



Initial Slices and Views

Draft Map, Winter, 2008



Boston-Area Healthcare Network

Visualize, Navigate, Analyze, Self-Organize

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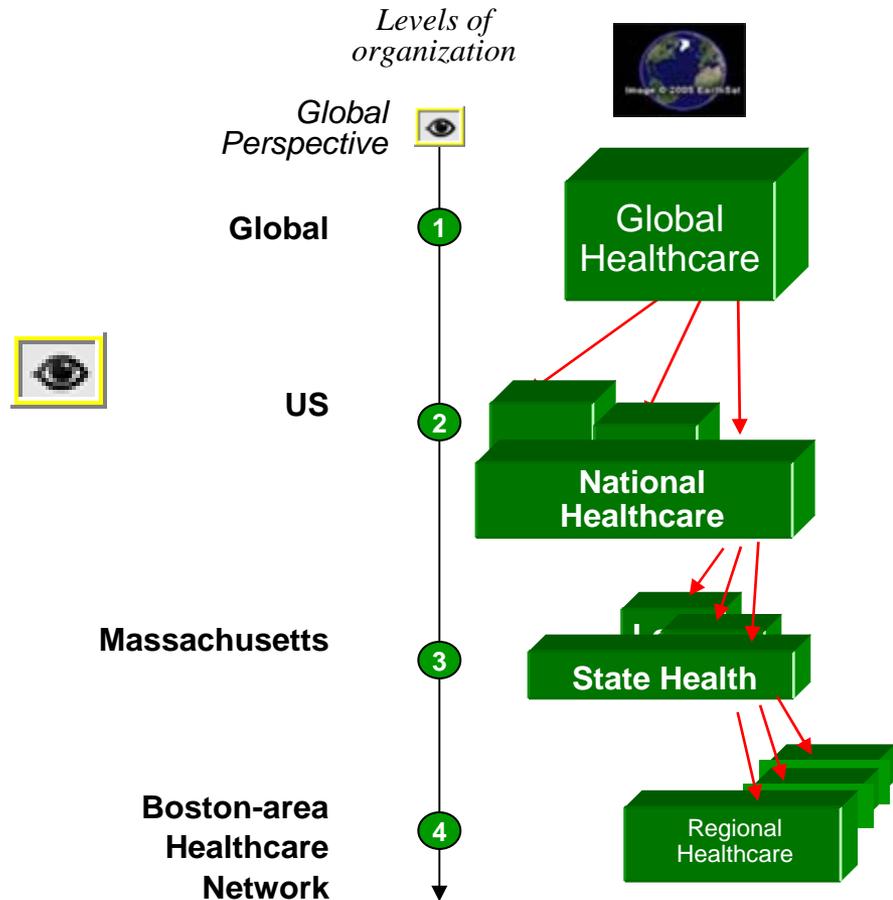
Boston Area Is Regional Hub in Global Healthcare Network

Healthcare is a multi-scale network of interconnected organizations and people

Networks are naturally organized in nested sets of whole-part relationships (hierarchy)

To represent a network, we have to establish a perspective, a particular point of reference as the “top” (root). Here, we work with four top points of reference. Each time we generate a network, we begin with one of these nodes as the starting point:

- Global healthcare (see right)
- Boston-area healthcare
- Boston-area “Medical” Network
- Partners and PCHI





Big Picture of Boston-Area Healthcare Networks

Consumers

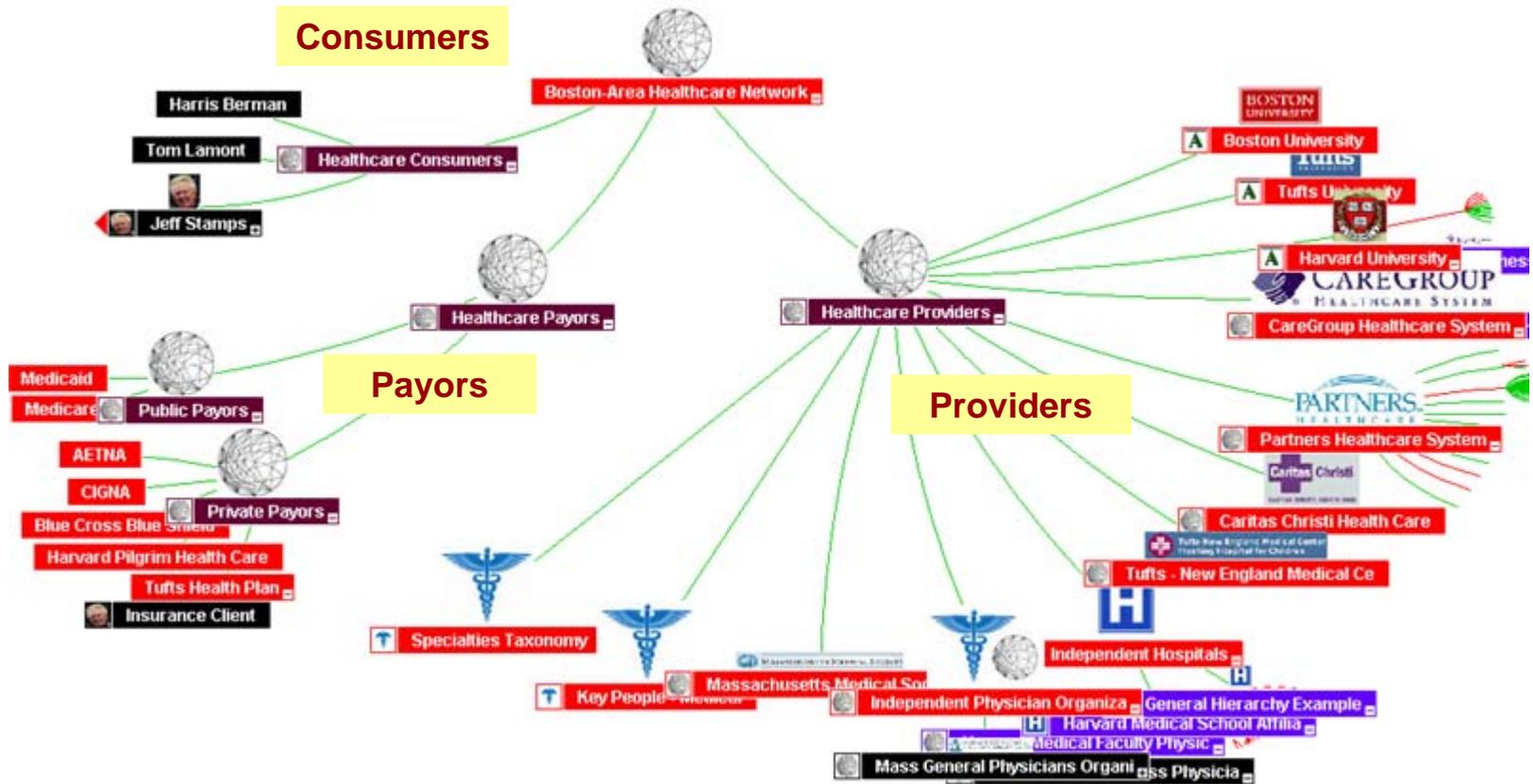
We are all consumers of healthcare, including the doctors and other healthcare workers who provide it

