



<i>Preface</i>	<i>xiii</i>
<i>Contributors</i>	<i>xvii</i>
1 Voice: A Historical Perspective	1
Introduction	1
Definition of a Voice Disorder	2
Role and Skills of the Speech-Language Pathologist	2
Ancient History	3
Folklore Remedies	3
Egyptian Papyri	3
Hindu Writings	4
Hippocrates	4
Aristotle	4
Claudius Galenus	5
The Renaissance	6
The 17th to 19th Centuries	7
The Laryngeal Mirror	7
Further Advancements	8
Voice Therapy	9
Clinical Voice Pathology	11
Artistic and Scientific Ingredients of Voice Pathology	11
Summary and Concluding Remarks	12
References	13
2 Anatomy and Physiology	15
Anatomy	15
The Laryngeal Valve	17
Respiration for Phonation	19
Vocal Tract Resonance	21
Structural Support for the Larynx	21
Hyoid Bone	21
Laryngeal Cartilages	22
Muscles	27
Muscles for Respiration: Inspiration and Exhalation	27
Laryngeal Muscles	29
True Folds, Ventricular (False) Folds, and Ventricle	39

Vocal Fold Microstructure	41
Epithelium	41
Basement Membrane Zone	42
Lamina Propria	42
Vocalis Muscle	45
Blood Supply and Secretions	46
Neurologic Supply	46
Central Nervous System Control	46
Peripheral Innervation	47
Laryngeal Reflexes	49
Developmental Changes	50
Geriatric Vocal Folds	51
DNA Microarray Gene Expression Analysis	52
Physiology of Phonation	53
Theories of Vibration	53
Fundamental Frequency Control	56
Intensity Control	57
Phonation Modes and Voice Quality Control	57
Summary	58
References	58
3 Etiologies of Voice Disorders	63
Etiologies of Phonotrauma	63
Phonotrauma	64
Inappropriate Vocal Components	65
Medically Related Etiologies	69
Direct Surgery	70
Indirect Surgery	70
Chronic Illnesses and Disorders	70
Primary Disorder Etiologies	74
Personality-Related Etiologies	75
Environmental/Life Stress	75
Identity Conflict	76
Summary	77
References	77
4 Pathologies of the Laryngeal Mechanism	83
Prevalence of Voice Disorders	84
Pathology Classifications	85
Structural Pathologies of the Vocal Fold	86
Congenital and Maturational Changes Affecting Voice	99
Inflammatory Conditions of the Larynx	101
Trauma or Injury of the Larynx	104

Systemic Conditions Affecting Voice	105
Allergies	107
Nonlaryngeal Aerodigestive Disorders Affecting Voice	108
Psychiatric and Psychological Disorders Affecting Voice	111
Neurologic Disorders Affecting Voice	115
Movement Disorders Affecting the Larynx	123
Central Neurologic Disorders Affecting Voice	126
Other Disorders of Voice Use	129
Summary	132
References	133
5 The Diagnostic Voice Evaluation	141
The Management Team	142
Patient Profile	143
Referral Sources	144
Medical Evaluation	145
Voice Pathology Evaluation	147
Diagnostic Voice Evaluation	148
Referral	148
Reason for the Referral	148
History of the Problem	150
Oral-Peripheral Examination	153
Auditory-Perceptual Voice Assessment	153
Diagnostic Probes (Stimulability)	156
Focal Palpation of the Paralaryngeal Region	157
Patient Self-Assessment of the Voice Disorder	158
Impressions	159
Prognosis	159
Recommendations	160
Additional Considerations	160
Summary	160
References	161
Appendix 5–A. Sample Report	164
Appendix 5–B. Consensus Auditory-Perceptual Evaluation of Voice (CAPE-V)	167
Appendix 5–C. The Rainbow Passage	172
Appendix 5–D. Vocal Component Checklist	173
Appendix 5–E. Voice Handicap Index (VHI)	174
6 Instrumental Measurement of Voice	177
Clinical Utility	178
Basics of Technical Instruments	181
Microphones and Recording Environment	181

Digital Signal Processing	182
Acoustic Measures	183
Pitch Detection Algorithm	185
Fundamental Frequency	185
Intensity	186
Voice Range Profile, Phonetogram, and Physiologic Frequency	188
Range of Phonation	
Perturbation Measures	189
Signal (or Harmonic)-to-Noise Ratios	190
Spectral Analysis	191
Aerodynamic Measures	194
Calibration	196
Pressure, Flow, Resistance, and Ohm's Law	196
Airflow Equipment	197
Flow Measurement	198
Subglottal Air Pressure Measurement	198
Phonation Threshold Pressure	199
Laryngeal Resistance	201
Inverse Filter	201
Laryngeal Imaging	202
Endoscopy	204
Stroboscopy	206
High-Speed Digital Imaging	208
Kymography	210
Criteria for Laryngeal Imaging	213
Endoscopic Imaging Techniques	214
Recording Protocol	215
Visual Perceptual Judgments	216
Electroglottography (EGG)	218
Laryngeal Electromyography (LEMG)	219
Normative Information	219
Electrical Safety	221
Hygienic Safety	222
The Clinical Voice Laboratory	223
Caveats and Additional Considerations	224
Glossary	225
Acoustics	225
Aerodynamics	226
Imaging	227
References	228
Appendix 6–A. Joint Statement: ASHA and AAO-HNS	234
Appendix 6–B. Vocal Tract Visualization and Imaging: Position Statement	235

