learning Technologies (ICALT). July, 2014.
83. Madhavan A, Carnaby G, Crary M. Food sticking in the throat: fluoroscopic assessment of patient localization and etiology. Dysphagia. 2015;30:343-8.
84. Lenius K, Stierwalt J, LaPointe L, Bourgeois M, Carnaby G, Crary MA. Effects of lingual effort on swallow pressures following radiation treatment. J Speech, Lang, Hearing Research. 2015 Mar 25. [Epub ahead of print].
85. Barikroo A, Berretin-Felix G, Carnaby G, Crary MA. Effect of transcutaneous electrical stimulation (TES) amplitude on timing of swallow pressure peaks between healthy young and older adults. Gerodontology. December, 2015 [Epub ahead of print]
86. Barikroo A, Carnaby GD, Crary MA. Effects of age and bolus volume on velocity of hyolaryngeal excursion in healthy adults. Dysphagia. 2015;30:558-564.
87. Crary MA, Carnaby GD, Shabbir Y, Miller L, Silliman S. Clinical variables associated with hydration status in acute ischemic stroke patients with dysphagia. Dysphagia. 2016;31:60-65.

89. Shivashankar H, Crary MA, Sia I, Lok B. Exploring the effects of healthcare students creating virtual patients for interpersonal skills training. 15th International Proceedings on Intelligent Virtual Agents. August, 2015.
90. Carnell S, Shivashankar H, Crary MA, Madhavan A, Lok B. Adapting virtual patient interviews for interviewing skills training of novice healthcare students. 15th International Proceedings on Intelligent Virtual Agents. August, 2015.
91. Madhavan A, LaGorio L, Crary MA, Dahl W, Carnaby GD. Prevalence of and risk factors for dysphagia in the community dwelling elderly: A systematic review. Journal of Nutrition, Health, and Aging. 2016;20:806-815.
92. Sia I, Shivashankar H, Lok B, Crary MA, Virtual patient simulation training in graduate dysphagia management education – a research-led enhancement targeting development of clinical interviewing and clinical reasoning skills. Perspectives in Swallowing and Swallowing Disorders. 2016, 1;SIG13: 130-139 (August).
93. Hoffman Ruddy B, Kuruppumullage D, Carnaby G, Crary M A, Lehman J, Ilegbusi O. Computational modelling of cough function and penetrant behavior in disorders of laryngeal function. Laryngoscope Investigative Otolaryngology. 2017;2:23–29.
94. Barikroo A, Carnaby G, Crary MA. Electrical stimulation therapy for dysphagia: a follow-up survey of USA dysphagia practitioners. International Journal Rehabilitation Research. 2017;40:360-65.
95. Barikroo A, Carnaby G, Bolser D, Rozensky R, Crary MA. Transcutaneous electrical stimulation on the anterior neck region: the impact of pulse duration and frequency on maximum amplitude tolerance and discomfort. J Oral Rehab. 2018;45:436-441.
96. Ihara Y, Crary M, Madhavan A, Gregorio D, Im I, Ross S, Carnaby G,. Relationships between dysphagia and oral morbidities in chemoradiation treated head and neck cancer patients. Dysphagia. 2018;33:739-748.
97. Carnaby GD, Sia I, Crary MA. Associations between spontaneous swallowing frequency at admission, dysphagia, and stroke related outcomes in acute care. Arch Phys Med Rehabil. 2019;100:1283-1288.

