

Supporting Information

Title: Identifying Collaborative Care Teams through Electronic Medical Record Utilization Patterns

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S1: Empirically Determining the Number of Organizational Components in an HCO

We invoke a hierarchical clustering algorithm to learn the components. The number of components was determined by a distance threshold between pairs of clusters, around which point the rate at which large-sized clusters is high. The healthcare system is a collaborative environment, such that in a hierarchical model all operational areas would eventually be merged into several large clusters. To prevent the clustering process from arriving at only several mega-clusters, we set the distance at which there are frequent merges of large clusters as the distance threshold.

Fig. S1 shows that when the distance is between 0.1 and 0.15, there are several large clusters (over 60 operational areas) merged together, which indicates that the HCO is characterized by only several large groups. These mainly correspond to the main hospital and the children's hospital of the VUMC. To avoid clustering all operational areas into one or two clusters, we terminated the clustering process (i.e., invoked a distance threshold λ) when the distance between two neighboring clusters is greater than 0.1.

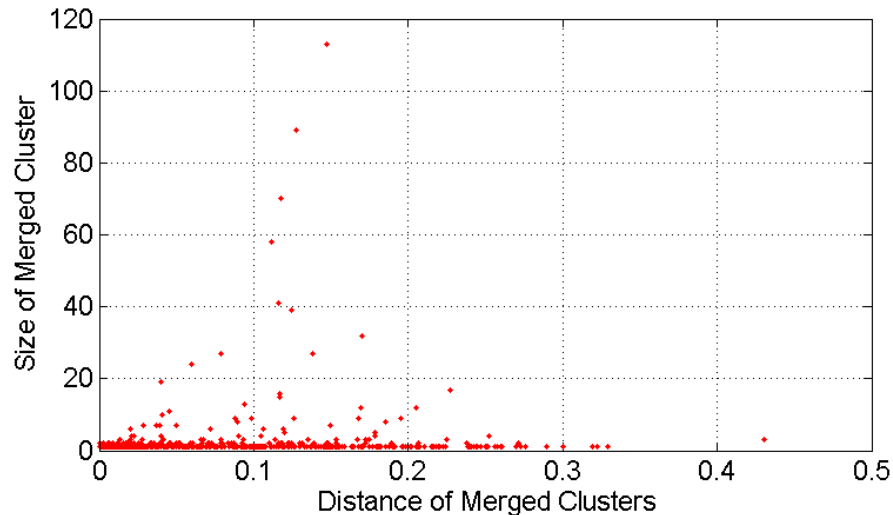


Fig. S1. The number of operational areas in a merged cluster as a function of its distance.

S2: Inferred Organizational Component Details

The data mining pipeline developed for this investigation led to the discovery of 34 organizational components, each of which is composed of a number of operational areas in the form of a hierarchy. In this supplement, we depict each component with a title, a hierarchical structure as a figure and a list of PheWAS codes associated with that component as a table. The hierarchical structures for components that consist of less than 3 operational areas are not shown.

Component C₁: Women and Babies

This component consists of 13 operational areas as shown in Fig. S1. It also consists of 10 associated PheWAS codes as shown in Table S1.

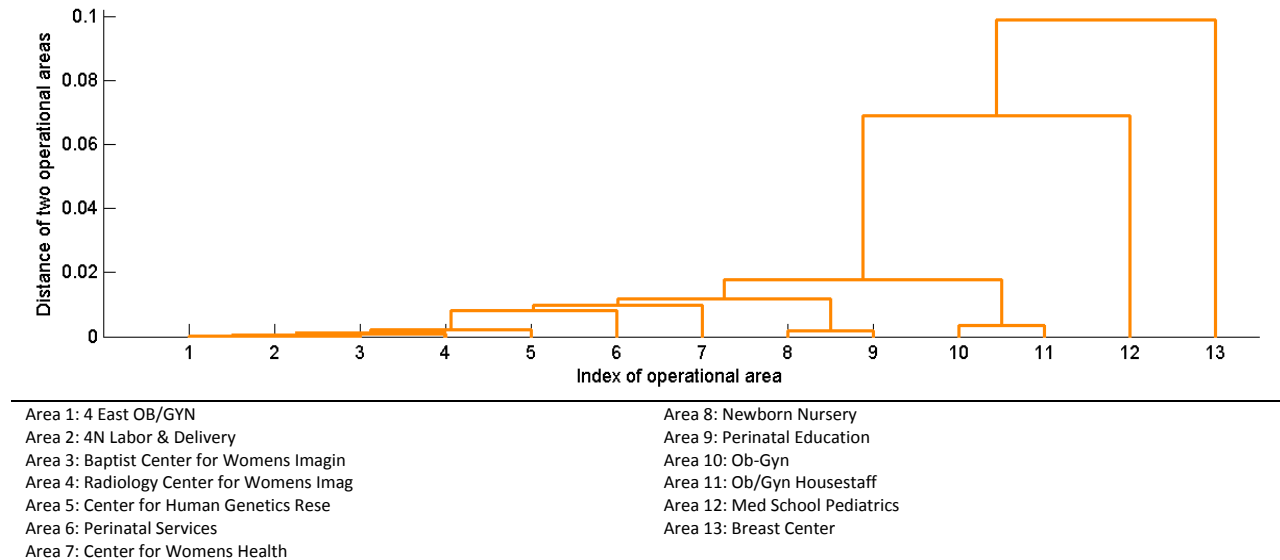


Fig. S2. Hierarchical structure of component C₁: *Women and Babies*.

Table S1. PheWAS codes associated with organizational component C₁: *Women and Babies*.

| Code | Description | Probability |
|--------|---|-------------|
| 649 | Other conditions of the mother complicating pregnancy | 1.000000 |
| 665 | Obstetrical/birth trauma | 0.772330 |
| 655.1 | Abnormality in fetal heart rate or rhythm | 0.547498 |
| 1010 | Other tests | 0.531423 |
| 645 | Late pregnancy and failed induction | 0.445625 |
| 278.1 | Obesity | 0.435162 |
| 658 | Problems associated with amniotic cavity and membranes | 0.421773 |
| 278.11 | Morbid obesity | 0.384521 |
| 654 | Abnormality pelvic soft tissues & organs complicating pregnancy | 0.333415 |
| 655 | Known or suspected fetal abnormality | 0.317591 |

Component C₂: Dancing Injured Service

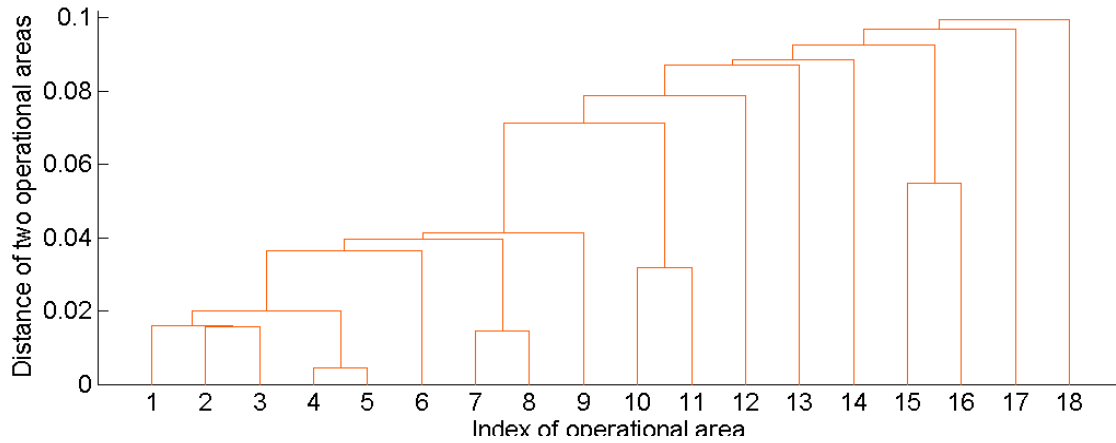
This component consists of 2 operational areas: i) *3A Observation Unit* and ii) *Vanderbilt Dance Group*. It also consists of 18 associated PheWAS codes as shown in Table S2.

Table S2. PheWAS codes associated with organizational component C₂: *Dancing Injured Service*.

| Code | Description | Probability |
|-------------|--|--------------------|
| 474.2 | Chronic tonsillitis and adenoiditis | 1.000000 |
| 819 | Skull fracture and other intracranial injury | 0.914452 |
| 327.32 | Obstructive sleep apnea | 0.873120 |
| 530.11 | GERD | 0.596303 |
| 749 | Congenital anomalies of face and neck | 0.556909 |
| 348.2 | Cerebral edema and compression of brain | 0.547652 |
| 540.11 | Acute appendicitis | 0.535554 |
| 585.1 | Acute renal failure | 0.483803 |
| 276.5 | Hypovolemia | 0.466668 |
| 656 | Other perinatal conditions | 0.452524 |
| 749.1 | Cleft palate | 0.441330 |
| 509.2 | Respiratory insufficiency | 0.431105 |
| 285.1 | Acute post hemorrhagic anemia | 0.371733 |
| 532 | Dysphagia | 0.371497 |
| 1008 | Internal injury to organs | 0.369968 |
| 331 | Other cerebral degenerations | 0.368074 |
| 264.2 | Failure to thrive | 0.327711 |
| 752.2 | Other specified congenital anomalies of nervous system | 0.323319 |

Component C₃: Trauma and Connected Service

This component consists of 18 operational areas as shown in Fig. S2. It also consists of 5 associated PheWAS codes as shown in Table S3.



- | | |
|--|------------------------------------|
| Area 1: 10 N Trauma | Area 10: Pastoral Care |
| Area 2: Transplant Center | Area 11: Vanderbilt Kennedy Center |
| Area 3: VICTR (Vanderbilt Institute for Clinical and Translational Research) | Area 12: Lifeflight |
| Area 4: Oral Surgery | Area 13: Main OR - N/E/W |
| Area 5: Oral Surgery-Housestaff | Area 14: General Counsel |
| Area 6: Police Department | Area 15: Occupational Therapy |
| Area 7: Surgery/Trauma PCC (Patient Care Center) | Area 16: Physical Therapy |
| Area 8: Trauma | Area 17: Main OR - ADMN |
| Area 9: Oral Surgery Clinic | Area 18: Adult Admin |

Fig. S3. Hierarchical structure of component C₃: *Trauma and Connected Service*.