Providers

Hospitals, clinics, doctors, medical schools and other medical institutions

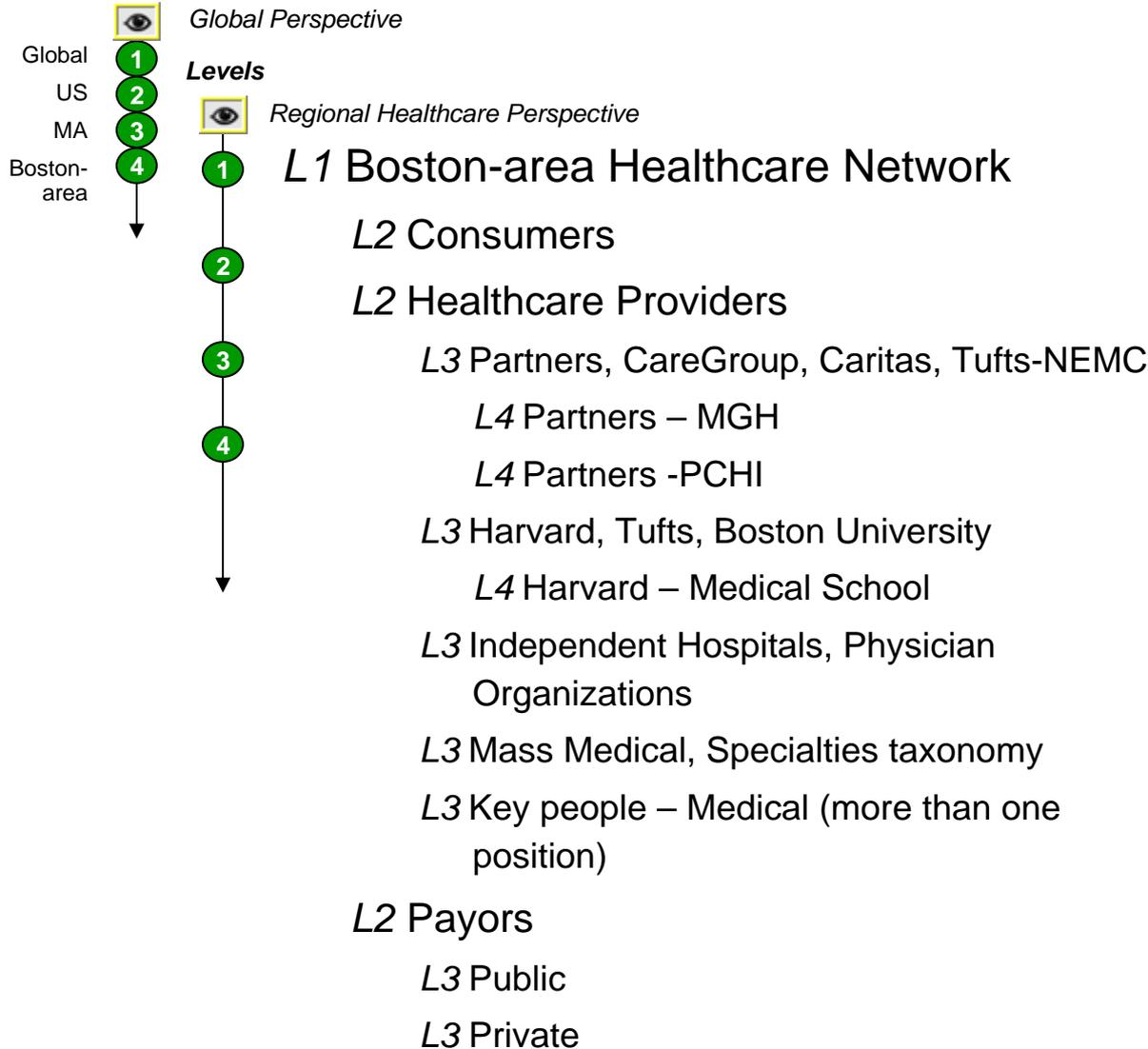
Payors

Health programs/plans, both public (government) and private organizations





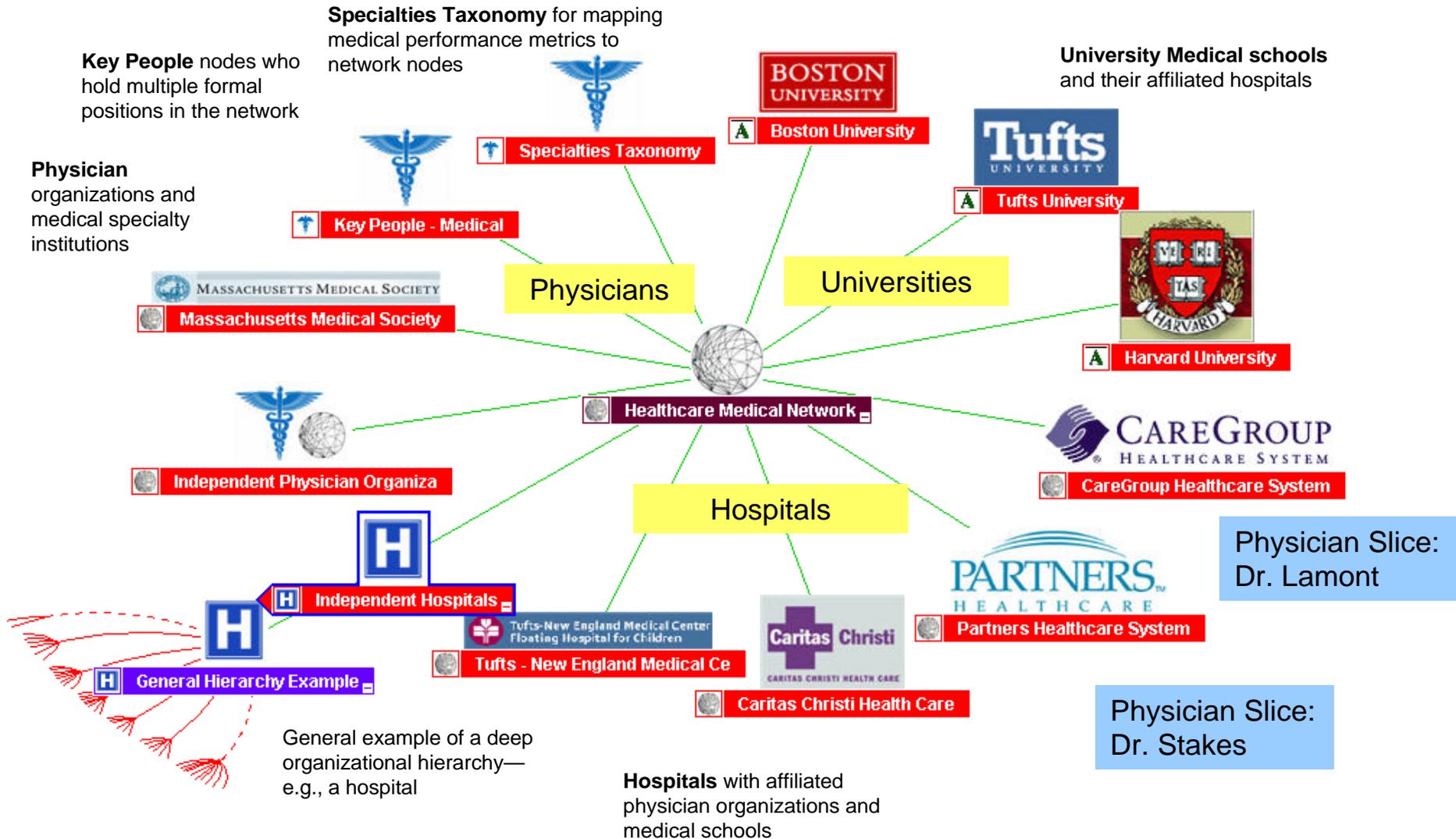
How We Stack the Healthcare Providers Network