98. Shivashankar H, Sia I, Miles A, Crary MA, Lok B. Engineering social agent creation into an opportunity for interviewing and interpersonal skills training. Proceedings of the 18th Conference on Autonomous Agents and Multiagent Systems (AAMAS). Stockholm, Sweden, July 2018.
99. Barikroo A, Hegland K, Carnaby G, Bolser D, Manini T, Crary MA. The effects of electrical stimulation pulse duration on lingual palatal pressures measures during swallowing in healthy adults. *Dysphagia*. 2019;34:529-539
100. Sia I, Crary MA, Kairalla J, Carnaby GD, Sheplak M, McCulloch T. Deriving and determining the reliability of a novel biofluid dynamics measure of deglutitive bolus-driving function – pharyngeal swallowing power. *Neurogastroenterology & Motility*. 2019;31:e13465
101. Sia I, Crary MA, Kairalla J, Carnaby GD, Sheplak M, McCulloch T. Bolus volume and viscosity effects on pharyngeal swallowing power – how physiological bolus accommodation affects bolus dynamics. *Neurogastroenterology & Motility*. 2018;30:e13481
102. Im I, Jun JP, Crary MA, Carnaby GD, Hong KH. Longitudinal kinematic evaluation of pharyngeal swallowing impairment in thyroidectomy patients. *Dysphagia*. 2019;34:161-169.
103. Madhavan A, Carnaby GD, Chhabria K, Crary MA. Preliminary development of a screening tool for pre-clinical dysphagia in community dwelling older adults. *Geriatrics*. 2018;3:E90.
104. Barikroo A, Hegland K, Carnaby G, Bolser D, Manini T, Crary MA. Transcutaneous electrical stimulation on the submental area: the relation of biopsychological factors with maximum amplitude tolerance and perceived discomfort level. *Dysphagia*. 2020;35:301-307.
105. Carnaby G, Sia I, Crary M. Associations between spontaneous swallowing frequency at admission, dysphagia, and stroke related outcomes in acute care. *Arch Phys Med Rehab*. 2019;100:1283-1288.
106. Carnaby GD, LaGorio L, Silliman S, Crary M. Exercise-based swallowing intervention (McNeill Dysphagia Therapy) with adjunctive NMES to treat dysphagia post-stroke: A double-blind placebo-controlled trial. *J Oral Rehab*. 2020; 00:1-10.
107. Focht KL, McCullough G, Crary MA, Arvedson J, Doddrell P. Assessment across the lifespan: the clinical swallow evaluation. *Am J Speech-Lang Path*. 2020; 29:919-933. (July).

108. Im I, Crary MA, Takahashi N, Dungan S, Carnaby GD. Clinical profile change in HNC patients treated with CRT. *Laryngoscope*. 2020 Nov 12. doi: 10.1002/lary.29266. Online ahead of print.
109. Crary M, Carnaby G, Mathijs L, Maes S, Gelin G, Ortibus E, Rommel N. Spontaneous swallowing frequency, dysphagia, and drooling in children with cerebral palsy. *Arch. Phy Med Rehabil*. Revisions in Progress, April 2021.
110. Madhavan, A, Sia I, Carnaby G, Crary MA. A preliminary study of pharyngeal acidity, stroke severity, dysphagia and oral intake. *OMB Geriatrics*. 2021;5(1):13.
111. Carnaby GD, Madhavan A, Barikroo A, Crary MA. Change in spontaneous swallowing frequency in HNC patients undergoing C/RT. *Otolaryngology-Head and Neck Surg*. Revisions in Progress. April 2021.

Current Projects

Rehydration strategies for dysphagic patients in acute stroke. (NIH RO1 proposal, June/October 2021)

Swallow Frequency Analysis as an indicator of dysphagia in community dwelling older persons. (NIH RO1 grant revision [A1] on hold due to pandemic)

A multimodal sensor to monitor swallow, respiration, and cardiac rate. Implications for post and Covid-19 rehabilitation recovery. (NSF Seed Fund proposal, June 2020 – Project Pitch accepted – Full proposal in process – May 2021 - SBIR with Patheous Health)

Swallowing, Physical, and Cognitive Profiles in Community Dwelling Elderly. (Life Grant-UCF: G Carnaby PI – on hold due to pandemic).

7. Nonrefereed Publications

- Crary, M.A. Developmental verbal dyspraxia: myth or reality. National Association for Hearing and Speech Action Newsletter, 5, 1986, 2.
- Crary, M.A. Treatment advances in dysphagia: The role of electromyographic (EMG) biofeedback. Dysphagia Care (2nd ed), 1995, 18-22.

Crary, M.A. Application of instrumentation and software in dysphagia management. Dysphagia Special Interest Division Newsletter, 4, 1995 (Fall), 14-16.