Table S3. PheWAS codes associated with organizational component C₃: *Trauma and Connected Service*.

| Code | Description | Probability |
|-------|--|-------------|
| 1008 | Internal injury to organs | 1.000000 |
| 805 | Fracture of vertebral column without mention of spinal cord injury | 0.561599 |
| 819 | Skull fracture and other intracranial injury | 0.529972 |
| 509.2 | Respiratory insufficiency | 0.468648 |
| 807 | Fracture of ribs | 0.319147 |

Component C₄: Interventional Cardiology and Vascular Institute

This component consists of 39 operational areas as shown in Fig. S3. It also consists of 8 associated PheWAS codes as shown in Table S4.

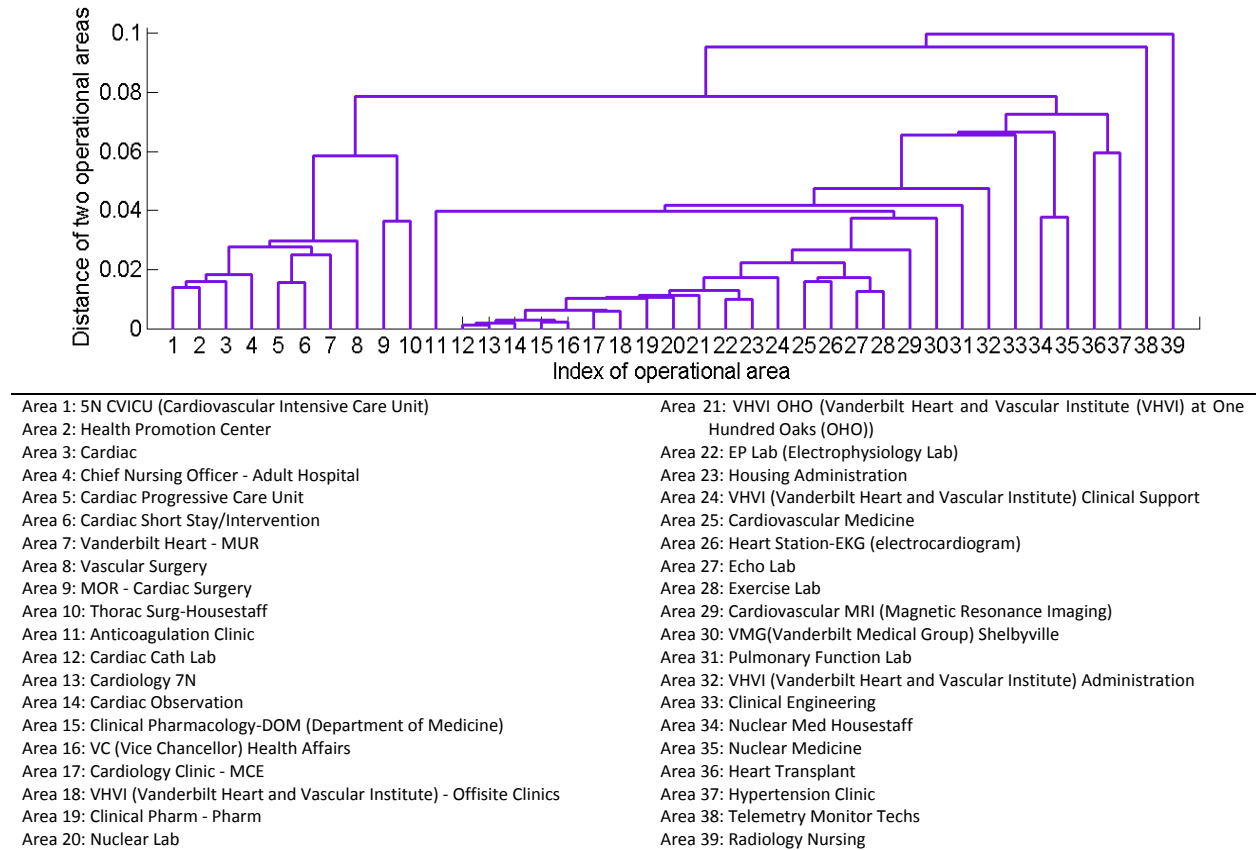


Fig. S4. Hierarchical structure of component C₄: *Interventional Cardiology and Vascular Institute*.

Table S4. PheWAS codes associated with organizational component C₄: *Interventional Cardiology and Vascular Institute*.

| Code | Description | Probability |
|--------|----------------------------------|-------------|
| 411.4 | Coronary atherosclerosis | 1.000000 |
| 428 | Heart failure | 0.819011 |
| 411.2 | Myocardial infarction | 0.619555 |
| 401.1 | Essential hypertension | 0.577865 |
| 585.1 | Acute renal failure | 0.548154 |
| 428.1 | Systolic/diastolic heart failure | 0.501015 |
| 427.21 | Atrial fibrillation | 0.425669 |
| 250.2 | Type 2 diabetes | 0.305771 |

Component C₅: Pediatrics Surgery

This component consists of 15 operational areas as shown in Fig. S4. It also consists of 28 associated PheWAS codes as shown in Table S5.

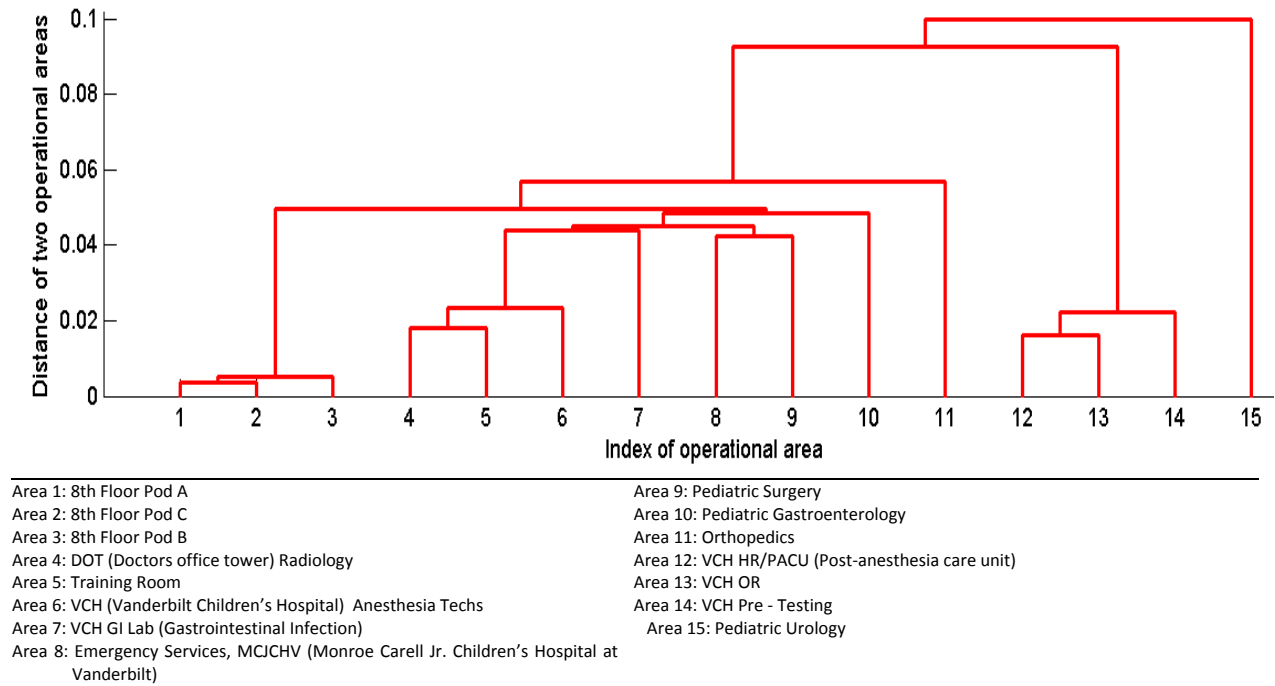


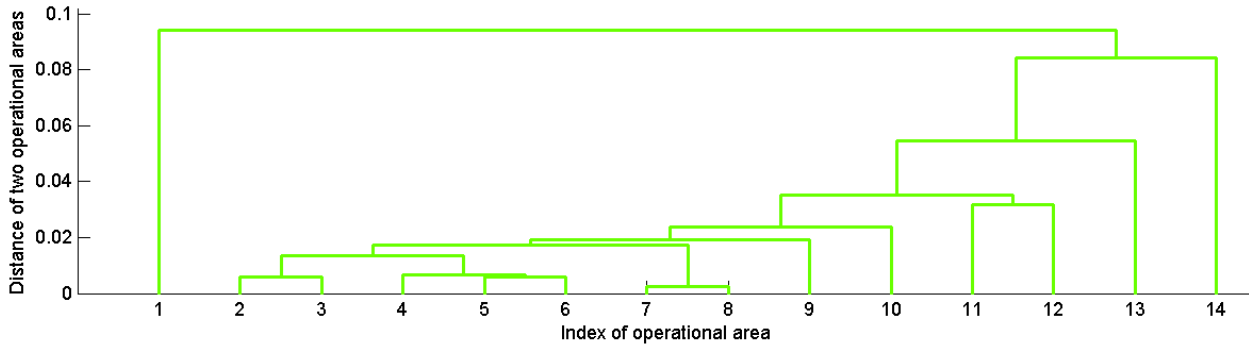
Fig. S5. Hierarchical structure of component C₅: *Pediatrics Surgery*.

