

TABLE W1

NUMBER OF OFFICE VISITS, REFERRAL RATES, AND SPECIALISTS REFERRED TO FOR ALL CONDITIONS SEEN DURING OFFICE VISITS ACCORDING TO DATA REPORTED BY 141 FAMILY PHYSICIANS WHO PARTICIPATED IN THE ASPN REFERRAL STUDY\*

Condition	Number of Office Visits for Condition	Condition-Specific Referral Rate (% Visits Referred)	Two Most Common Types of Specialists Referred to (% of Referrals)
Administrative			
General medical exam	5519	0.4%	Gastroenterologist (30.0) Urologist (20.0)
Surgical aftercare	222	2.7%	Orthopedic surgeon (50.0) Plastic surgeon (16.7)
Allergy			
Allergic reactions	125	5.6%	Allergist (57.1) Dermatologist (42.9)
Asthma	526	1.9%	Allergist (80.0) Pulmonologist (10.0)
Allergic rhinitis	699	2.9%	Allergist (95.0) ENT (5.0)
Cardiovascular			
Cardiovascular signs and symptoms	123	10.6%	Cardiologist (76.9) Hand surgeon (7.7)
Hypertension	2865	0.1%	Cardiologist (50.0) Psychologist (50.0)
Ischemic heart disease	528	2.3%	Cardiologist (91.7) Physical therapist (8.3)
Congenital heart disease	26	15.4%	Cardiologist (100.0)
Congestive heart failure	345	0.3%	Cardiologist (100.0)
Cardiac valve disorders	47	2.1%	Cardiologist (100.0)
Cardiomyopathy	29	6.9%	Cardiologist (100.0)
Heart murmur	18	5.6%	Pediatrician (100.0)

Condition	Number of Office Visits for Condition	Condition-Specific Referral Rate (% Visits Referred)	Two Most Common Types of Specialists Referred to (% of Referrals)
Cardiac arrhythmia	276	5.8%	Cardiologist (93.8) ENT (6.3)
Generalized atherosclerosis	136	2.9%	Vascular surgeon (50.0) General surgeon (25.0)
Disorders of lipid metabolism	817	0.4%	Nutritionist (100.0)

Developmental			
Developmental disorder	69	11.6%	Speech therapist (25.0) Psychologist (25.0)
Dental			
Disorders of mouth	36	11.1%	ENT (50.0) Oral surgeon (25.0)
Disorders of teeth	17	0.0%	N/A
Gingivitis	5	0.0%	N/A
Stomatitis	20	0.0%	N/A
Skin			
Contusions and abrasions	262	0.0%	N/A
Dermatitis and eczema	410	2.9%	Dermatologist (100.0)
Keloid	9	0.0%	N/A
Acne	171	4.1%	Dermatologist (100.0)
Disorders of sebaceous glands	14	0.0%	N/A
Sebaceous cyst	114	7.0%	Dermatologist (37.5) General surgeon (37.5)
Viral warts and molluscum contagiosum	283	0.7%	Dermatologist (50.0) Ob/gyn (50.0)
Other inflammatory conditions of skin	37	5.4%	Dermatologist (100.0)

Exanthems	372	1.3%	Dermatologist (80.0) Podiatrist (20.0)
Skin keratoses	117	3.4%	Dermatologist (50.0) Plastic surgeon (25.0)
Dermatophytoses	174	1.1%	Dermatologist (50.0) Podiatrist (50.0)
Psoriasis	34	8.8%	Dermatologist (100.0)
Disease of hair and hair follicles	56	3.6%	Dermatologist (50.0) Ophthalmologist (50.0)
Scabies and pediculosis	20	0.0%	N/A
Diseases of nail	67	11.9%	Podiatrist (100.0)
Other skin disorders	114	5.3%	Dermatologist (50.0) General surgeon (33.3)
Condition	Number of office visits for condition	Condition-specific referral rate (% visits referred)	2 most common types of specialists referred to (% of referrals)
Endocrine			
Diabetes mellitus	1654	3.4%	Ophthalmologist (48.2) Nutritionist (16.1)
Osteoporosis	81	0.0%	N/A
Short stature, failure to thrive	27	3.7%	Nutritionist (100.0)
Obesity	301	5.6%	Nutritionist (58.8) Endocrinologist (29.4)
Thyroid disease	459	1.1%	Endocrinologist (60.0) Head and neck surgeon (20.0)
Other endocrine disorders	57	5.3%	Endocrinologist (66.7) Gastroenterologist (33.3)
Ears, Nose, Throat			
Otitis media	1185	1.9%	ENT (95.7) Audiologist (4.4)
Tinnitus	21	33.3%	ENT (85.7) Audiologist (14.3)