Crary, M.A. New treatment for rare speech disorder. Miami Health Letter 9, 1995 (Fall), 1-2.

Crary, M.A. Dysphagia overview: Practical Reviews in Otolaryngology - Head and Neck Surgery, 3(9), 1996 (February).

Crary, M.A. and Groher, M.E. State of the science: Use of surface electromyographic biofeedback as an adjunct to dysphagia therapy. Dysphagia Special Interest Division Newsletter, July, 1999, 4-5.

Crary M.A. Using the Kay digital swallowing workstation to understand a case of aerophagia. Swallowing Application Notes and Articles, Kay Elemetrics Corp. Lincoln Park, NJ, 2004.

Crary M.A. and Carnaby G. D. McNeill Dysphagia Therapy Program - 10 years of Research Experience with an Exercise Based Dysphagia Rehabilitation Approach. Dysphagia Cafe. October, 2015.

8. **Reviews**

Crary, M.A. Review of the "Aphasia and Associated Disorders" by A. Kertesz. Journal of the American Speech-Language and Hearing Association, 21, 1981, 69-70.

Crary, M.A. Review of "Clinical Management of Memory Problems" by B. Wilson and N. Moffet (Eds.) Journal of the American Speech Language and Hearing Association, 27, 1985, 69.

Crary, M.A. "Review of Treatment of Aphasia: A language-oriented approach." By C. Shewan and C. Bandur. Journal of the American Speech, Language, and Hearing Association, 32, 1990, 66.

Crary MA. Review of "Stepping Stones to Living Well with Dysphagia". J. Cichero and P. Clave'. March, 2013 (Gastroenterology).

9. **Miscellaneous**

A. **Journal and Grant Review**

Editorial Board: Open Journal of Clinical and Medical Sciences. 2016-present

Editorial Consultant: Speech, Language, Hearing Sciences and Education Journal. Brazil. 2016 - 2020

Editorial Board: Thieme Publishers, New York, NY 2018

Journal Reviewer: Language Speech and Hearing Services in Schools. 1987-1988.

Journal Reviewer: Journal of Speech-Language and Hearing Research. 1988-2000, 2003-2005. 2010, 2012

Journal Reviewer: Journal of Speech and Hearing Disorders. 1990-1991.

Journal Reviewer: Aphasiology. 1992 - 1993, 1997, 1998, 2000

Journal Reviewer: American Journal of Speech-Language Pathology. 1992 – 2003, 2005 – 2006, 2010 – 2012, 2018, 2020

Journal Reviewer: Journal of Medical Speech-Language Pathology. 1993 – 2000, 2005-2007

Journal Reviewer: Dysphagia. 1995 - 2021

Journal Reviewer: Stroke: 2004 – 2019

Journal Reviewer: Therapy: 2005-2006

Journal Reviewer: Archives of Physical Medicine and Rehabilitation: 2006 – 2021

Journal Reviewer: BMC Neurology: 2007

Journal Reviewer: Journal of Neurology: 2008 - 2009

Journal Reviewer: The Laryngoscope: 2009 - 2021

Journal Reviewer: Clinical Rehabilitation: 2012

Journal Reviewer: Journal of Rehabilitation Medicine: 2011 – 2015

Journal Reviewer: Archives of Gerontology and Geriatrics: 2013

Journal Reviewer: Clinical Nutrition: 2013

Journal Reviewer: World Journal of Gastroenterology: 2013

Journal Reviewer: BMC Geriatrics: 2014, 2019-2021

Journal Reviewer: Cerebrovascular Disease: 2014

Journal Reviewer: European Journal of Neurology: 2014, 2020

Journal Reviewer: Journal of Oral Rehabilitation: 2014- 2020

Journal Reviewer: Journal of Nutrition in Gerontology: 2014

Journal Reviewer: Int J of Environmental Research in Public Health: 2014

Journal Reviewer: International Archives of Otorhinolaryngology: 2014-2015

Journal Reviewer: International Journal of Neuroscience: 2016

Journal Reviewer: Clinical and Experimental Dental Research: 2017 – 2019

Journal Reviewer: Clinical Neurophysiology: 2017-2019

Journal Reviewer: Neurogastroenterology & Motility: 2018-2020

Journal Reviewer: Expert Review in Neurotherapeutics: 2020

Grant Reviewer: National Institutes of Health (NIDCD and NCI), 1992-1993-1994.