Table S5. PheWAS codes associated with organizational component C₅: *Pediatrics Surgery*.

| Code | Description | Probability |
|-------------|--|--------------------|
| 540.11 | Acute appendicitis | 1.000000 |
| 656 | Other perinatal conditions | 0.851272 |
| 530.11 | GERD | 0.817412 |
| 276.5 | Hypovolemia | 0.744075 |
| 1008 | Internal injury to organs | 0.656585 |
| 509.2 | Respiratory insufficiency | 0.527980 |
| 264.2 | Failure to thrive | 0.495757 |
| 532 | Dysphagia | 0.474189 |
| 789 | Nausea and vomiting | 0.451370 |
| 343 | Infantile cerebral palsy | 0.450246 |
| 585.1 | Acute renal failure | 0.447390 |
| 563 | Constipation | 0.438596 |
| 747.11 | Cardiac shunt/ heart septal defect | 0.429032 |
| 819 | Skull fracture and other intracranial injury | 0.407528 |
| 783 | Fever of unknown origin | 0.395589 |
| 348.2 | Cerebral edema and compression of brain | 0.388335 |
| 331 | Other cerebral degenerations | 0.387982 |
| 285.1 | Acute post hemorrhagic anemia | 0.384965 |
| 480 | Pneumonia | 0.371582 |
| 509.1 | Respiratory failure | 0.369913 |
| 752.2 | Other specified congenital anomalies of nervous system | 0.365997 |
| 750.21 | Congenital anomalies of intestine | 0.358937 |
| 785 | Abdominal pain | 0.338781 |
| 637 | Short gestation; low birth weight; and fetal growth retardation | 0.326521 |
| 499 | Cystic fibrosis | 0.316083 |
| 041.12 | Methicillin resistant Staphylococcus aureus | 0.313673 |
| 591 | Urinary tract infection | 0.313503 |
| 081 | Infection/inflammation of internal prosthetic device, implant or graft | 0.306471 |

Component C₆: Oncology I

This component consists of 14 operational areas as shown in Fig. S5. It also consists of 20 associated PheWAS codes as shown in Table S6.



| | |
|---------------------------------------|---|
| Area 1: 100 Oaks Phlebotomy | Area 8: Myelosuppression (11N) |
| Area 2: Bone Marrow Processing Lab | Area 9: Cytogenetics |
| Area 3: Bone Marrow Registry | Area 10: Out Patient Clinic Pharmacy |
| Area 4: Rad Oncology Housestaff | Area 11: Cancer Call Center |
| Area 5: Radiation Oncology Housestaff | Area 12: Hematology/Oncology |
| Area 6: Radiation Oncology | Area 13: VICC Clinical Trials Shared Re |
| Area 7: Hematology/Stem Cell Clinic | Area 14: Cancer Infusion Center |

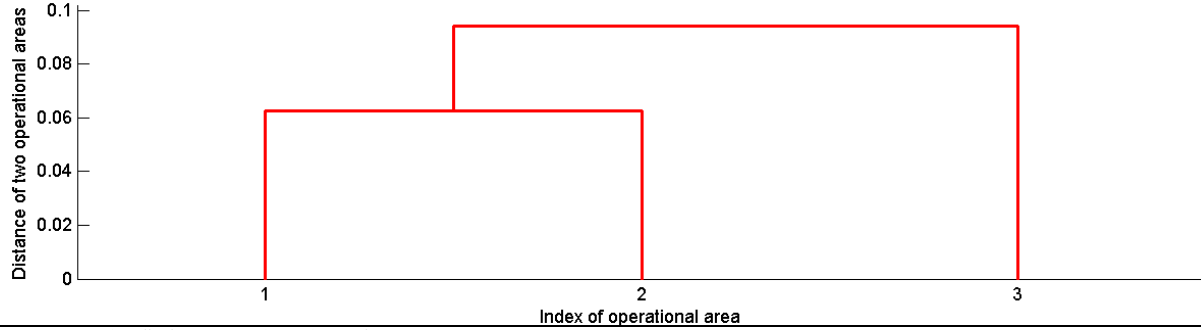
Fig. S6. Hierarchical structure of component C₆: Oncology I.

Table S6. PheWAS codes associated with organizational component C₆: *Oncology I*.

| Code | Description | Probability |
|--------|--|-------------|
| 585.1 | Acute renal failure | 1.000000 |
| 197 | Chemotherapy | 0.768735 |
| 204.21 | Myeloid leukemia, acute | 0.687980 |
| 288.11 | Neutropenia | 0.533483 |
| 509.1 | Respiratory failure | 0.506089 |
| 284 | Aplastic anemia | 0.496026 |
| 480 | Pneumonia | 0.488906 |
| 401.1 | Essential hypertension | 0.477884 |
| 198.2 | Secondary malignancy of lung | 0.463323 |
| 198 | Secondary malignant neoplasm | 0.443476 |
| 202.2 | Non-Hodgkins lymphoma | 0.439937 |
| 081 | Infection/inflammation of internal prosthetic device, implant or graft | 0.429597 |
| 198.6 | Secondary malignancy of bone | 0.409195 |
| 287.3 | Thrombocytopenia | 0.390456 |
| 284.1 | Pancytopenia | 0.358009 |
| 783 | Fever of unknown origin | 0.357391 |
| 198.4 | Secondary malignant neoplasm of liver | 0.355280 |
| 198.1 | Secondary malignancy of lymph nodes | 0.348458 |
| 204.4 | Multiple myeloma | 0.343321 |
| 198.5 | Secondary malignancy of brain/spine | 0.319017 |

Component C₇: Pre-Post Anesthesia

This component consists of 3 operational areas as shown in Fig. S6. It also consists of 5 associated PheWAS codes as shown in Table S7.



Area 1: MCE (Medical Center East) OR (Operating Room)
Area 2: MCE (Medical Center East) Recovery
Area 3: VPEC (Vanderbilt Preoperative Evaluation Center) 100 Oaks

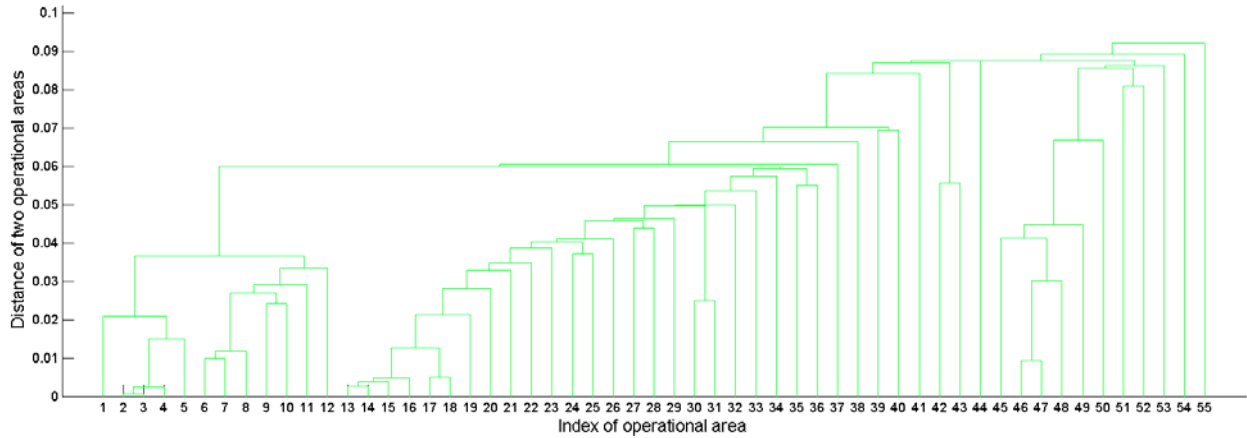
Fig. S7. Hierarchical structure of component C₇: Pre-Post Anesthesia.

Table S7. PheWAS codes associated with organizational component C₇: Pre-Post Anesthesia.

| Code | Description | Probability |
|--------|------------------------|-------------|
| 401.1 | Essential hypertension | 1.000000 |
| 278.11 | Morbid obesity | 0.575634 |
| 250.2 | Type 2 diabetes | 0.437420 |
| 318 | Tobacco use disorder | 0.425894 |
| 185 | Prostate cancer | 0.311719 |

Component C₈: Pediatric Cardiology, Comprehensive Care and Neonatology

This component consists of 55 operational areas as shown in Fig. S7. It also consists of 13 associated PheWAS codes as shown in Table S8.



| | |
|--|--|
| Area 1: 6th Floor Pod C-Cardiology | Area 28: Pediatrics-Housestaff |
| Area 2: Cardiovascular (CV) Surgery | Area 29: VCH ED Registration |
| Area 3: Pediatric Cardiac Surgery | Area 30: CHOC (Children's Hospital Outpatient Clinic) |
| Area 4: VCH EP (Electrophysiology) Lab | Area 31: VCH Pharmacy |
| Area 5: Peds IV Team | Area 32: VCH/ED Discharge Station |
| Area 6: Adolescent Medicine | Area 33: VCH Case Management |
| Area 7: PCCU (Pediatric Critical Care Unit) | Area 34: Pediatric Utilization Mgmt |
| Area 8: Pediatric Critical Care | Area 35: Pediatric Pulmonary |
| Area 9: ECMO (Extracorporeal Membrane Oxygenation) | Area 36: Peds Respiratory Care |
| Area 10: Pediatric Cardiology | Area 37: Briley Sterile Proc |
| Area 11: Exec Director VCH | Area 38: Diagnostic Radiology |
| Area 12: VCH Retail Pharmacy | Area 39: Claims & Risk Management |
| Area 13: 7th Floor Pod A | Area 40: Student Athletics |
| Area 14: 7th Floor Pod C | Area 41: VCH Nutrition Support Service |
| Area 15: 7th Floor Pod B | Area 42: Perioperative Admin |
| Area 16: Pediatric Hospital Medicine | Area 43: Radiology Administration |
| Area 17: Pediatric Emergency Dept | Area 44: Child Life Services |
| Area 18: Peds Emergency Medicine | Area 45: Medical Affairs |
| Area 19: V B & J OR (Vanderbilt Bone and Joint Operating Room) | Area 46: Neonatal Transport |
| Area 20: Center For Health Service | Area 47: VCH Admitting |
| Area 21: Pediatric Clinical Research | Area 48: VMG (Vanderbilt Medical Group) Practice Support |
| Area 22: Pediatric Endocrinology | Area 49: Patient Accounting |
| Area 23: Developmental Medicine | Area 50: University Peds |
| Area 24: Eskind Diabetes - Peds | Area 51: NICU (Neonatal Intensive Care Unit) |
| Area 25: Pediatric Rheumatology | Area 52: Neonatology |
| Area 26: VCH Float Pool | Area 53: VCH Peds Rehab |
| Area 27: Pediatric Social Work | Area 54: MRI |
| | Area 55: Biomed Grad Studies |

Fig. S8. Hierarchical structure of component C₈: *Pediatric Cardiology, Comprehensive Care and Neonatology*. This component can be divided into three subcomponents: i) areas 1 to 12, ii) areas 13 to 44, and iii) areas 45 to 55.

Table S8. PheWAS codes associated with organizational component C₈: *Pediatric Cardiology, Comprehensive Care and Neonatology*.

| Code | Description | Probability |
|-------------|---|--------------------|
| 656 | Other perinatal conditions | 1.000000 |
| 747.11 | Cardiac shunt/ heart septal defect | 0.602658 |
| 637 | Short gestation; low birth weight; and fetal growth retardation | 0.554497 |
| 509.1 | Respiratory failure | 0.491009 |
| 509.2 | Respiratory insufficiency | 0.369282 |
| 647 | Infectious & parasitic conditions complicating pregnancy | 0.360678 |
| 747.12 | Valvular heart disease/ heart chambers | 0.340654 |
| 585.1 | Acute renal failure | 0.336597 |
| 747.13 | Congenital anomalies of great vessels | 0.323945 |
| 480 | Pneumonia | 0.322890 |
| 656.2 | Other respiratory conditions of fetus and newborn | 0.306009 |
| 428 | Heart failure | 0.305790 |
| 276.5 | Hypovolemia | 0.304967 |

Component C₉: Prevention of Skin Diseases

This component consists of 2 operational areas i) *Dermatology* and ii) *Preventive Medicine*. It also consists of 9 associated PheWAS codes as shown in Table S9.