Specific institutions, like hospitals or medical schools, have internal category structures (hierarchies) as well as interdependencies with other institutions (e.g., formal affiliations)



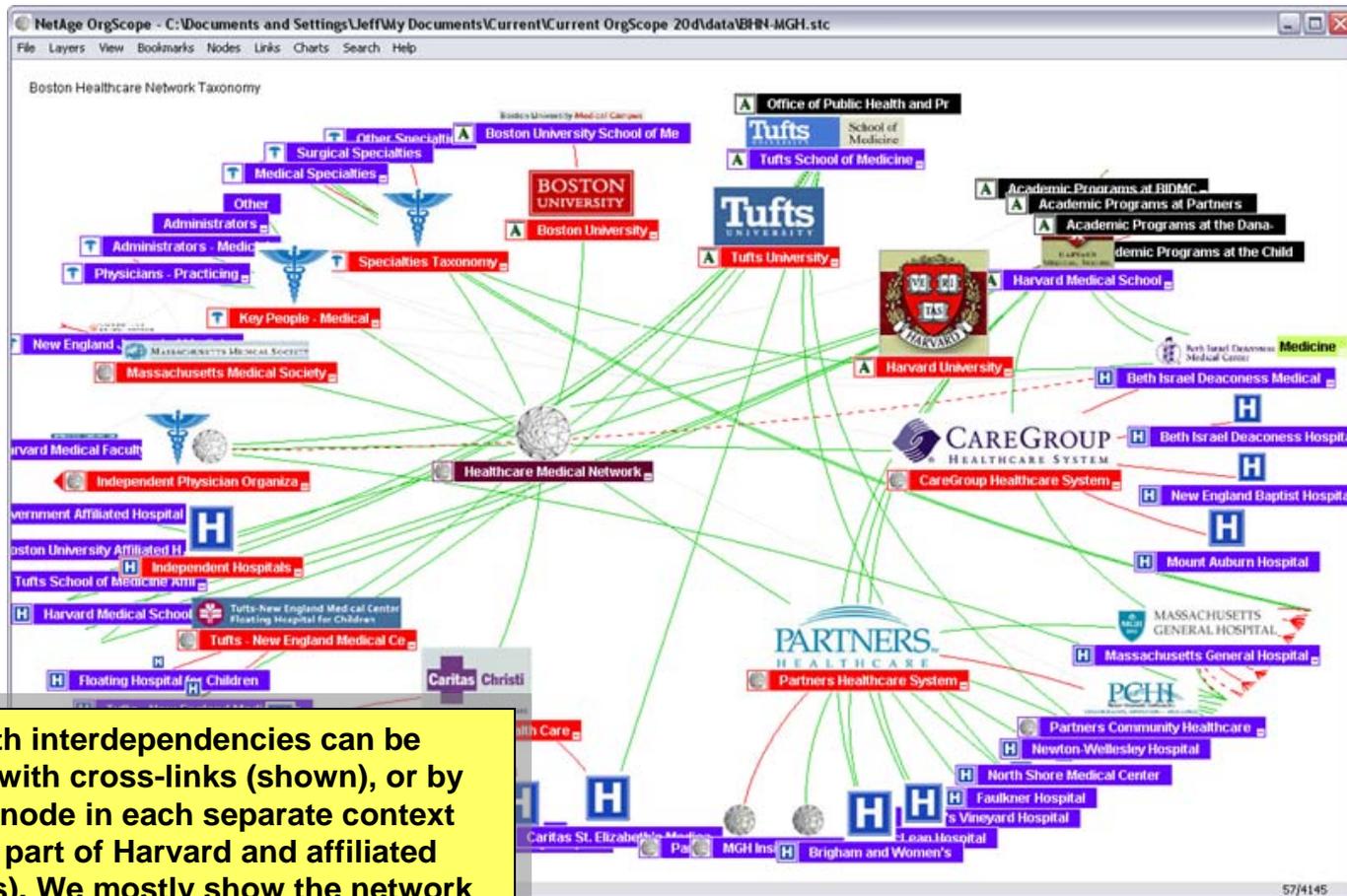
Boston-Area Medical Providers Network





One Picture of the Boston Medical Network Showing Some Interrelationships

- Skeleton framework of regional providers network ecology with institutional affiliations
- System and physician slices show network nodes with multiple organizational affiliations



Networks with interdependencies can be represented with cross-links (shown), or by displaying a node in each separate context (e.g., HMS is part of Harvard and affiliated with Partners). We mostly show the network with nodes represented multiple times.



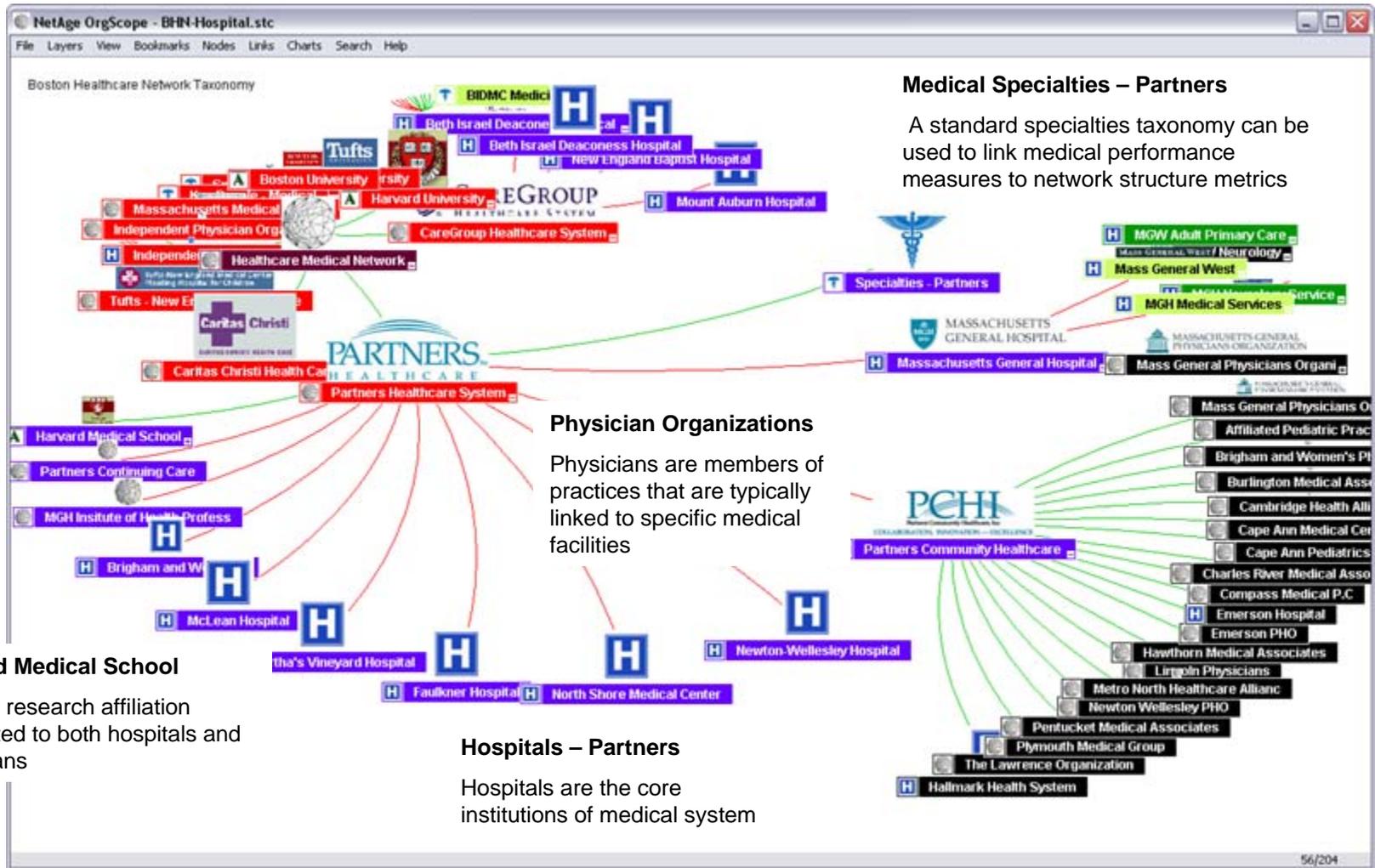
Partners Healthcare System & John Stakes MD: An Example of a System and a Physician