Grant Reviewer: VAMC Special Review: 1996, 1998

Grant Reviewer: March of Dimes: 2001

Grant Reviewer: Sheffield Hospitals Charitable Trust 2006

Grant Reviewer: Health Research Board of Ireland 2007

Grant Reviewer: Northern Ireland Chest Heart and Stroke Research Council 2008

Grant Reviewer: SMA- Europe: 2008

Grant Reviewer: Princes Beatrix Fund – Netherlands: 2009

Grant Reviewer: UK Medical Research Council: 2011

Grant Reviewer: UK Dept of Health - Wellcome Trust Fund: 2012

Grant Reviewer: Alberta Innovates Health Solutions, Alberta, Canada: 2012

Grant Reviewer: Genesis Oncology Trust, New Zealand; 2013

Grant Reviewer: FWO (Flanders Research Foundation), Belgium, 2014 - 2020

Grant Reviewer: Austrian Science Fund, 2014

Grant Reviewer: Stroke Association of the UK, 2017

Grant Reviewer: Research Grants Council of Hong Kong, 2020

B. Published Videotaped Lectures

Developmental Motor Speech Disorders. Info-Link Video Bulletin, Layton, Utah. May, 1995.

Treatment of Neurogenic Swallowing Disorders. Info-Link Video Bulletin, Layton, Utah. November, 1995.

Update on Voice Disorders. Pro' Fono, Sao Paulo, Brazil. December, 1996.

The Video Introduction to Adult Swallowing Disorders. (with M. Groher). Butterworth-Heinemann, 2001.

The Functional Oral Intake Scale. MedBridge, Seattle, 2015

sEMG Biofeedback in Dysphagia Therapy for Adults. MedBridge, Seattle, 2015

Exercise-Based Dysphagia Therapy for Adults. MedBridge, Seattle, 2015.

C. Research Awards

First Place Poster Competition Florida Speech-Language and Hearing Association 1986. "The Neurolinguistic Bases of Propositional Prosody".

Third Place Poster Competition Florida Speech-Language and Hearing Association 1987. "Longitudinal Language Abilities in a Patient Receiving Bethanechol Treatment."

Third Place Poster Competition Florida Speech-Language and Hearing Association 1988. "Touch Talker Intelligibility"

College of Health Related Professions Annual Research Competition: First Place Award 1992. "Use of Bioglass to Medialize the Paralyzed True Vocal Fold: A Canine Study"

Dysphagia Research Society 1996: 2nd Place - Scientific Achievement for Presented Paper: "Endoscopic and Fluoroscopic Evaluations of Swallowing: Comparison of Observed and Inferred Findings."

Rose Rivers Award for Excellence in Nursing Research: “Validation of the nurse swallow screen evaluation (NSSE) tool among hospitalized adult patients diagnosed with stroke.” UF Health System and Shand’s Hospital, Spring 2017

D. Other Awards/ Honors

Clinical Achievement Award 1994:

Florida Association of Speech-Language Pathologists and Audiologists.

Outstanding Clinical Achievement Award 1995:

American Speech-Language and Hearing Association

DiCarlo Award Nominee 1995:

Nominee from the state of Florida for national recognition for clinical achievement from the American Speech-Language and Hearing Association

Fellow of the American Speech-Language and Hearing Association 1998

Medal of Merit 2005

Ohio University Alumni Association

Superior Accomplishment Award – Division 5 2007

University of Florida

Key Note Speaker at the 14th Annual Japanese Society of Dysphagia Rehabilitation. Tokyo (Chiba), Japan. September, 2008

Key Note Speaker - University of Massachusetts Leadership Conference. April, 2011.