Table S9. PheWAS codes associated with organizational component C₉: *Prevention of Skin Diseases*.

| Code | Description | Probability |
|-------------|--|--------------------|
| 585.1 | Acute renal failure | 1.000000 |
| 509.1 | Respiratory failure | 0.524527 |
| 480 | Pneumonia | 0.493289 |
| 401.1 | Essential hypertension | 0.476336 |
| 707.1 | Decubitus ulcer | 0.403846 |
| 428 | Heart failure | 0.382895 |
| 081 | Infection/inflammation of internal prosthetic device, implant or graft | 0.374045 |
| 591 | Urinary tract infection | 0.326532 |
| 401.22 | Hypertensive chronic kidney disease | 0.318753 |

Component C₁₀: VUMC Medicine, Emergency Medicine, Vanderbilt University Hospital Administration and Research, and Radiology

This component consists of 38 operational areas as shown in Fig. S8. It also consists of 16 associated PheWAS codes as shown in Table S10.

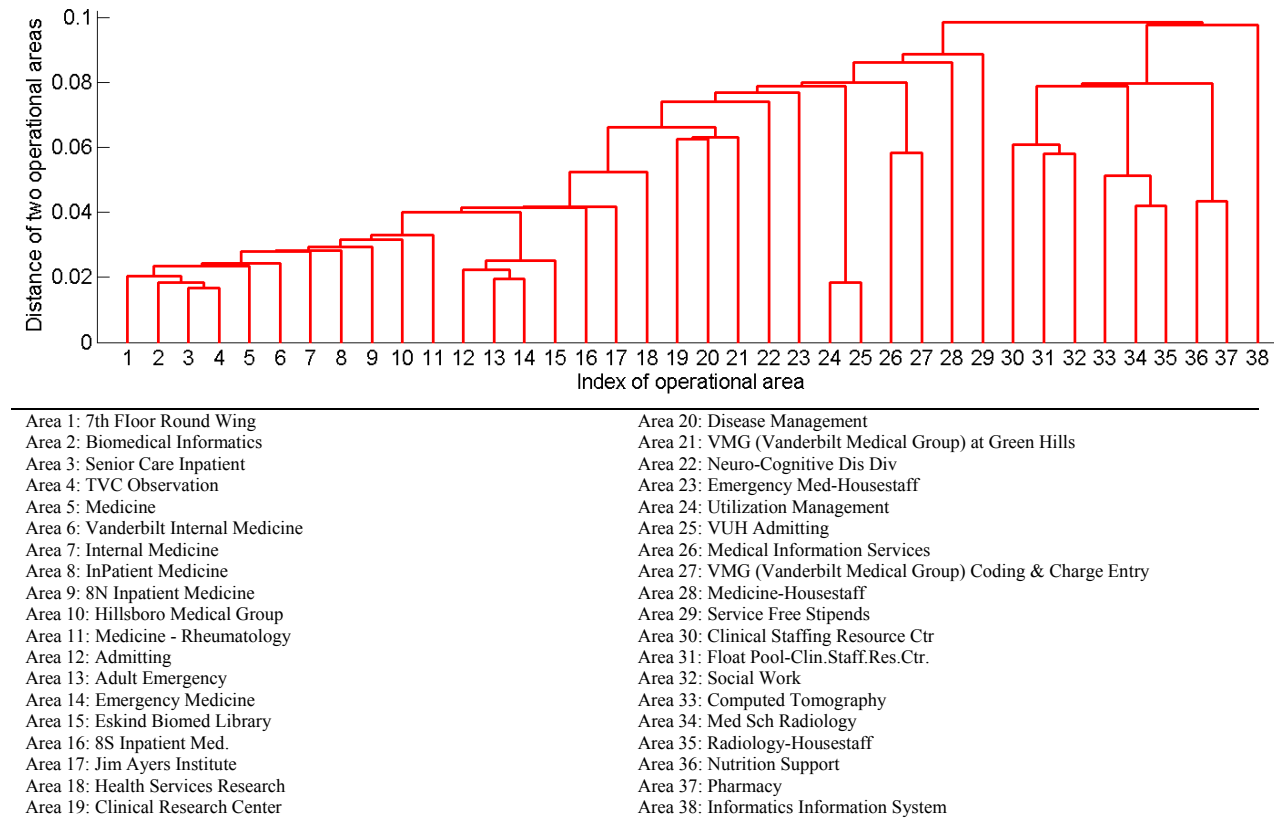


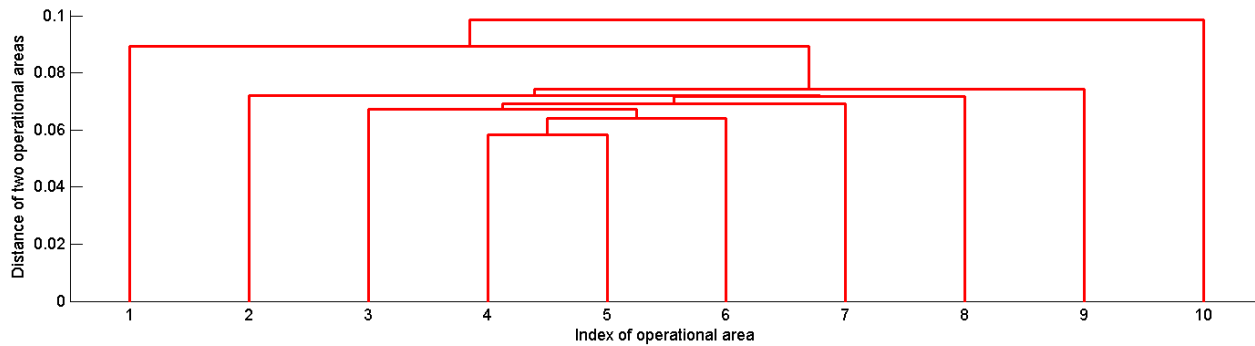
Fig. S9. Hierarchical structure of component C₁₀: *VUMC Medicine, Emergency Medicine, Vanderbilt University Hospital Administration and Research, and Radiology*. This component can be divided into four subcomponents: i) areas 1 to 11, ii) areas 12 to 15, iii) areas 16 to 29, and iv) areas 30 to 38, respectively.

Table S10. PheWAS codes associated with organizational component C₁₀: *VUMC Medicine, Emergency Medicine, Vanderbilt University Hospital Administration and Research, and Radiology.*

| Code | Description | Probability |
|-------------|-------------------------------------|--------------------|
| 585.1 | Acute renal failure | 1.000000 |
| 401.1 | Essential hypertension | 0.986568 |
| 428 | Heart failure | 0.571371 |
| 411.4 | Coronary atherosclerosis | 0.567780 |
| 509.1 | Respiratory failure | 0.535665 |
| 250.2 | Type 2 diabetes | 0.523173 |
| 480 | Pneumonia | 0.488494 |
| 428.1 | Systolic/diastolic heart failure | 0.457995 |
| 591 | Urinary tract infection | 0.419253 |
| 401.22 | Hypertensive chronic kidney disease | 0.358377 |
| 318 | Tobacco use disorder | 0.354040 |
| 509.2 | Respiratory insufficiency | 0.350450 |
| 411.2 | Myocardial infarction | 0.341899 |
| 1008 | Internal injury to organs | 0.332426 |
| 707.1 | Decubitus ulcer | 0.310416 |
| 427.21 | Atrial fibrillation | 0.306264 |

Component C₁₁: Surgical Intensive Care Unit

This component consists of 10 operational areas as shown in Fig. S9. It also consists of 9 associated PheWAS codes as shown in Table S11.



Area 1: Coagulation Thrombosis
 Area 2: Dietetic Interns
 Area 3: Informatics Info Tech Integrat
 Area 4: Office of Emergency Communicatn
 Area 5: Respiratory Care
 Area 6: Surgical Science
 Area 7: Medical Intensive Care Unit
 Area 8: Rehab Administration
 Area 9: Surgical Intensive Care Unit
 Area 10: VMG (Vanderbilt Medical Group) Claims Management

Fig. S10. Hierarchical structure of component C₁₁: *Surgical Intensive Care Unit*.

Table S11. PheWAS codes associated with organizational component C₁₁: *Surgical Intensive Care Unit*.

| Code | Description | Probability |
|-------|---------------------------|-------------|
| 585.1 | Acute renal failure | 1.000000 |
| 509.1 | Respiratory failure | 0.814060 |
| 509.2 | Respiratory insufficiency | 0.562468 |
| 797 | Shock | 0.458418 |
| 428 | Heart failure | 0.420518 |
| 038 | Septicemia | 0.402955 |
| 1008 | Internal injury to organs | 0.365863 |
| 480 | Pneumonia | 0.348383 |
| 411.2 | Myocardial infarction | 0.304953 |

Component C₁₂: Nephrology Interventional Cardiology and Vascular Institute

This component consists of 5 operational areas as shown in Fig. S10. It also consists of 5 associated PheWAS codes as shown in Table S12.

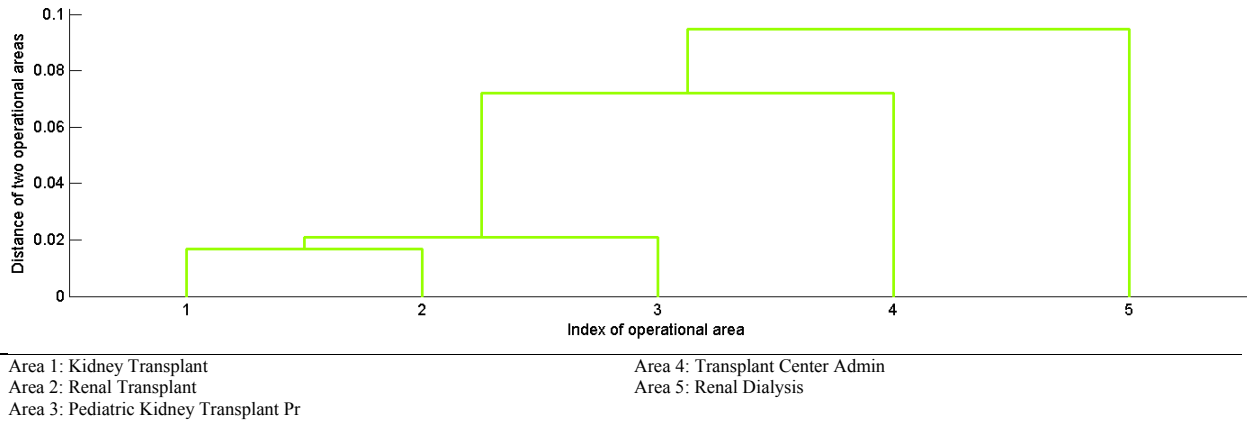


Fig. S11. Hierarchical structure of component C₁₂: *Nephrology Interventional Cardiology and Vascular Institute*.