7	Survey of Voice Management	237
	Voice Therapy Orientations	237
	Hygienic Voice Therapy	237
	Symptomatic Voice Therapy	242
	Psychogenic Voice Therapy	244
	Physiologic Voice Therapy	245
	Eclectic Voice Therapy	246
	Case Study 1: Representing Voice Therapy Orientations	247
	Hygienic Voice Therapy	251
	Treatment Strategies for Vocally Traumatic Behavior	251
	Vocal Hygiene Therapy Approaches	251
	Case Study 2: The Homemaker	252
	Case Study 3: The Noisy Job Environment	253
	Case Study 4: The Public Speaker	254
	Case Study 5: Phonotrauma in Children	255
	Case Study 6: Can We Always Expect Success?	260
	Hydration	261
	Confidential Voice	262
	Symptomatic Voice Therapy	263
	Therapy Approaches for Respiration	263
	Therapy Approaches for Phonation	266
	Therapy Approaches for Resonance	268
	Therapy Approaches for Pitch	273
	Case Study 7: The Pseudoauthoritative Voice	274
	Case Study 8: The Voice Saver	275
	Case Study 9: Emotional Voice Changes	276
	Voice and Communication Modification for Gender Diverse People	277
	Therapy Approaches for Loudness Modification	278
	Therapy Approaches for Rate Modification	279
	Treatment Approaches for Laryngeal Area Muscle Tension	279
	Case Study 10: Ventricular Phonation	281
	Psychogenic Voice Therapy	282
	Functional Aphonia/Dysphonia	283
	Functional Falsetto	292
	Vocal Cord Dysfunction (VCD)	297
	Physiologic Voice Therapy	298
	Case Study 11: Laryngeal Muscle Imbalance	298
	Case Study 12: The Postsurgical Patient	299
	Case Study 13: The Aging Voice	300
	The Semi-Occluded Vocal Tract	301
	Speech-Based SOVT Therapy	309
	Accent Method of Voice Therapy	313
	Flow Phonation	315

Lee Silverman Voice Treatment (LSVT) [™]	316
Phonation Resistance Training Exercise (PhoRTE) [™]	317
Conversation Training Therapy (CTT)	318
Team Management of Specific Laryngeal Pathologies	320
Vocal Fold Cover Lesions	320
Laryngopharyngeal Reflux (LPR) and Gastroesophageal Reflux Disease (GERD)	321
Unilateral Vocal Fold Paralysis	323
Case Study 14: Unilateral Vocal Fold Paralysis	328
Spasmodic Dysphonia	329
Organic (Essential) Tremor	334
Successful Voice Therapy	335
References	337
Appendix 7–A. Phrases and Sentences Graduated in Length	350

8 The Professional Voice **369**

Overview	369
The Professional Voice User	370
History	370
The “At-Risk” Status	373
Professional Roles	374
The Otolaryngologist	375
The Voice Pathologist	376
The Producer	377
The Agent or Manager	378
Clinical Pathways	378
Otolaryngology-Voice Pathology-Voice Pedagogy	378
Voice Pedagogy-Otolaryngologist-Voice Pathology	379
Voice Pedagogy-Voice Pathology-Otolaryngology	379
Otolaryngology-Voice Pedagogy	381
Voice Pathologist-Voice Pedagogy	381
Vocal Types and Vocal Range	381
Categories of Singers	383
Vocal Registers	383
Common Etiology Factor	384
Personality Factor	384
Phonotrauma	384
Drugs	386
Hydration	387
Common Pathologies	388
Acute and Chronic Noninfectious Laryngitis	388
Vocal Nodules	389

Contact Ulcers and Granulomas	390
Gastroesophageal Reflux Disease/Laryngopharyngeal Reflux	390
Voice Fatigue	392
Vocal Fold Hemorrhage and Vascular Pathologies	393
Clinical Assessment of the Vocal Performer	395
Supportive Training and Techniques	396
Alexander Technique	397
The Linklater Method	398
The Feldenkrais Method	398
The Lessac System	399
Estill Voice Training	399
Summary	400
Glossary of Terms Used in Singing	400
References	402
9 Rehabilitation of the Laryngectomized Patient	409
Overview	409
Incidence of Laryngeal Cancer	409
Etiology	410
Symptoms of Laryngeal Cancer	411
Medical Evaluation	412
Staging and Tumor-Node-Metastasis Classifications	413
Lymph Node Distribution	419
Treatment Options	421
Conservation	421
Combined Treatments	422
Radiation Therapy	422
Surgery	424
Concurrent Chemoradiotherapy	425
Methods of Reconstruction	428
Need for Follow-up Treatment	429
Multidisciplinary Rehabilitation Team	430
Special Concerns of the Laryngectomized Patient	435
Communication	435
Physical Concerns	436
Psychosocial Concerns	445
Speech Rehabilitation	446
Artificial Larynges	447
Esophageal Speech	453
Surgical Prosthetics	458
Role of the Speech-Language Pathologist and Surgical Prosthetics	463
Patient Evaluation	463

Patient Fitting	465
Independent Care	469
Maximizing Communication	472
Hands-Free Speaking Valve	473
Summary	475
Helpful Websites on Head and Neck Cancers	476
References	478
10 Artificial Airway and Mechanical Ventilation	491
Introduction	491
Artificial Airway	492
Nasopharyngeal Airway	492
Oropharyngeal Airway	492
Laryngeal Mask Airway	493
Endotracheal Intubation	493
Tracheotomy	497
Tracheostomy Complications	499
Communication Options for Patients with a Tracheostomy	500
Mechanical Ventilation	506
Mechanical Ventilation Terminology	507
Strategies for Restoring Verbal Communication for Ventilator Dependent Patients	508
Noninvasive Ventilation Speech Challenges	508
Invasive Ventilation Speech Challenges	510
Summary	511
References	512
<i>Index</i>	<i>515</i>