Temporomandibular joint disease	45	13.3%	Maxillofacial Surgeon (50.0) Oral surgeon (33.3)
Foreign body in the ear, nose, or throat	5	0.0%	N/A
Deviated nasal septum	7	28.6%	ENT (100.0)
Otitis externa	109	1.8%	ENT (100.0)
Wax in ear	104	1.9%	ENT (50.0) Audiologist (50.0)
Deafness, hearing loss	75	36.0%	Audiologist (63.0) ENT (37.0)
Chronic pharyngitis and tonsillitis	15	46.7%	ENT (100.0)
Epistaxis	29	6.9%	ENT (100.0)
Acute upper respiratory tract infection	2213	0.4%	ENT (88.9) Dermatologist (11.1)
Gastrointestinal/Hepatic			
Gastrointestinal signs and symptoms	182	15.9%	Gastroenterologist (79.3) General surgeon (10.3)
Inflammatory bowel disease	27	11.1%	Gastroenterologist (66.7) Colorectal surgeon (33.3)
Constipation	106	4.7%	Gastroenterologist (100.0)
Condition	Number of office visits for condition	Condition-specific referral rate (% visits referred)	2 most common types of specialists referred to (% of referrals)
Acute hepatitis	39	5.1%	Gastroenterologist (50.0) Nutritionist (50.0)
Chronic liver disease	27	11.1%	Gastroenterologist (66.7) General Surgeon (33.3)
Peptic ulcer disease	242	4.5%	Gastroenterologist (81.8) General surgeon (9.1)
Diarrhea	348	1.7%	Gastroenterologist (100.0)
Gastroesophageal reflux	351	4.8%	Gastroenterologist (76.5)

			General surgeon (11.8)
Irritable bowel syndrome	111	1.8%	Gastroenterologist (100.0)
Diverticular disease of colon	69	0.0%	N/A
Nutrition			
Nutritional deficiencies	22	0.0%	N/A
Genetic			
Chromosomal anomalies	17	0.0%	N/A
General Signs and Symptoms			
General signs and symptoms	246	6.1%	Neurologist (33.3) ENT (20.0)
Chest pain	376	4.8%	Cardiologist (77.8) Internist (11.1)
Fever	215	0.0%	N/A
Syncope	64	4.7%	Cardiologist (100.0)
Nausea, vomiting	85	1.2%	Gastroenterologist (100.0)
Debility and undue fatigue	475	1.3%	Physical therapist (50.0) Gastroenterologist (16.7)
Lymphadenopathy	57	7.0%	General surgeon (50.0) ENT (25.0)
Edema	180	2.2%	General surgeon (50.0) Vascular surgeon (25.0)
Hematologic			
Hemolytic anemia	10	0.0%	N/A
Iron deficiency/other deficiency anemias	226	1.3%	Hematologist (100.0)
Thrombophlebitis	69	1.4%	Vascular surgeon (100.0)
Neonatal jaundice	4	0.0%	N/A
Condition	Number of office visits for condition	Condition-specific referral rate (% visits referred)	2 most common types of specialists referred to (% of referrals)

Aplastic anemia	2	0.0%	N/A
Infections			
Tuberculosis infection	7	0.0%	N/A
Fungal infections	70	0.0%	N/A
Infectious mononucleosis	28	0.0%	N/A
HIV, AIDS	15	0.0%	N/A
Sexually transmitted diseases	66	4.5%	Urologist (66.7) Orthopedic surgeon (33.3)
Viral syndromes	267	0.0%	N/A
Lyme disease	7	0.0%	N/A
Renal			
Chronic renal failure	41	4.9%	Nephrologist (100.0)
Fluid or electrolyte disturbances	53	1.9%	Nephrologist (100.0)
Neurologic			
Neurologic signs and symptoms	52	21.2%	Neurologist (72.7) Speech therapist (9.1)
Headaches	726	2.5%	Neurologist (72.2) Ophthalmologist (11.1)
Peripheral neuropathy, neuritis	249	13.3%	Orthopedic surgeon (27.3) Neurologist (21.2)
Vertiginous syndromes	292	5.8%	ENT (58.8) Neurologist (23.5)
Cerebrovascular disease	122	7.4%	Neurologist (66.7) Physical therapist (11.1)
Parkinson's disease	47	6.4%	Neurologist (100.0)
Seizure disorder	151	4.0%	Neurologist (100.0)
Multiple sclerosis	25	16.0%	Neurologist (75.0) Physical therapist (25.0)
Sleep problems	135	3.7%	Neurologist (80.0) Pulmonologist (20.0)
Dementia and delirium	72	0.0%	N/A
Female Reproductive			