Table S12. PheWAS codes associated with organizational component C₁₂: *Nephrology Interventional Cardiology and Vascular Institute*.

| Code | Description | Probability |
|--------|-------------------------------------|-------------|
| 401.22 | Hypertensive chronic kidney disease | 1.000000 |
| 585.1 | Acute renal failure | 0.974843 |
| 585.32 | End stage renal disease | 0.952311 |
| 587 | Kidney replaced by transplant | 0.525431 |
| 276.41 | Acidosis | 0.330546 |

Component C₁₃: Otolaryngology

This component consists of 2 operational areas *i) Otolaryngology, and ii) Otolrn Surg Housestaff*. It also consists of 21 associated PheWAS codes as shown in Table S13.

Table S13. PheWAS codes associated with organizational component C₁₃: *Otolaryngology*.

| Code | Description | Probability |
|-------------|--|--------------------|
| 401.1 | Essential hypertension | 1.000000 |
| 509.2 | Respiratory insufficiency | 0.860866 |
| 819 | Skull fracture and other intracranial injury | 0.800257 |
| 474.2 | Chronic tonsillitis and adenoiditis | 0.674625 |
| 327.32 | Obstructive sleep apnea | 0.637242 |
| 585.1 | Acute renal failure | 0.602740 |
| 348.2 | Cerebral edema and compression of brain | 0.548872 |
| 530.11 | GERD | 0.517801 |
| 509.1 | Respiratory failure | 0.508077 |
| 1008 | Internal injury to organs | 0.474208 |
| 318 | Tobacco use disorder | 0.423853 |
| 250.2 | Type 2 diabetes | 0.422321 |
| 285.1 | Acute post hemorrhagic anemia | 0.380301 |
| 749 | Congenital anomalies of face and neck | 0.379974 |
| 278.11 | Morbid obesity | 0.361630 |
| 260 | Protein-calorie malnutrition | 0.333092 |
| 480 | Pneumonia | 0.331846 |
| 656 | Other perinatal conditions | 0.328312 |
| 479 | Other upper respiratory disease | 0.322592 |
| 532 | Dysphagia | 0.309478 |
| 749.1 | Cleft palate | 0.300081 |

Component C₁₄: Oncology II

This component consists of 8 operational areas as shown in Fig. S11. It also consists of 10 associated PheWAS codes as shown in Table S14.

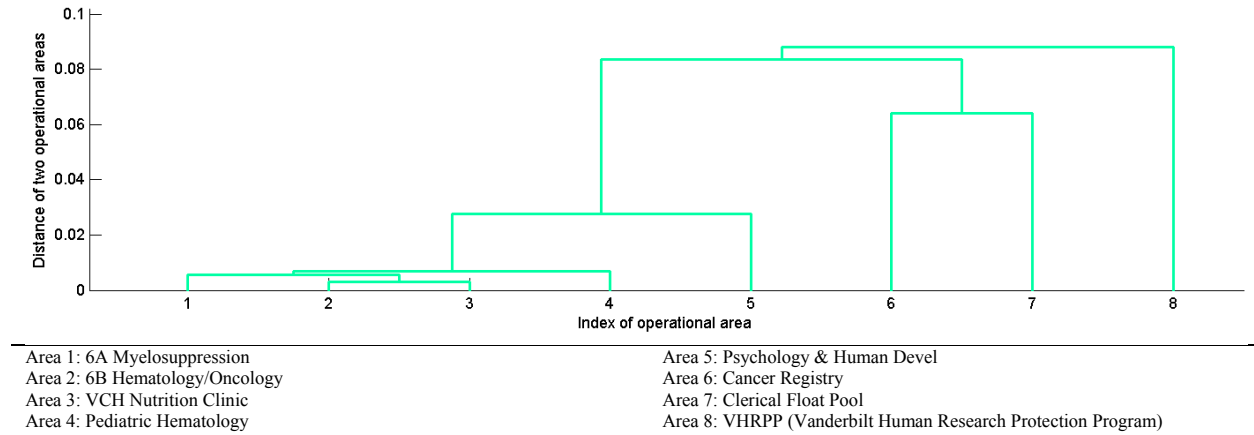


Fig. S12. Hierarchical structure of component C₁₄: Oncology II.

Table S14. PheWAS codes associated with organizational component C₁₄: *Oncology II*.

| Code | Description | Probability |
|--------|--|-------------|
| 284 | Aplastic anemia | 1.000000 |
| 204.11 | Lymphoid leukemia, acute | 0.939787 |
| 197 | Chemotherapy | 0.872920 |
| 288.11 | Neutropenia | 0.723207 |
| 963.1 | Adverse effects of antineoplastic and immunosuppressive drugs | 0.539644 |
| 783 | Fever of unknown origin | 0.489424 |
| 285.22 | Anemia in neoplastic disease | 0.471886 |
| 260 | Protein-calorie malnutrition | 0.343080 |
| 081 | Infection/inflammation of internal prosthetic device, implant or graft | 0.327296 |
| 198.6 | Secondary malignancy of bone | 0.323009 |

Component C₁₅: Virology Lab

This component consists of 2 operational areas i) Telephone Triage, and ii) Virology Laboratory. It also consists of 23 associated PheWAS codes as shown in Table S15.

Table S15. PheWAS codes associated with organizational component C₁₅: *Virology Lab*.

| Code | Description | Probability |
|-------------|--|--------------------|
| 585.1 | Acute renal failure | 1.000000 |
| 480 | Pneumonia | 0.773947 |
| 509.1 | Respiratory failure | 0.760274 |
| 656 | Other perinatal conditions | 0.624524 |
| 276.5 | Hypovolemia | 0.611551 |
| 495.2 | Asthma with exacerbation | 0.516945 |
| 783 | Fever of unknown origin | 0.498142 |
| 530.11 | GERD | 0.460644 |
| 401.1 | Essential hypertension | 0.449070 |
| 591 | Urinary tract infection | 0.405233 |
| 637 | Short gestation; low birth weight; and fetal growth retardation | 0.372079 |
| 079 | Viral infection | 0.367670 |
| 401.22 | Hypertensive chronic kidney disease | 0.366971 |
| 081 | Infection/inflammation of internal prosthetic device, implant or graft | 0.354973 |
| 348.2 | Cerebral edema and compression of brain | 0.349143 |
| 483 | Acute bronchitis and bronchiolitis | 0.348952 |
| 1008 | Internal injury to organs | 0.346324 |
| 345.1 | Epilepsy | 0.321226 |
| 789 | Nausea and vomiting | 0.319721 |
| 499 | Cystic fibrosis | 0.318322 |
| 428 | Heart failure | 0.316732 |
| 509.2 | Respiratory insufficiency | 0.316117 |
| 707.1 | Decubitus ulcer | 0.310351 |

Component C₁₆: Orthopedics

This component consists of 5 operational areas as shown in Fig. S12. It also consists of 16 associated PheWAS codes as shown in Table S16.

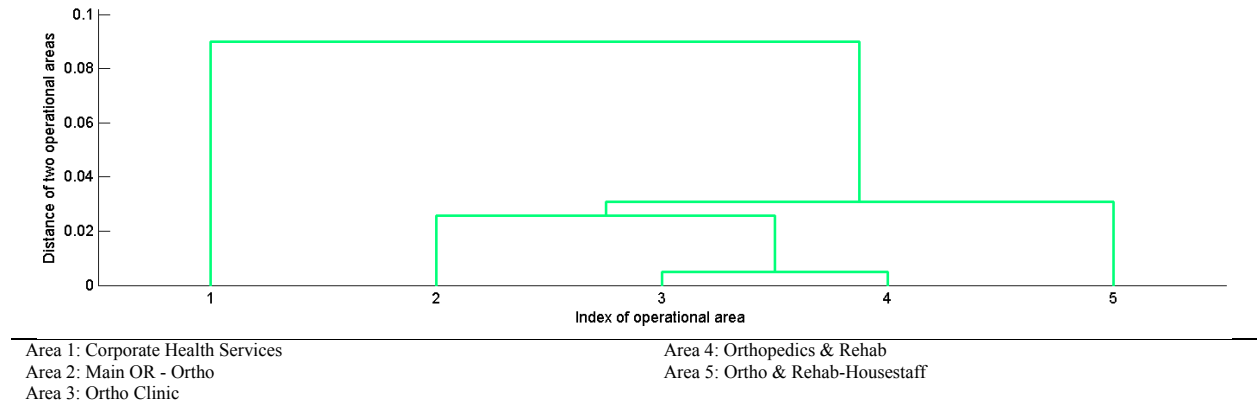


Fig. S13. Hierarchical structure of component C₁₆: *Orthopedics*.

Table S16. PheWAS codes associated with organizational component C₁₆: *Orthopedics*.

| Code | Description | Probability |
|--------|--|-------------|
| 1008 | Internal injury to organs | 1.000000 |
| 401.1 | Essential hypertension | 0.866331 |
| 1000 | Burns | 0.777183 |
| 805 | Fracture of vertebral column without mention of spinal cord injury | 0.734851 |
| 819 | Skull fracture and other intracranial injury | 0.521455 |
| 509.2 | Respiratory insufficiency | 0.477511 |
| 318 | Tobacco use disorder | 0.440795 |
| 285.1 | Acute post hemorrhagic anemia | 0.415182 |
| 278.11 | Morbid obesity | 0.401105 |
| 807 | Fracture of ribs | 0.393290 |
| 802 | Fracture of pelvis | 0.390578 |
| 585.1 | Acute renal failure | 0.381904 |
| 250.2 | Type 2 diabetes | 0.381514 |
| 740.1 | Osteoarthritis; localized | 0.342753 |
| 800.2 | Fracture of unspecified part of femur | 0.322067 |
| 800.3 | Fracture of tibia and fibula | 0.306859 |

Component C₁₇: Pediatric Infections

This component consists of 2 operational areas *i) PICC (Peripherally Inserted Central Catheter) - Pediatric Radiology* and *ii) Pediatric Infectious Disease*. It also consists of 29 associated PheWAS codes as shown in Table S17.