Partners Healthcare System

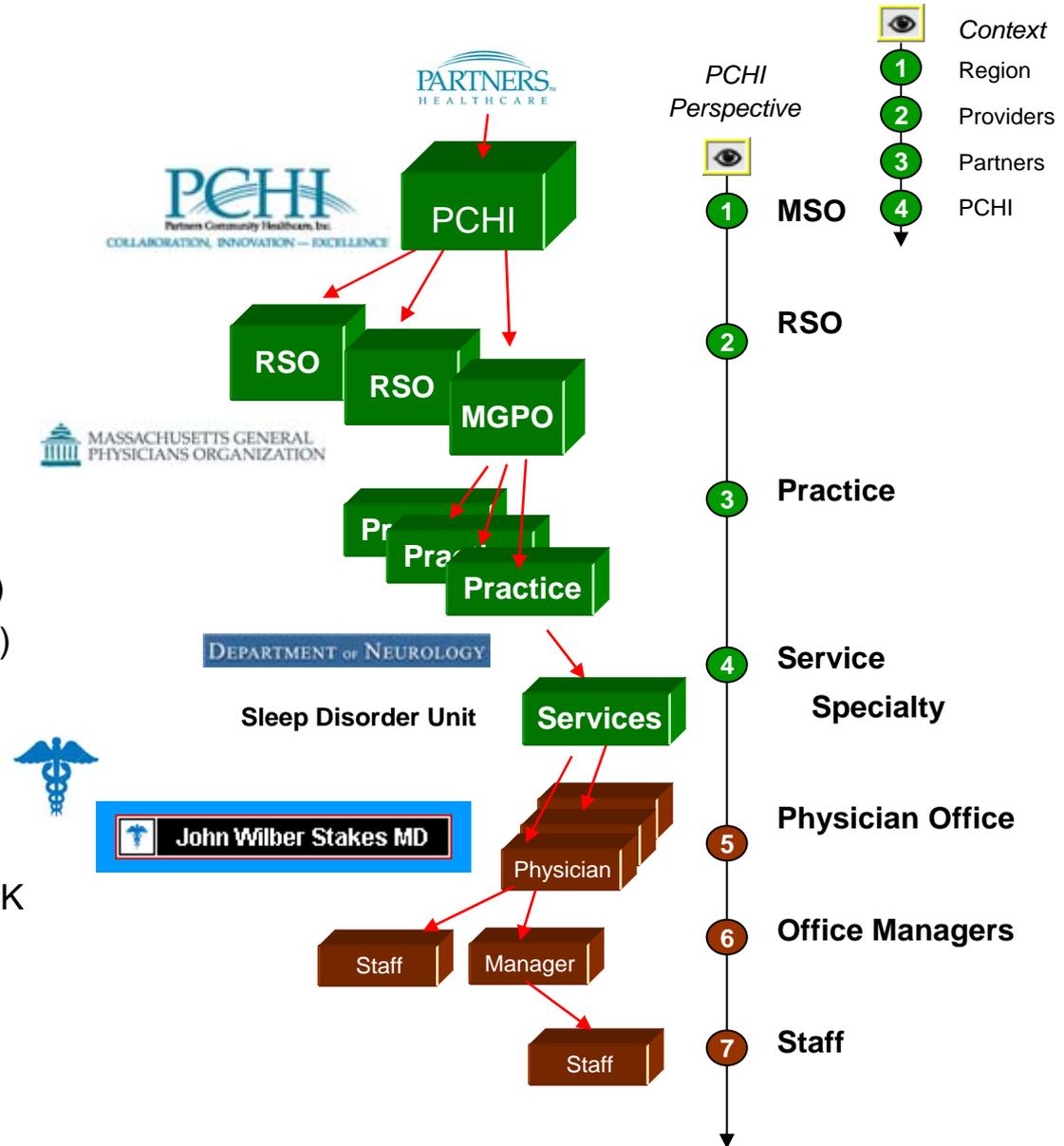
Partners consists primarily of hospitals and physician organizations. PCHI is the Partners network of physician organizations that work (predominately) with Partner hospitals and other clinical facilities





How We Stack the PCHI Network of Physician Organizations

- PCHI - MSO for distributed network of physicians, hospitals
 - 130 employees
 - Serving 1.5 million patients
- Regional RSOs
 - 17 voting units
 - MGPO largest RSO
 - 1200 physicians (MGH web)
 - 2500 employees (MGH web)
- 900+ Practices
- 6000 Physicians
- Total network employees
 - Docs + 2x employees = ~20K positions in PCHI network?
- Total with contractors?





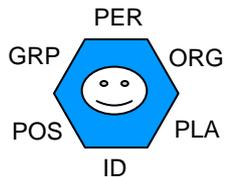
One Partners' Physician: John Wilber Stakes MD

- **Organization:** Mass General Hospital
- **Position:** Neurologist Specialist
- **Person:** John Wilbur Stakes MD
- **Group:** Mass General Physicians Organization
- **Place:** Boston MA



HARVARD MEDICINE

| John Wilbur Stakes III, M.D. | |
|------------------------------|--|
| Academic Title | Instructor in Neurology |
| Administrative Title | (none) |
| Department | Neurology-Massachusetts General Hospital |
| Institution | Massachusetts General Hospital |
| Address | Massachusetts General Hospital Wac 834 55 Fruit St Boston, MA 02114 |
| Telephone | 617/726-3643 |
| Fax | (none) |
| E-Mail | jstakes@partners.org |



These are the five node types mapped in one OrgScope node (ID)



Neurology

For our patients' convenience, we offer neurolog

Our neurologists are:

[Dr. John Stakes](#)
Dr. Richard Toran

Phone: 781-487-4300
Location: 3rd Floor, Suite 300



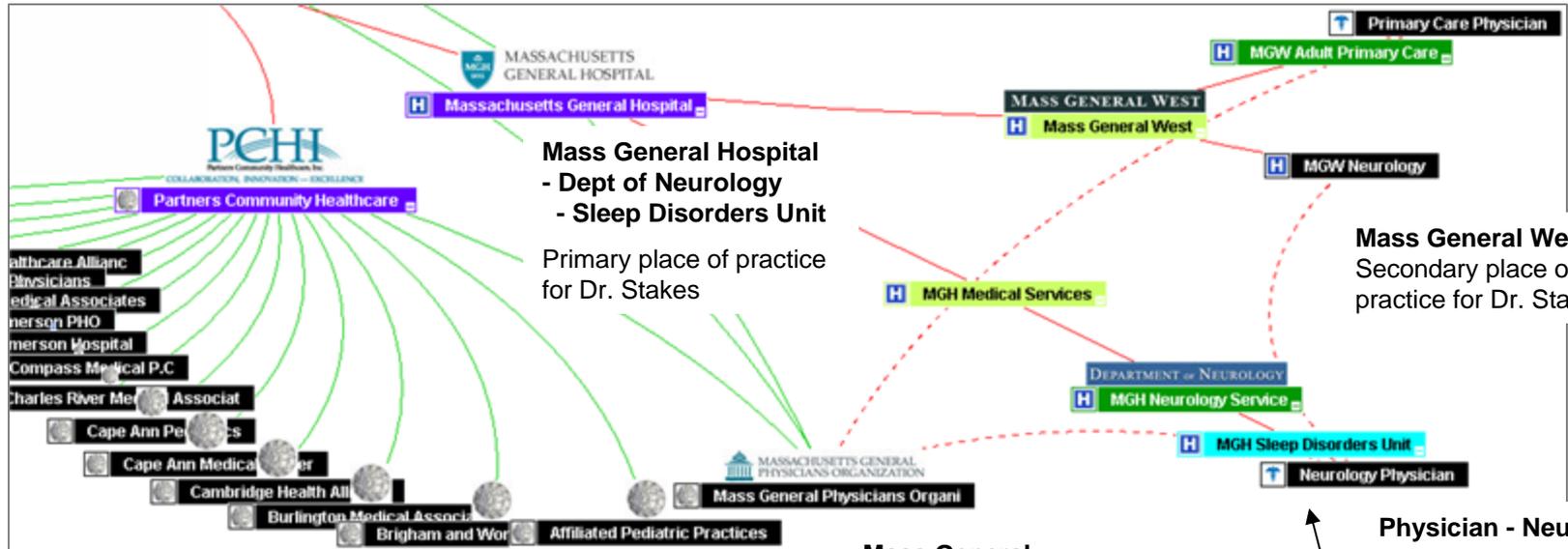
John Wilbur Stakes, MD

| | |
|-----------------------------|---|
| Service: | Neurology Service |
| Office: | Address: Mass General West, 40 Second Avenue, POB-1, Waltham, MA 02451 Phone: 781-522-8900 Accepting New Patients: Yes |
| Board Certification: | Neurology (Lifetime) Internal Medicine (Lifetime) |
| Medical Education: | Cornell University Medical College, MD |
| Languages: | French |
| Provider Type: | Specialist |
| Clinical Interests: | Sleep Disorders Medicine, General Neurology |



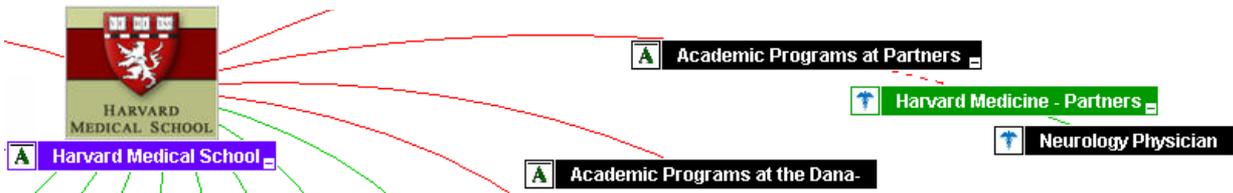
Map Snippets Representing Roles of John Stakes MD within Partners

John Wilber Stakes MD



John Wilber Stakes MD

Physician - Neurology
 John Stakes MD with neurology specialty has multiple roles in medical system





Connecting Medical Performance to Organizations and Physicians

A taxonomy of specialties can be attached to any level of the network to link medical performance metrics to medical network metrics

- Regional, like Boston area
- System, like Partners (shown)
- Sub-network, like PCHI
- Institution, like a hospital

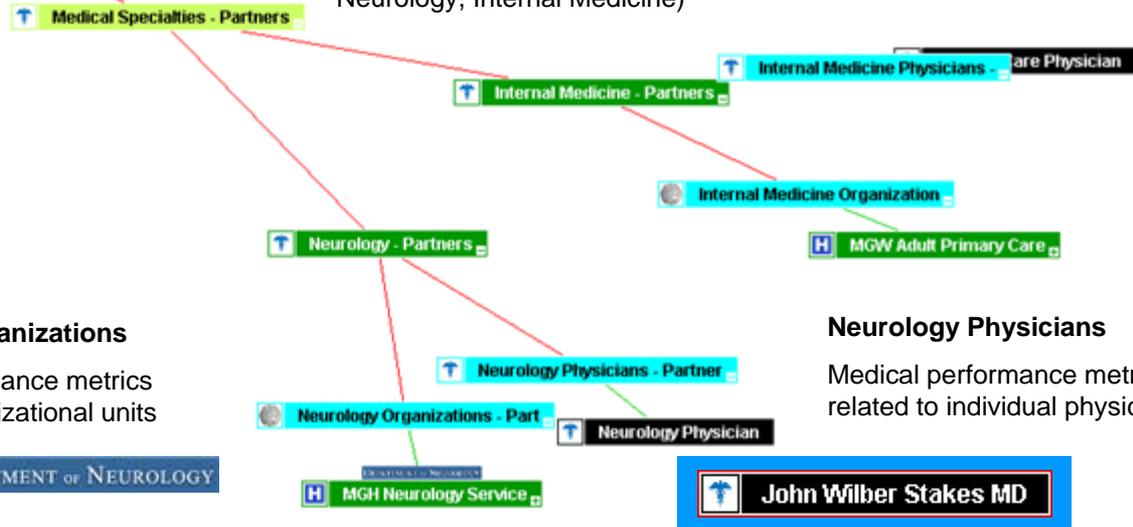
Specialties - Partners

Standard taxonomy of all applicable specialties within healthcare



Medical Specialties

Medical specialty taxonomy that applies both to physicians and organizational units (e.g., Neurology, Internal Medicine)