College of Public Health and Health Professions *Outstanding Teaching Service Incentive Award*, September 2011.

Diversity and Inclusion Award for University of Florida Health Science Center, February 2012.

Inaugural Diversity and Inclusion Award: University of Florida, April 2012.

Technology Innovator Award: University of Florida, Office of Technology and Licensing. 2013, 2016, 2020.

Dean's Citation Award for Outstanding Publication: College of Public Health and Health Professions. September, 2014.

Honors of the Association: American Speech-Language and Hearing Association, Fall, 2016

E. Mentored Student Research Awards

Emily Plowman - DRS New Investigator Award - 2001

Cynthia Dubose - DRS New Investigator Award – 2003

Lisa LaGorio - PPHP Outstanding Graduate Research Award – 2007

Lisa LaGorio – ASHA Foundation Scholarship – 2007

Isaac Sia - FLASHA Best Poster Award – 2010

Lisa LaGorio – UF Aging Research Award – 2010

Lisa LaGorio – ASHA Foundation New Century Scholarship – 2010

Lisa LaGorio – NIH F31 (Dissertation Support) - 2011

Isaac Sia - DRS 3rd Place Overall Best Poster – 2012

Isaac Sia – PPHP Collaboration Research Award – 2011, 2012

Aarthi Madhavan – PPHP Collaboration Research Award - 2012

Ali Barikroo - DRS - Springer Publishing Travel Award - 2014

Aarthi Madhavan - DRS - Head and Neck Cancer Alliance Award - 2014

Aarthi Madhavan – PPHP Outstanding Graduate Research Award – 2014

Aarthi Madhavan – ASHA Foundation New Century Scholarship – 2014

Isaac Sia – ASHA Foundation Graduate Student Scholarship - 2014

Ali Barikroo - Oak Hammock Institute for Learning in Retirement and Aging Research Award - 2015

Isaac Sia - Oak Hammock Institute for Learning in Retirement and Aging Research Award - 2015

Ali Barikroo - ASHA Foundation International Student Award – 2015

VI. Grants/Contracts (Only funded grants/contracts)

1984: DSR New Faculty Research Award (UF): \$11,859

1986: DSR Research Development Award (UF): \$23,352

1986: United Cerebral Palsy: \$1250

1986: DSR Graduate Assistant Award (UF): \$7,378

1987: Shands Teaching Hospital (Acoustics Laboratory): \$29,600

1988: American Electromedics Corp. (sEMG Biofeedback and Swallowing): \$6000

1989: Florida Speech Hearing Association Foundation (Developmental Motor Speech Disorders): \$2000

1992: Multidisciplinary Treatment Program (MDTP) (Evaluation of Language/Learning Disabilities): \$12,000

1993: Florida Speech Hearing Association Foundation (Spasmodic Dysphonia Pilot Study) – \$2000

1993: DSR and College of Medicine (MRI and Spasmodic Dysphonia) - \$7,400

1994: Multidisciplinary Treatment Program (Evaluation of Language /Learning Disabilities): \$14,223

1994: Shands Hospital (Contract: Speech-Language Pathology and Audiology Inpatient Service): \$200,000

1995: Development of a Diagnostic and Nourishment System for People with Swallowing Difficulties: PI. Sota-Tech, Minnesota: \$45,467

1996: Surface Electromyography (SEMG) biofeedback in the treatment of dysphagia. The Prometheus Group: \$20,030