Table S17. PheWAS codes associated with organizational component C₁₇: *Pediatric Infections*.

| Code | Description | Probability |
|-------------|--|--------------------|
| 656 | Other perinatal conditions | 1.000000 |
| 585.1 | Acute renal failure | 0.949139 |
| 747.11 | Cardiac shunt/ heart septal defect | 0.877011 |
| 509.1 | Respiratory failure | 0.862975 |
| 081 | Infection/inflammation of internal prosthetic device, implant or graft | 0.698257 |
| 480 | Pneumonia | 0.638912 |
| 428 | Heart failure | 0.592528 |
| 509.2 | Respiratory insufficiency | 0.575313 |
| 747.12 | Valvular heart disease/ heart chambers | 0.527832 |
| 783 | Fever of unknown origin | 0.481381 |
| 276.5 | Hypovolemia | 0.464927 |
| 499 | Cystic fibrosis | 0.433385 |
| 747.13 | Congenital anomalies of great vessels | 0.432266 |
| 041 | Bacterial infection NOS | 0.426042 |
| 530.11 | GERD | 0.423602 |
| 637 | Short gestation; low birth weight; and fetal growth retardation | 0.417938 |
| 507 | Pleurisy; pleural effusion | 0.403365 |
| 707.1 | Decubitus ulcer | 0.381606 |
| 284 | Aplastic anemia | 0.380218 |
| 080 | Postoperative infection | 0.377666 |
| 647 | Infectious & parasitic conditions complicating pregnancy | 0.369361 |
| 480.1 | Bacterial pneumonia | 0.368555 |
| 204.11 | Lymphoid leukemia, acute | 0.324969 |
| 260 | Protein-calorie malnutrition | 0.323424 |
| 656.2 | Other respiratory conditions of fetus and newborn | 0.318813 |
| 038.1 | Gram negative septicemia | 0.318746 |
| 415 | pulmonary heart disease | 0.316395 |
| 495.2 | Asthma with exacerbation | 0.312836 |
| 038.3 | Bacteremia | 0.309612 |

Component C₁₈: Neuroscience

This component consists of 25 operational areas as shown in Fig. S13. It also consists of 10 associated PheWAS codes as shown in Table S18.

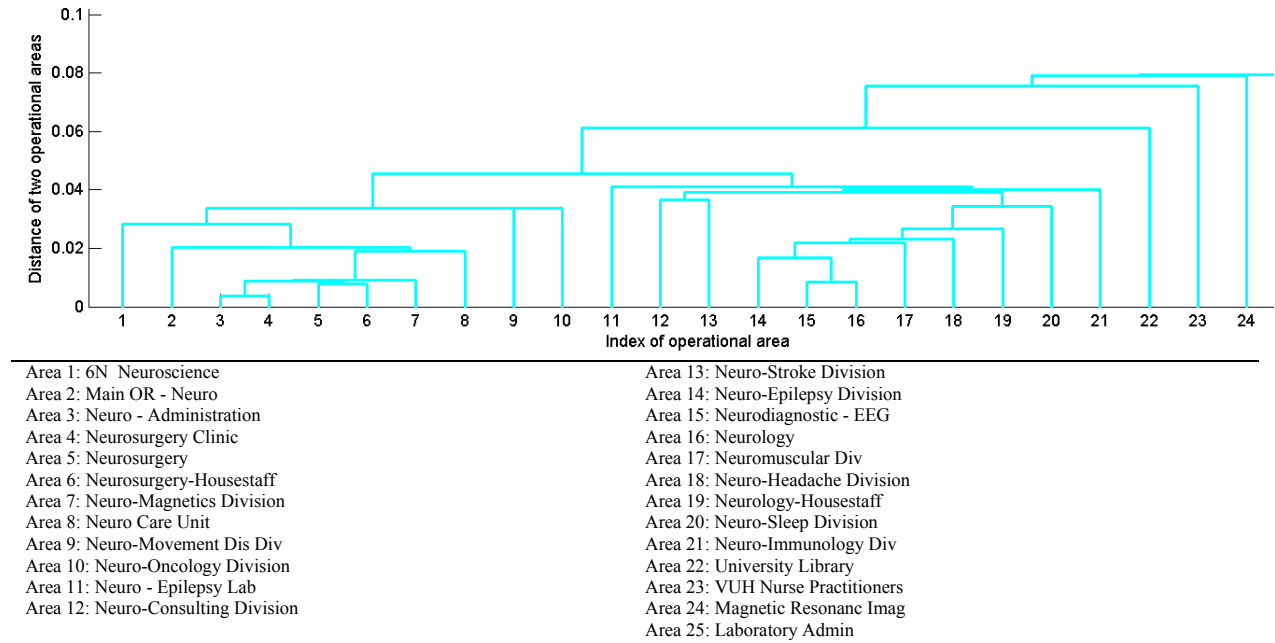


Fig. S14. Hierarchical structure of component C₁₈: *Neuroscience*.

Table S18. PheWAS codes associated with organizational component C₁₈: *Neuroscience*.

| Code | Description | Probability |
|--------|---|-------------|
| 348.2 | Cerebral edema and compression of brain | 1.000000 |
| 401.1 | Essential hypertension | 0.843327 |
| 509.1 | Respiratory failure | 0.461738 |
| 509.2 | Respiratory insufficiency | 0.442627 |
| 585.1 | Acute renal failure | 0.435213 |
| 331 | Other cerebral degenerations | 0.387272 |
| 433.21 | Ischemic stroke | 0.351933 |
| 345.3 | Convulsions | 0.343545 |
| 318 | Tobacco use disorder | 0.334899 |
| 250.2 | Type 2 diabetes | 0.311028 |

Component C₁₉: Infection Monitoring

This component consists of 2 operational areas *i) Infection Control & Prevention* and *ii) P.I.C.C. Service (Peripherally Inserted Central Catheter)*. It also consists of 9 associated PheWAS codes as shown in Table S19.

Table S19. PheWAS codes associated with organizational component C₁₉: *Infection Monitoring*.

| Code | Description | Probability |
|-------------|--|--------------------|
| 585.1 | Acute renal failure | 1.000000 |
| 509.1 | Respiratory failure | 0.658502 |
| 797 | Shock | 0.407313 |
| 038 | Septicemia | 0.390443 |
| 509.2 | Respiratory insufficiency | 0.383293 |
| 480 | Pneumonia | 0.344858 |
| 081 | Infection/inflammation of internal prosthetic device, implant or graft | 0.336993 |
| 428 | Heart failure | 0.334744 |
| 707.1 | Decubitus ulcer | 0.326288 |

Component C₂₀: Oncology III

This component consists of 4 operational areas as shown in Fig. S14. It also consists of 13 associated PheWAS codes as shown in Table S20.

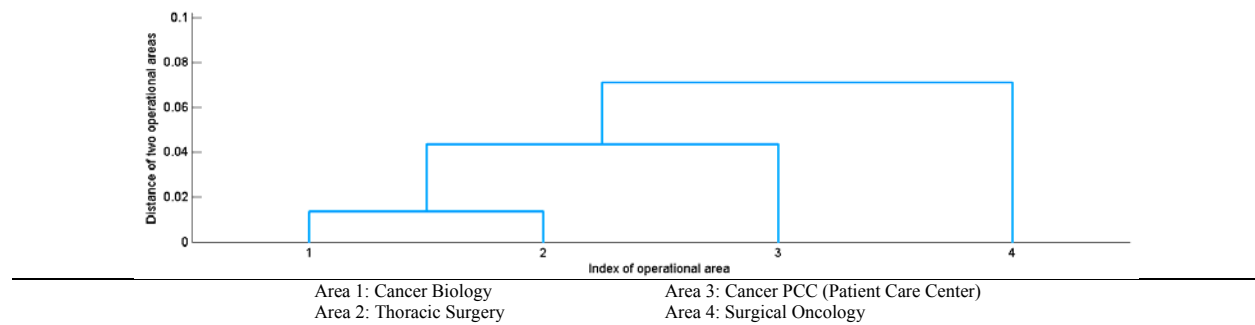


Fig. S15. Hierarchical structure of component C₂₀: Oncology III.

Table S20. PheWAS codes associated with organizational component C₂₀: *Oncology III*.

| Code | Description | Probability |
|--------|-------------------------------------|-------------|
| 401.1 | Essential hypertension | 1.000000 |
| 509.2 | Respiratory insufficiency | 0.712692 |
| 585.1 | Acute renal failure | 0.605242 |
| 509.1 | Respiratory failure | 0.482023 |
| 165.1 | Lung cancer | 0.441600 |
| 250.2 | Type 2 diabetes | 0.439838 |
| 318 | Tobacco use disorder | 0.432142 |
| 198.1 | Secondary malignancy of lymph nodes | 0.392320 |
| 260 | Protein-calorie malnutrition | 0.369449 |
| 506 | Empyema and pneumothorax | 0.359215 |
| 427.21 | Atrial fibrillation | 0.349325 |
| 530.11 | GERD | 0.341076 |
| 480 | Pneumonia | 0.333468 |

Component C₂₁: Endocrinology

This component consists of 2 operational areas *i) Diabetes/Endocrinology* and *ii) Eskind Diabetes - Adult*. It also consists of 12 associated PheWAS codes as shown in Table S21.

Table S21. PheWAS codes associated with organizational component C₂₁: *Endocrinology*.

| Code | Description | Probability |
|-------------|-------------------------------------|--------------------|
| 401.1 | Essential hypertension | 1.000000 |
| 585.1 | Acute renal failure | 0.806844 |
| 278.11 | Morbid obesity | 0.706770 |
| 250.2 | Type 2 diabetes | 0.507480 |
| 401.22 | Hypertensive chronic kidney disease | 0.458817 |
| 411.4 | Coronary atherosclerosis | 0.404454 |
| 318 | Tobacco use disorder | 0.395139 |
| 509.1 | Respiratory failure | 0.394500 |
| 509.2 | Respiratory insufficiency | 0.367975 |
| 585.32 | End stage renal disease | 0.362191 |
| 428 | Heart failure | 0.309840 |
| 411.2 | Myocardial infarction | 0.303815 |

Component C₂₂: Urology

This component consists of 5 operational areas as shown in Fig. S15. It also consists of 9 associated PheWAS codes as shown in Table S22.