Neurology Organizations

Medical performance metrics related to organizational units

Neurology Physicians

Medical performance metrics related to individual physicians

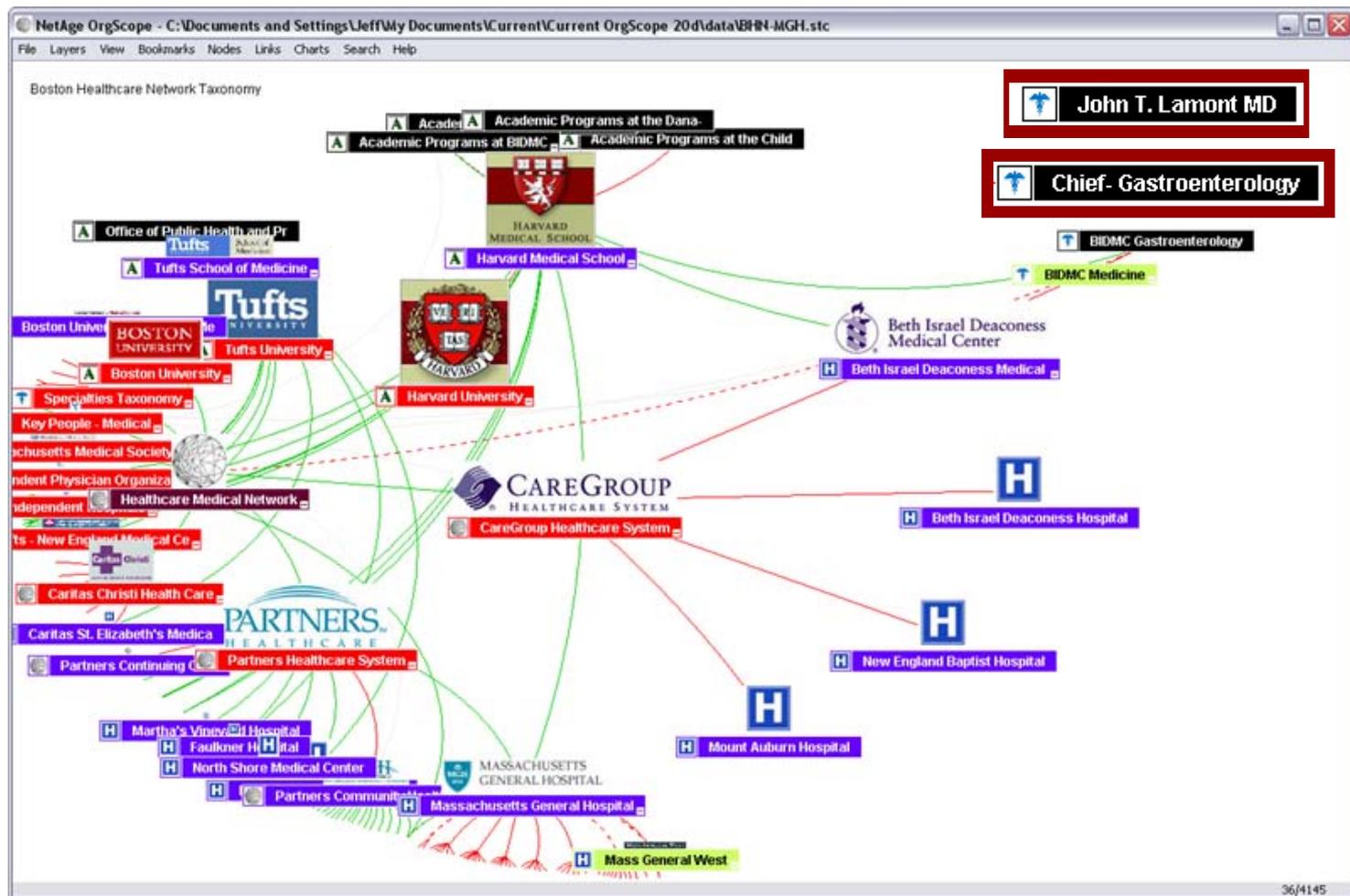


CareGroup Healthcare System – Tom Lamont MD: Example System and Physician Position Slice



CareGroup Slice to BIDMC Gastroenterology Department

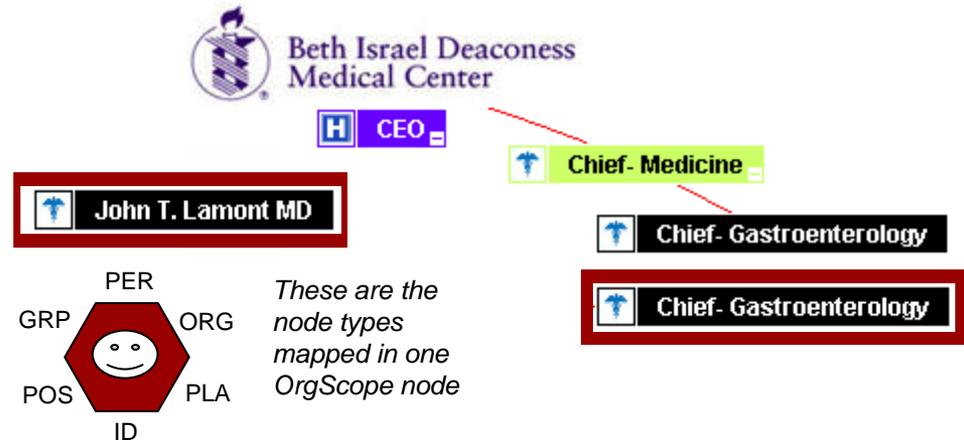
Dr. Lamont's primary association is as Chief of Gastroenterology at BIDMC, a position that is part of the hospital's formal structure. Tom, a neighbor, also holds positions in other key medical organizations





One Organizational Node: Chief of a Medical Specialty at a Hospital

- **Organization:** BIDMC (Hospital)
- **Position:** Chief – Gastroenterology
- **Person:** John T. Lamont MD
- **Group:** Harvard Medical Faculty Physicians (aka BIDPO)
- **Place:** Boston MA



Beth Israel Deaconess Medical Center



A teaching hospital of Harvard Medical School

| Name | Practice Affiliation (See Legend Below) | Specialty | Clinical Interest(s) | Hospital(s) | Office Location(s) |
|---------------------------------|--|------------------|----------------------------------|--------------------------------------|--------------------|
| Lamont, John T. | HMFP | Gastroenterology | GI Infections; C. Difficile; IBD | Beth Israel Deaconess Medical Center | Boston, MA |

Practice Affiliation Legend:

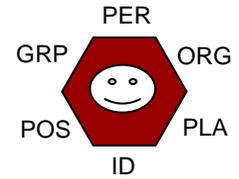
- API Member of Affiliated Physicians, Inc.
- HMFP Member of Harvard Medical Faculty Physicians (HMFP) at Beth Israel Deaconess Medical Center
- JOSLIN Member of Joslin Diabetes Center
- NEEDHAM Member of Beth Israel Deaconess Hospital - Needham Medical Staff

| Last Name | First Name | Middle Name | Organization | Specialty |
|-----------|------------|-------------|--|------------------|
| Lamont | John | T. | Beth Israel Deaconess Physician Organization | Gastroenterology |