Pregnancy and delivery, uncomplicated	1524	0.8%	Ob/gyn (41.7) Perinatologist (25.0)
Condition	Number of office visits for condition	Condition-specific referral rate (% visits referred)	2 most common types of specialists referred to (% of referrals)
Female genital symptoms	101	7.9%	Ob/gyn (100.0)
Endometriosis	10	10.0%	Ob/gyn (100.0)
Pregnancy and delivery with complications	77	3.9%	Ob/gyn (100.0)
Female infertility	19	10.5%	Ob/gyn (100.0)
Abnormal Pap smear	82	4.9%	Ob/gyn (75.0) General surgeon (25.0)
Ovarian cyst	30	6.7%	Ob/gyn (100.0)
Vaginitis, vulvitis, cervicitis	182	0.5%	Ob/gyn (100.0)
Menstrual disorders	232	5.6%	Ob/gyn (76.9) Family physician (7.7)
Contraception	237	4.6%	Ob/gyn (54.6) Urologist (45.5)
Menopausal symptoms	161	1.2%	Ob/gyn (50.0) Radiologist (50.0)
Uterovaginal prolapse	39	33.3%	Ob/gyn (61.5) Urologist (30.8)
Malignancies			
Malignant neoplasms of the skin	47	29.8%	Dermatologist (57.1) General surgeon (14.3)
Prostate cancer	41	4.9%	Oncologist (50.0) Urologist (50.0)
Low-impact malignant neoplasms	165	7.3%	Oncologist (41.7) General surgeon (16.7)
High-impact malignant neoplasms	44	11.4%	Pulmonologist (60.0) General surgeon (40.0)
Eye			

Ophthalmic signs and symptoms	40	40.0%	Ophthalmologist (87.5) Optometrist (12.5)
Blindness	15	26.7%	Ophthalmologist (100.0)
Retinal disorders (excluding diabetic retinopathy)	12	16.7%	Ophthalmologist (100.0)
Disorders of the eyelid or lacrimal duct (excluding blepharitis and chalazion)	18	50.0%	Ophthalmologist (88.9) Plastic surgeon (11.1)
Refractive errors	8	62.5%	Ophthalmologist (60.0) Optometrist (40.0)
Condition	Number of office visits for condition	Condition-specific referral rate (% visits referred)	2 most common types of specialists referred to (% of referrals)
Cataract, aphakia	35	14.3%	Ophthalmologist (100.0)
Conjunctivitis, keratitis	206	1.9%	Ophthalmologist (100.0)
Glaucoma	12	16.7%	Ophthalmologist (100.0)
Infections of eyelid	29	3.4%	Ophthalmologist (100.0)
Foreign body in eye	20	15.0%	Ophthalmologist (100.0)
Strabismus, amblyopia	6	83.3%	Ophthalmologist (80.0) Optometrist (20.0)
Traumatic injuries of eye	29	13.8%	Ophthalmologist (75.0) Optometrist (25.0)
<b>Musculoskeletal</b>			
Acute sprains and strains	641	4.2%	Physical therapist (44.4) Orthopedic surgeon (33.3)
Degenerative joint disease	537	2.4%	Orthopedic surgeon (76.9) Hand surgeon (7.7)
Fractures (excluding digits)	268	8.2%	Orthopedic surgeon (68.2) ENT (13.6)
Torticollis	7	14.3%	Chiropractor (100.0)
Kyphoscoliosis	19	21.1%	Orthopedic Surgeon (75.0) Physical Therapist (25.0)