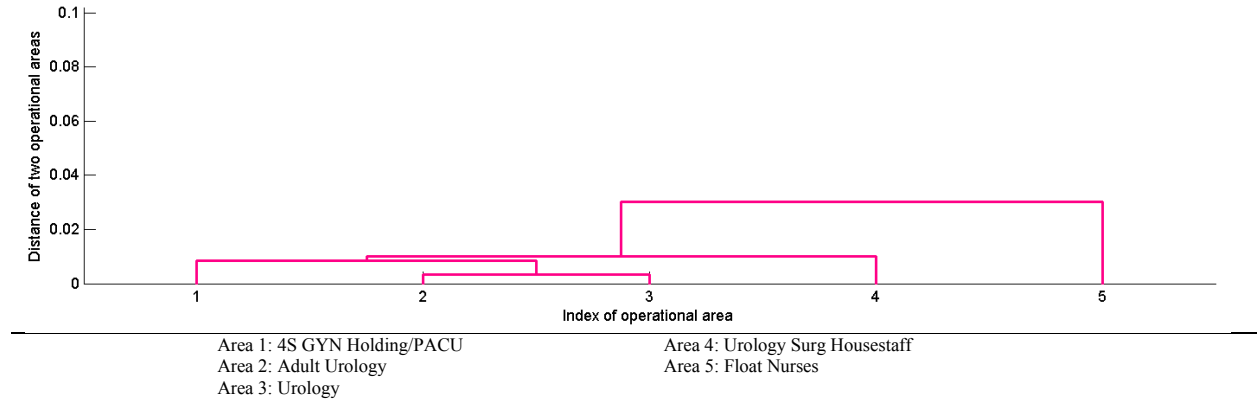


Fig. S16. Hierarchical structure of component C₂₂: Urology.

Table S22. PheWAS codes associated with organizational component C₂₂: Urology.

| Code | Description | Probability |
|--------|--------------------------|-------------|
| 401.1 | Essential hypertension | 1.000000 |
| 185 | Prostate cancer | 0.804166 |
| 318 | Tobacco use disorder | 0.478855 |
| 250.2 | Type 2 diabetes | 0.412826 |
| 189.11 | Renal cell carcinoma | 0.350127 |
| 278.1 | Obesity | 0.349561 |
| 585.1 | Acute renal failure | 0.331502 |
| 595 | Hydronephrosis | 0.329396 |
| 411.4 | Coronary atherosclerosis | 0.307507 |

Component C₂₃: Outpatient Surgical Related

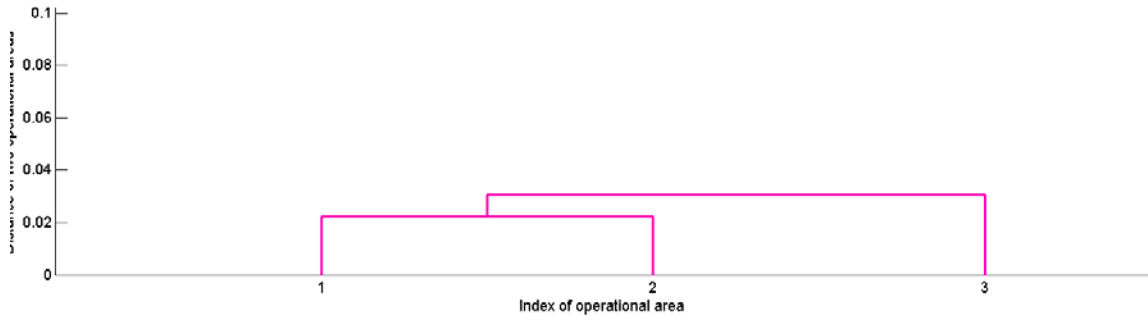
This component consists of 2 operational areas i) *TVC (The Vanderbilt Clinic) HR (Human Resource)/PACU (Post-anesthesia care unit)/obstetrics* and ii) *TVC OR (operating room)*. It also consists of 14 associated PheWAS codes as shown in Table S23.

Table S23. PheWAS codes associated with organizational component C₂₃: *Outpatient Surgical Related*.

| Code | Description | Probability |
|-------------|--|--------------------|
| 401.1 | Essential hypertension | 1.000000 |
| 509.2 | Respiratory insufficiency | 0.643679 |
| 819 | Skull fracture and other intracranial injury | 0.602735 |
| 707.1 | Decubitus ulcer | 0.549722 |
| 1008 | Internal injury to organs | 0.548448 |
| 318 | Tobacco use disorder | 0.494377 |
| 285.1 | Acute post hemorrhagic anemia | 0.457023 |
| 1000 | Burns | 0.454635 |
| 585.1 | Acute renal failure | 0.438049 |
| 250.2 | Type 2 diabetes | 0.395239 |
| 509.1 | Respiratory failure | 0.376453 |
| 805 | Fracture of vertebral column without mention of spinal cord injury | 0.331717 |
| 278.11 | Morbid obesity | 0.312570 |
| 530.11 | GERD | 0.302251 |

Component C₂₄: Surgery, General

This component consists of 3 operational areas as shown in Fig. S16. It also consists of 6 associated PheWAS codes as shown in Table S24.



Area 1: Dept of Surgery Admin
 Area 2: Surgical PCC (Patient Care Center)
 Area 3: General Surgery

Fig. S17. Hierarchical structure of Component C₂₄: *Surgery, General*.

Table S24. PheWAS codes associated with organizational component C₂₄: *Surgery, General*.

| Code | Description | Probability |
|--------|------------------------------|-------------|
| 401.1 | Essential hypertension | 1.000000 |
| 278.11 | Morbid obesity | 0.899617 |
| 250.2 | Type 2 diabetes | 0.515767 |
| 585.1 | Acute renal failure | 0.480500 |
| 318 | Tobacco use disorder | 0.383420 |
| 260 | Protein-calorie malnutrition | 0.311849 |

Component C₂₅: Pathology

This component consists of 2 operational areas i) *Medical Pathology* and ii) *Pathology-Housestaff*. It also consists of 14 associated PheWAS codes as shown in Table S25.

Table S25. PheWAS codes associated with organizational component C₂₅: *Pathology*.

| Code | Description | Probability |
|-------------|-------------------------------|--------------------|
| 401.1 | Essential hypertension | 1.000000 |
| 585.1 | Acute renal failure | 0.958922 |
| 509.1 | Respiratory failure | 0.613427 |
| 509.2 | Respiratory insufficiency | 0.593497 |
| 250.2 | Type 2 diabetes | 0.478504 |
| 278.11 | Morbid obesity | 0.429152 |
| 318 | Tobacco use disorder | 0.423848 |
| 260 | Protein-calorie malnutrition | 0.378067 |
| 797 | Shock | 0.369896 |
| 480 | Pneumonia | 0.354103 |
| 038 | Septicemia | 0.339392 |
| 285.1 | Acute post hemorrhagic anemia | 0.330002 |
| 530.11 | GERD | 0.328286 |
| 411.4 | Coronary atherosclerosis | 0.309403 |

Component C₂₆: Plastic Surgery

This component consists of 3 operational areas as shown in Fig. S17. It also consists of 9 associated PheWAS codes as shown in Table S26.

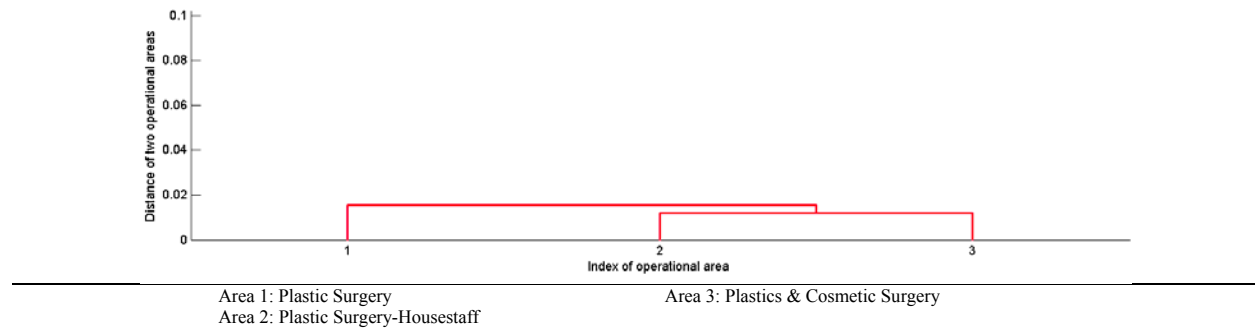


Fig. S18. Hierarchical structure of component C₂₆: *Plastic Surgery*.

Table S26. PheWAS codes associated with organizational component C₂₆: *Plastic Surgery*.

| Code | Description | Probability |
|--------|--|-------------|
| 707.1 | Decubitus ulcer | 1.000000 |
| 1000 | Burns | 0.924583 |
| 819 | Skull fracture and other intracranial injury | 0.608345 |
| 285.1 | Acute post hemorrhagic anemia | 0.521837 |
| 401.1 | Essential hypertension | 0.503639 |
| 174.11 | Breast cancer | 0.323530 |
| 585.1 | Acute renal failure | 0.309283 |
| 1008 | Internal injury to organs | 0.305926 |
| 318 | Tobacco use disorder | 0.303261 |

Component C₂₇: Vanderbilt Psychiatry

This component consists of 12 operational areas as shown in Fig. S18. It also consists of 5 associated PheWAS codes as shown in Table S27.

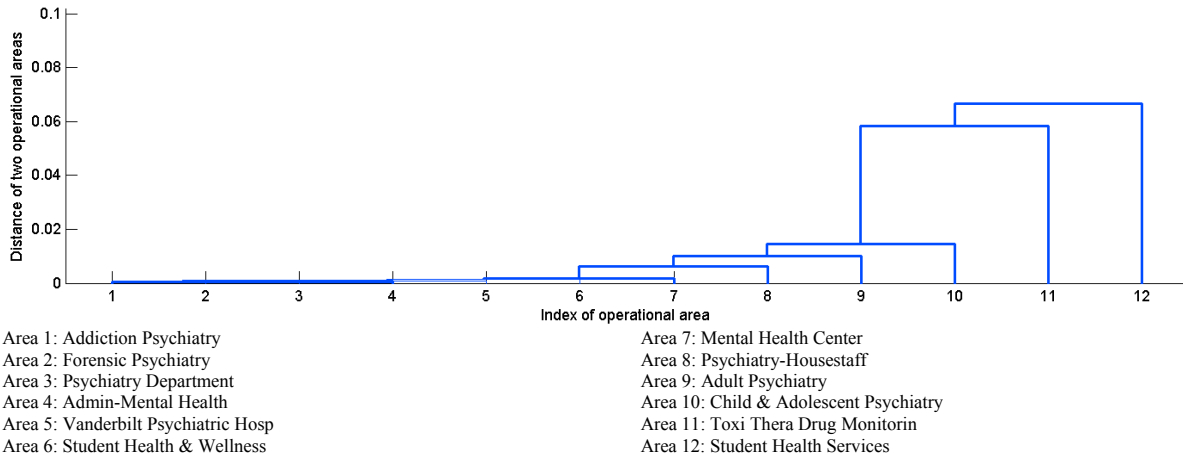


Fig. S19. Hierarchical structure of component C₂₇: *Vanderbilt Psychiatry*.