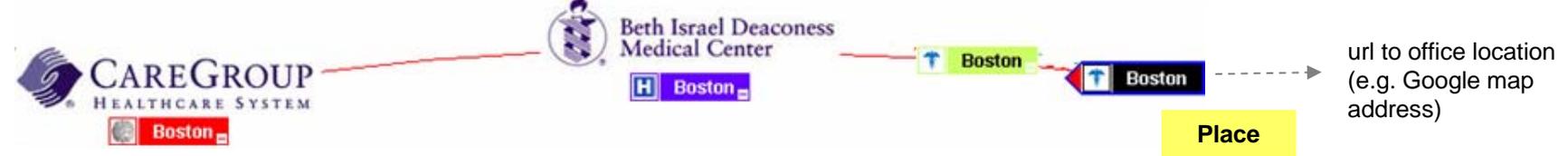
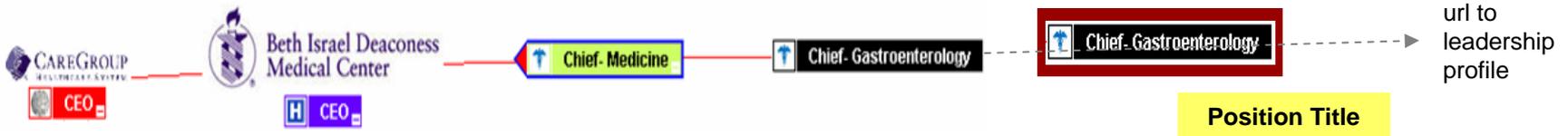
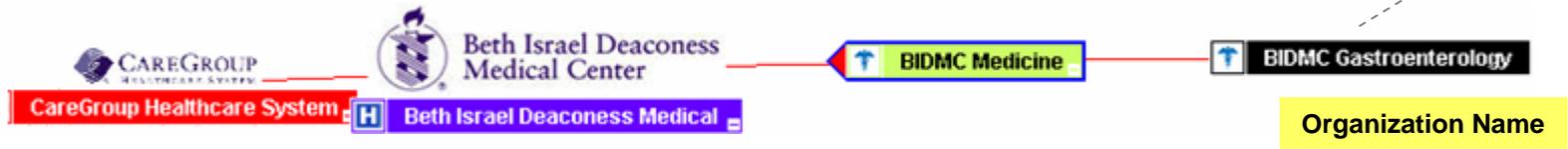


Slice 2: One Position Represents Five Node Types

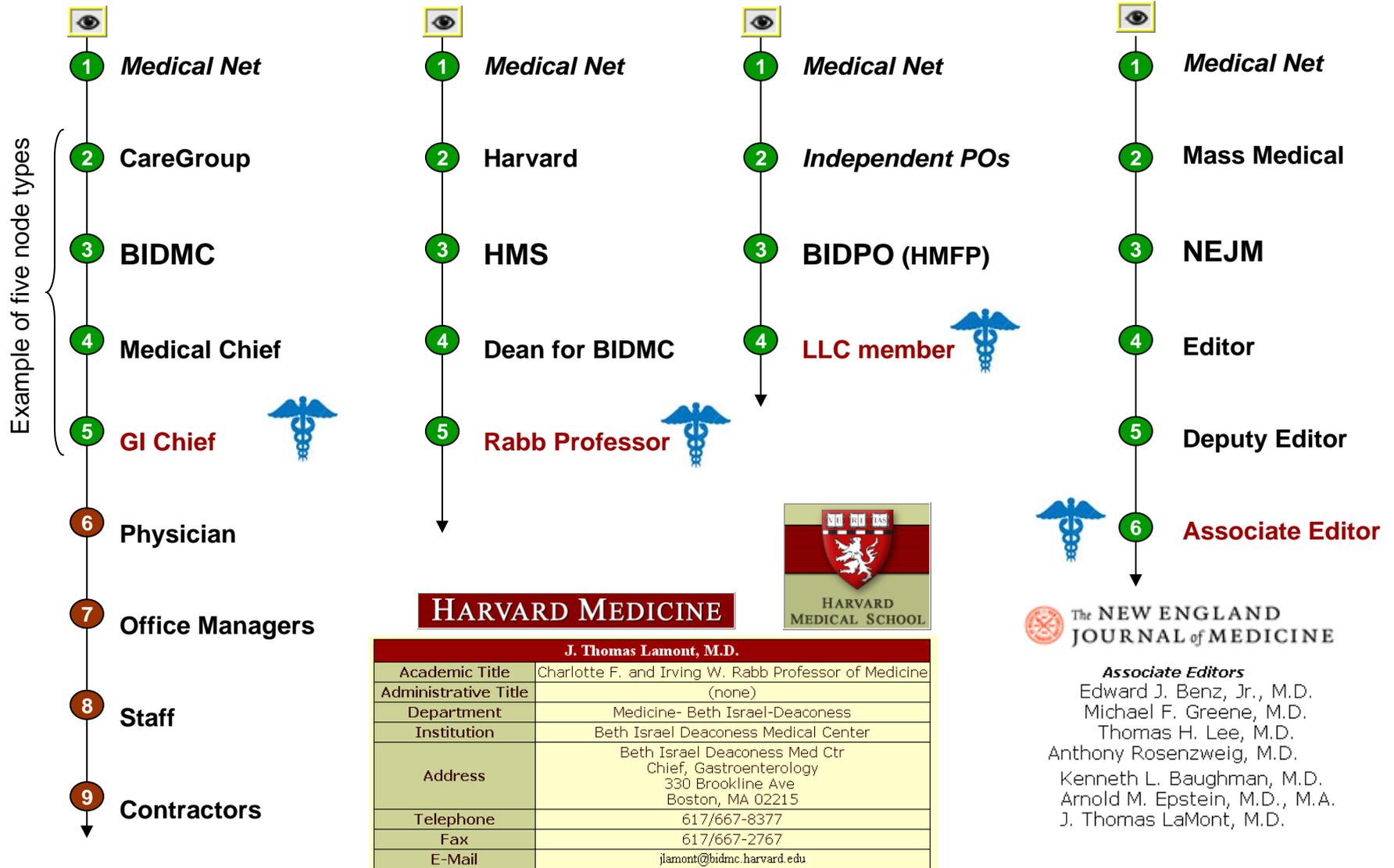
- Map: Each formal network node (ID) can represent 5 node types simultaneously: organization (ORG), group (GRP), position (POS), person (PER), place (PLA)
- Navigate: Up to six URLs can be attached to each node (five types + ID) enabling web connections to many different sources from each point on map