Congenital hip dislocation	1	0.0%	N/A
Fracture and dislocation of the digits	45	13.3%	Orthopedic surgeon (83.3) Hand surgeon (16.7)
Joint disorders, trauma related	108	23.1%	Orthopedic surgeon (84.0) Physical therapist (8.0)
Fracture of neck of femur (hip)	11	9.1%	Orthopedic surgeon (100.0)
Congenital anomalies of limbs, hands, and feet	11	27.3%	Orthopedic surgeon (100.0)
Acquired foot deformities	61	29.5%	Podiatrist (83.3) Orthopedic surgeon (16.7)
Cervical pain syndromes	248	8.1%	Physical therapist (50.0) Orthopedic surgeon (25.0)
Low back pain	1149	6.7%	Physical therapist (33.8) Orthopedic surgeon (19.5)
Bursitis, synovitis, tenosynovitis	422	10.4%	Orthopedic surgeon (50.0) Hand surgeon (15.9)
Condition	Number of office visits for condition	Condition-specific referral rate (% visits referred)	2 most common types of specialists referred to (% of referrals)
Reconstructive			
Cleft lip and palate	1	0.0%	N/A
Lacerations	190	0.0%	N/A
Chronic ulcer of the skin	61	6.6%	Dermatologist (25.0) General surgeon (25.0)
Burns, second and third degree	42	0.0%	N/A
Psychosocial			
Depression, anxiety, neuroses	1472	3.6%	Psychologist (39.6) Psychiatrist (26.4)
Substance use	90	1.1%	Other mental health professional (100.0)
Tobacco abuse	120	0.0%	N/A
Behavior problems	30	16.7%	Psychologist (40.0)

			Neurologist (20.0)
Attention deficit disorder	204	5.4%	Psychologist (45.5) Psychiatrist (36.4)
Family and social problems	27	7.4%	Family therapist (50.0) Psychologist (50.0)
Schizophrenia and affective psychosis	77	3.9%	Psychiatrist (100.0)
Personality disorders	11	0.0%	N/A
<b>Respiratory</b>			
Respiratory signs and symptoms	183	8.7%	ENT (37.5) Cardiologist (31.3)
Acute lower respiratory tract infection	1118	0.0%	N/A
Sinusitis	1181	0.9%	ENT (81.8) Allergist (18.2)
Cystic fibrosis	4	0.0%	N/A
Emphysema, chronic bronchitis, chronic obstructive pulmonary disease	410	2.0%	Pulmonologist (100.0)
Cough	304	1.3%	Pulmonologist (50.0) ENT (50.0)
Sleep apnea	39	33.3%	Pulmonologist (84.6) ENT (7.7)
<b>Rheumatologic</b>			
Gout	81	0.0%	N/A
Condition	Number of office visits for condition	Condition-specific referral rate (% visits referred)	2 most common types of specialists referred to (% of referrals)
Arthropathy	205	3.4%	Rheumatologist (42.9) Orthopedic surgeon (28.6)
Musculoskeletal signs and symptoms	1077	10.1%	Orthopedic surgeon (58.7) Podiatrist (10.1)
Raynaud's syndrome	7	0.0%	N/A

General Surgery			
Anorectal conditions	185	11.9%	Gastroenterologist (50.0) General surgeon (22.7)
Appendicitis	3	0.0%	N/A
Benign and unspecified neoplasm	808	15.7%	General surgeon (32.3) Dermatologist (22.8)
Cholelithiasis, cholecystitis	46	45.7%	General surgeon (81.0) Gastroenterologist (4.8)
External abdominal hernias, hydroceles	77	45.5%	General surgeon (100.0)
Chronic cystic disease of the breast	42	0.0%	N/A
Other breast disorders	81	16.0%	General surgeon (53.9) Plastic Surgeon (38.5)
Varicose veins of lower extremities	47	14.9%	Vascular surgeon (57.1) General surgeon (28.6)
Nonfungal infections of skin and subcutaneous tissue	403	3.0%	ENT (25.0) Orthopedic surgeon (25.0)
Abdominal pain	645	3.6%	Gastroenterologist (39.1) General surgeon (39.1)
Peripheral vascular disease	69	4.3%	Vascular surgeon (100.0)
Toxic Effects			
Adverse effects of medicinal agents	42	2.4%	Allergist (100.0)
Genitourinary			
Undescended testes	2	0.0%	N/A
Hypospadias, other penile anomalies	2	50.0%	Urologist (100.0)
Prostatic hypertrophy	131	6.9%	Urologist (100.0)
Stricture of urethra	4	25.0%	General surgeon (100.0)
Urinary symptoms	272	13.6%	Urologist (75.7) Nephrologist (16.2)

Condition	Number of office visits for condition	Condition-specific referral rate (% visits referred)	2 most common types of specialists referred to (% of referrals)
Other male genital disease	93	8.6%	Urologist (87.5) Dermatologist (12.5)
Urinary tract infections	474	1.5%	Urologist (85.7) OB/Gyn (14.3)
Renal calculi	39	0.0%	N/A
Prostatitis	38	2.6%	Urologist (100.0)

\*Total number of visits in the data set was 34,519. NT denotes ear, nose, and throat specialist; HIV, human immunodeficiency virus infection.