- 1997: Shands Health Care System (Contract: Expansion of Speech and Hearing Services): \$600,000
- 1997 – 2001: University of Florida Brain Institute: \$125,000 to support research development in junior faculty
- 1998-2001: Shands Health Care System (contract continued and expanded to exceed \$2,700,000 per year)
- 2000 - 2002: Florida Department of Education (Multidisciplinary Diagnostic and Treatment Program): \$22,000 per year for doctoral student support
- 2001 - 2003: Muscle Composition and Function for Swallowing in Head/Neck Cancer Patients Undergoing Radiotherapy: A Randomized Controlled Trial of Swallowing Therapy. Florida Department of Health Biomedical Research Program (\$386,635). (Co-PI).
- 2002: Grant-in-Aid for support of website development for Florida Dysphagia Institute. \$5,000. Ez-Em Corporation.
- 2002 – 2004: K30 APPCI Fellowship: Advanced Postgraduate Program in Clinical Investigation (APPCI) funded by the Clinical Research Curriculum Award K30RR022258 from the National Center For Research Resources. University of Florida College of Medicine (Tuition and Travel funds)
- 2003 - 2006: Dysphagia and Nutritional Status Following Stroke. Pilot Study funded by College of Public Health and Health Professions (\$15,000)
- 2004 - 2005: Effects of orally dissolving tablets on pill swallowing in dysphagic adults. Schwarz Pharma. (Co-PI) \$31,000
- 2004 - 2005: Pilot studies in electrical-stimulation for the treatment of dysphagia in adults and children. (PI) Chattanooga Group. (\$105,090).
- 2006-2007: Multisite clinical studies and physiological evaluation of electrical stimulation for the treatment of dysphagia in adults (pilot studies). (PI) EMPI (\$84,688).
- 2006 – 2011: Muscle preservation and swallow function following radiotherapy. American Cancer Society. (Co-PI) \$828,000 (Direct Costs)
- 2008 – 2011:NIH/NCMRR- R21 Traditional swallowing therapy vs. NMES assisted therapy. (Co-PI) \$275,000 (direct costs)

2009 - 2012: Development and initial validation of a swallow frequency meter. Clinical Translation and Science Institute (CTSI: NIH), University of Florida. (PI) \$24,720

2011- 2013: Sensory Alterations and Swallow Function in RT Treated Head/Neck Cancer Patients. Florida Department of Health - Bankhead Coley Cancer Research Program. (PI) \$155,250.

2012 - 2013: Swallow Ability, Reflux, and Risk for Chest Infection in Acute Stroke. Shands Quasi Endowment Grant. (PI) \$51,852

2013: Commercialization Fund, Office of Technology and Licensing, University of Florida (PI) \$22,500

2013 - 2016: NIH/NCI-R21: Sensory Alterations and Swallow Function in RT Treated Head/Neck Cancer Patients (PI) \$ 410,687 (Direct and Indirect Costs)

Pending Grants/Contracts:

2021: NIH R01: Risk and benefits of a hydration protocol for acute stroke patients with dysphagia. Co-PI (In process for June/October 2021 submission). This proposal is preparatory to a larger multi-institutional R01 including UCF, UF, FSU, and JHMC.

2020: NSF Seed Funds: A multimodal sensor to monitor swallow, respiration, and cardiac rate. Implications for post and Covid-19 rehabilitation recovery. With Patheous Corp. (In progress for May 2021 Submission)

2020: NIH R01: Indicators of dysphagia among community dwelling elderly. Co-inv. (In process for October 2021 submission).

VII. Foundation Gifts/Support:

2006 - 2007: Chattanooga Group: \$211,619 to support core function of Swallowing Research Laboratory

2007-2008: EMPI, Inc: \$209,079 to support core function of Swallowing Research Laboratory

VIII. Patents:

Crary, M. A. and Carnaby-Mann G. D. Automated Swallow Frequency Meter. Patent approved December 2018. This patent application relates to an automated (computerized) method to identify swallow activity and to calculate swallowing frequency.

IX. Mentored International Visiting Scholars:

Dr Noriaki Takahashi, Tokyo, Japan 2018-2019

Dr Ikjae Im, Seoul, South Korea, 2017 - 2019
Dr. Yoshiaki Ihara, Tokyo, Japan, 2016- 2018
Dr. Sachiko Takaki, Tokyo, Japan, 2011-2012
Dr. Yue Lan, Guangzhou, China 2010-2011
Dr. Mai Ohkubo, Tokyo, Japan 2010
Dr. Giedre Felix, Bauru, Brazil 2010
Mr. Jai Gupta, Sydney, Australia 2005.
Dr. Mitsuyoshi Yoshida, Hiroshima, Japan 2004.