E.g., url to hospital department page

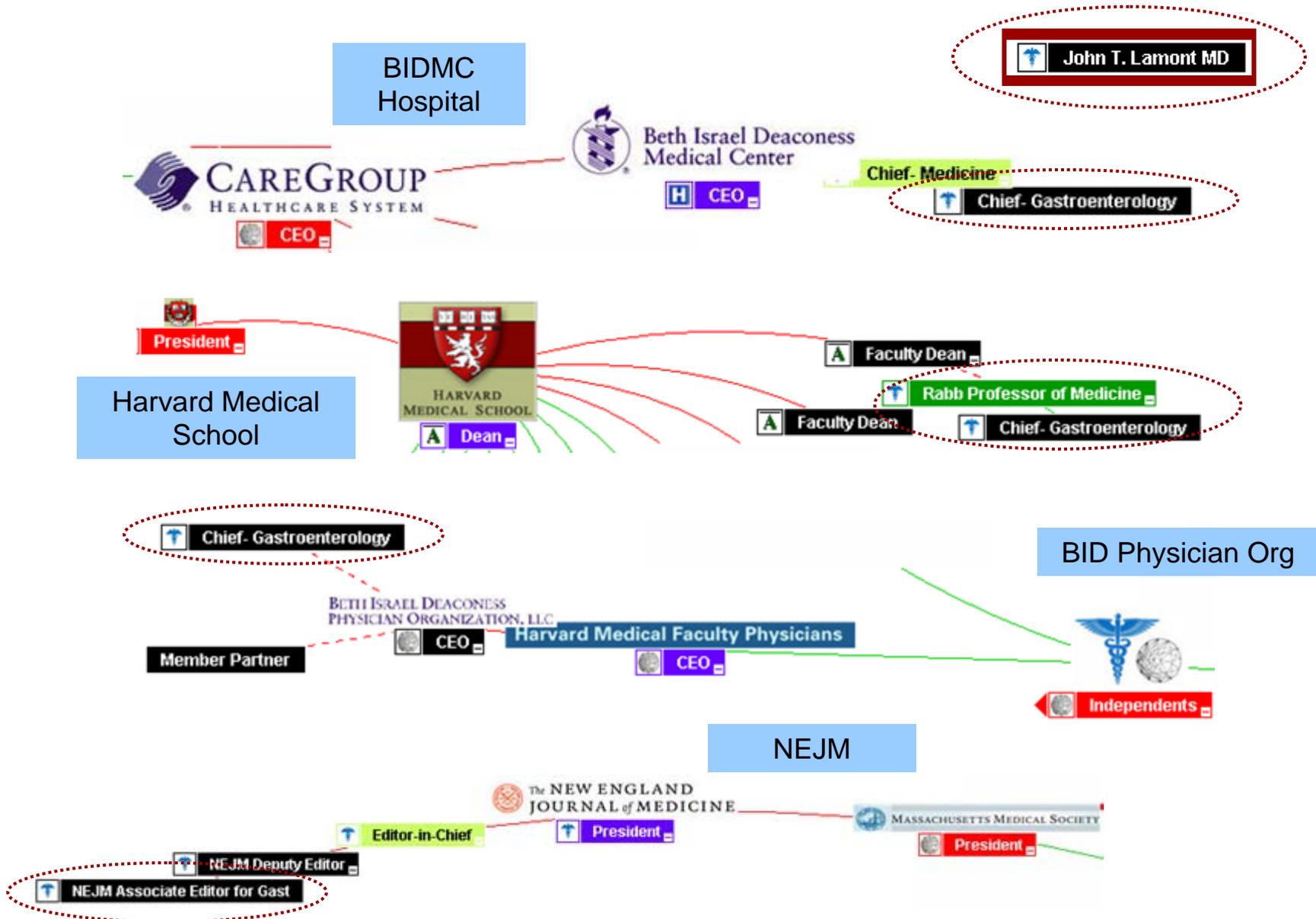


Slice 2: Stacks for (Some of) Dr. Lamont's Formal Positions

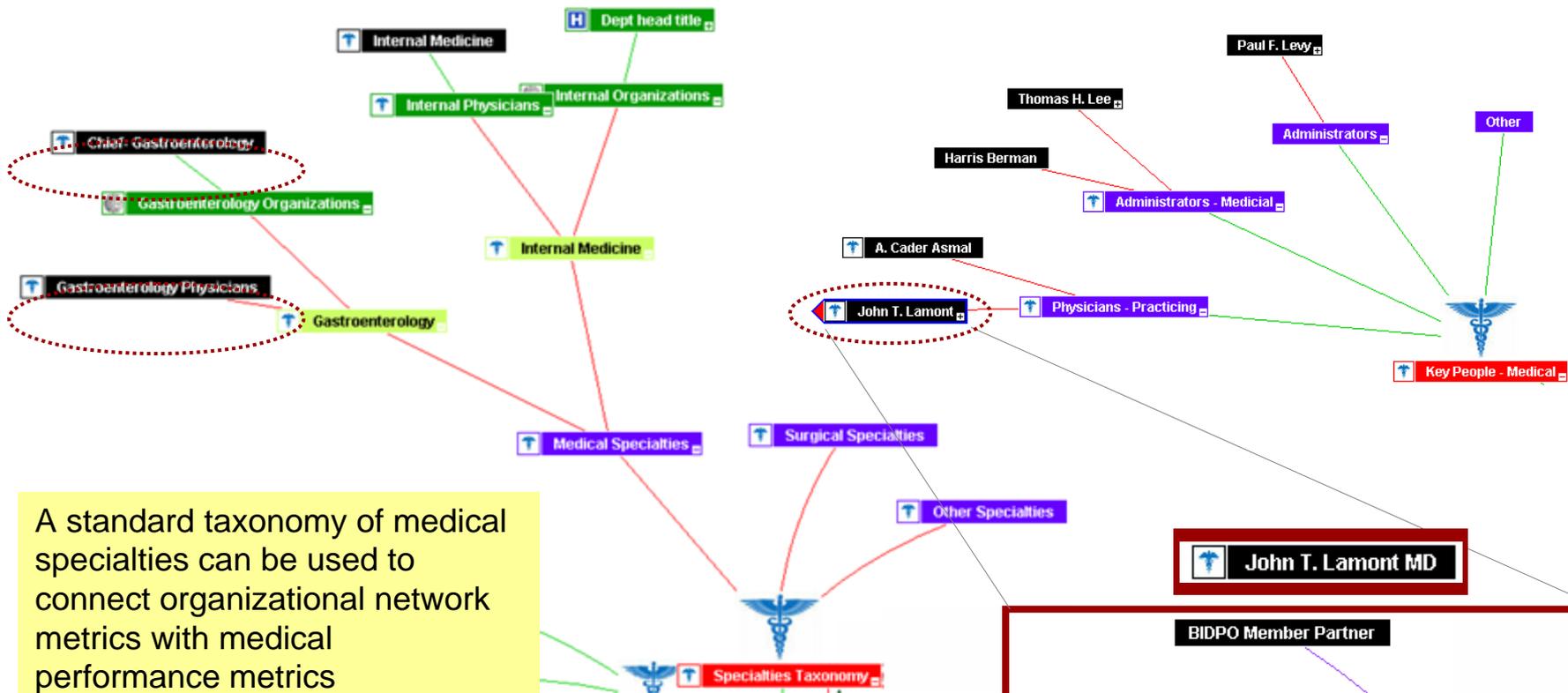




Map Shows Multiple Organizational Positions Held by One Physician



Other Node Groups – Key People and Medical Specialties

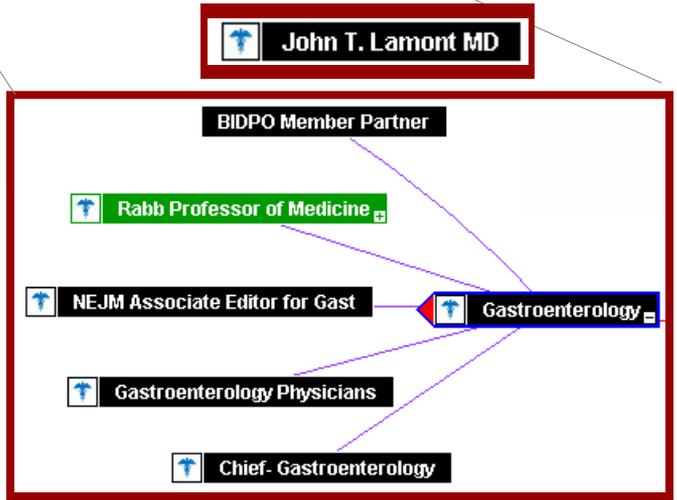


A standard taxonomy of medical specialties can be used to connect organizational network metrics with medical performance metrics

- Individual physicians with specialty (e.g., Lamont as GI specialist)
- Org units responsible for a specialty (e.g., Lamont's GI unit at BIDMC)

Specialties taxonomy can be attached to any level of the network to make comparisons

- Top level regional
- System, like Partners
- Sub-network, like PCHI
- Institution, like a hospital





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