Table S27. PheWAS codes associated with organizational component C₂₇: *Vanderbilt Psychiatry*.

| Code | Description | Probability |
|--------|-----------------------------------|-------------|
| 316 | Substance addiction and disorders | 1.000000 |
| 297.1 | Suicidal ideation | 0.619576 |
| 296.1 | Bipolar | 0.557161 |
| 296.22 | Major depressive disorder | 0.447389 |
| 300.9 | Posttraumatic stress disorder | 0.361852 |

Component C₂₈: Ophthalmology

This component consists of 2 operational areas i) *Ophthalmology* and ii) *Ophthalmology-Housestaff*. It also consists of 13 associated PheWAS codes as shown in Table S28.

Table S28. PheWAS codes associated with organizational component C₂₈: *Ophthalmology*.

| Code | Description | Probability |
|-------------|--|--------------------|
| 1008 | Internal injury to organs | 1.000000 |
| 1000 | Burns | 0.911112 |
| 819 | Skull fracture and other intracranial injury | 0.819937 |
| 509.2 | Respiratory insufficiency | 0.614339 |
| 805 | Fracture of vertebral column without mention of spinal cord injury | 0.572727 |
| 585.1 | Acute renal failure | 0.557687 |
| 348.2 | Cerebral edema and compression of brain | 0.475399 |
| 474.2 | Chronic tonsillitis and adenoiditis | 0.387963 |
| 509.1 | Respiratory failure | 0.359091 |
| 327.32 | Obstructive sleep apnea | 0.348954 |
| 401.1 | Essential hypertension | 0.346567 |
| 807 | Fracture of ribs | 0.313597 |
| 656 | Other perinatal conditions | 0.309772 |

Component C₂₉: Infection Related

This component consists of 7 operational areas as shown in Fig. S19. It also consists of 10 associated PheWAS codes as shown in Table S29.

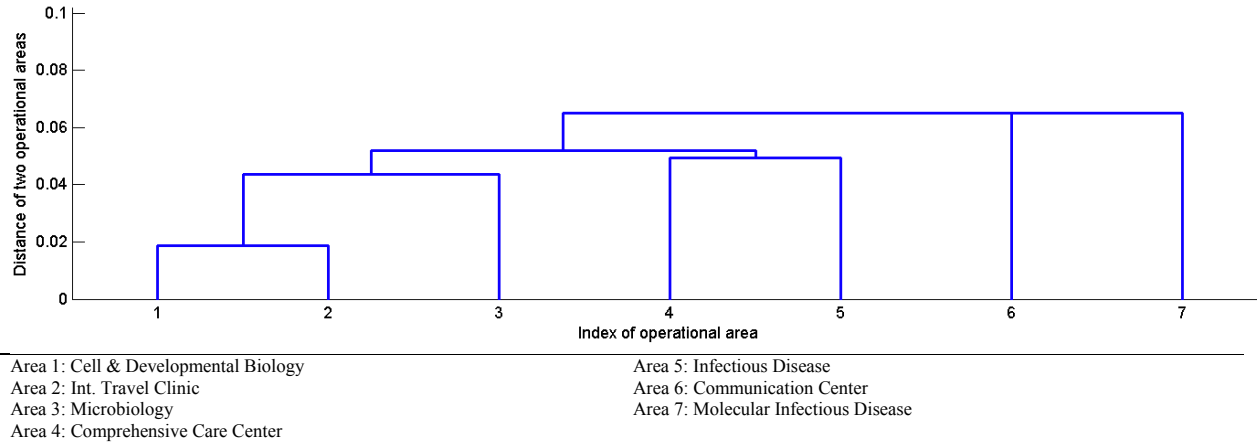


Fig. S20. Hierarchical structure of component C₂₉: *Infection Related*.

Table S29. PheWAS codes associated with organizational component C₂₉: *Infection Related*.

| Code | Description | Probability |
|-------|--|-------------|
| 585.1 | Acute renal failure | 1.000000 |
| 081 | Infection/inflammation of internal prosthetic device, implant or graft | 0.576224 |
| 707.1 | Decubitus ulcer | 0.438631 |
| 509.1 | Respiratory failure | 0.432196 |
| 480 | Pneumonia | 0.351515 |
| 428 | Heart failure | 0.339162 |
| 080 | Postoperative infection | 0.330399 |
| 038 | Septicemia | 0.324999 |
| 038.1 | Gram negative septicemia | 0.324223 |
| 041 | Bacterial infection NOS | 0.311750 |

Component C₃₀: Rheumatology Clinic

This component consists of 2 operational areas i) Nephrology Clinic and ii) Rheumatology Clinic. It also consists of 7 associated PheWAS codes as shown in Table S30.

Table S30. PheWAS codes associated with organizational component *C₃₀: Rheumatology Clinic*.

| Code | Description | Probability |
|-------------|-------------------------------------|--------------------|
| 585.1 | Acute renal failure | 1.000000 |
| 401.22 | Hypertensive chronic kidney disease | 0.930815 |
| 585.32 | End stage renal disease | 0.839477 |
| 587 | Kidney replaced by transplant | 0.453849 |
| 401.1 | Essential hypertension | 0.387587 |
| 428 | Heart failure | 0.321580 |
| 276.41 | Acidosis | 0.305401 |

Component C₃₁: Burn Treatment

This component consists of 3 operational areas as shown in Fig. S20. It also consists of 1 associated PheWAS codes as shown in Table S31.

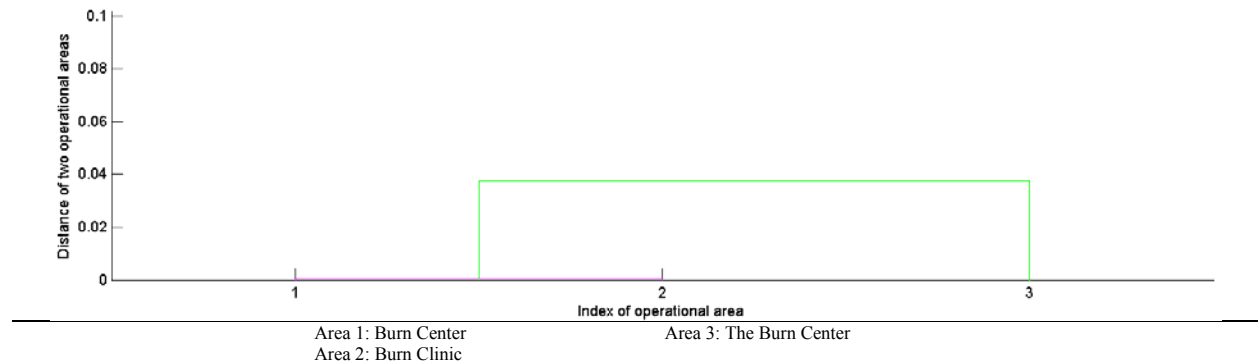


Fig. S21. Hierarchical structure of component C₃₁: *Burn Treatment*.

Table S31. PheWAS codes associated with organizational component C₃₁: *Burn Treatment*.

| Code | Description | Probability |
|------|-------------|-------------|
| 1000 | Burns | 1.000000 |

Component C₃₂: Gastroenterology

This component consists of 6 operational areas as shown in Fig. S21. It also consists of 7 associated PheWAS codes as shown in Table S32.

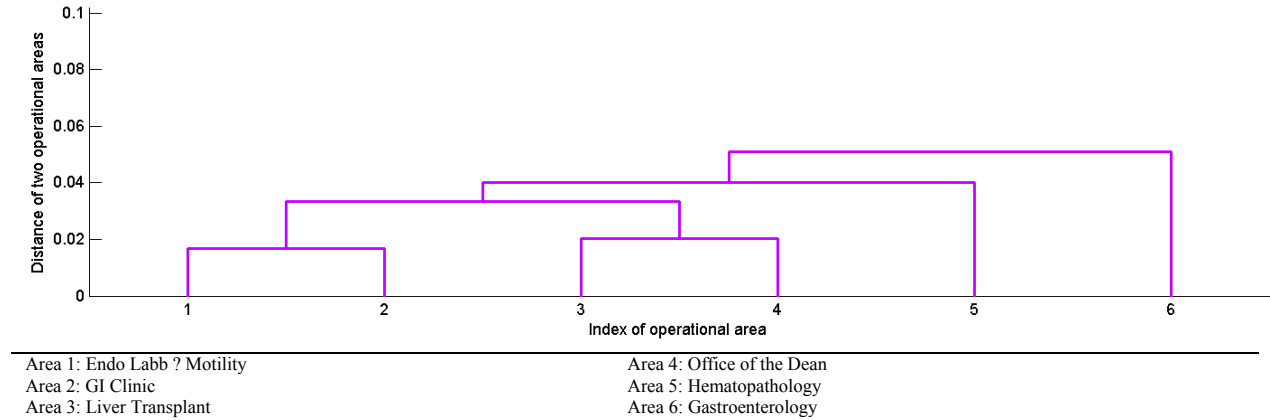


Fig. S22. Hierarchical structure of component C₃₂: *Gastroenterology*.

Table S32. PheWAS codes associated with organizational component C₃₂: *Gastroenterology*.

| Code | Description | Probability |
|--------|---|-------------|
| 585.1 | Acute renal failure | 1.000000 |
| 572 | Ascites (non malignant) | 0.461241 |
| 571.51 | Cirrhosis of liver without mention of alcohol | 0.439160 |
| 070.3 | Viral hepatitis C | 0.419060 |
| 509.1 | Respiratory failure | 0.339680 |
| 571.8 | Liver abscess and sequelae of chronic liver disease | 0.335455 |
| 401.1 | Essential hypertension | 0.317685 |

Component C₃₃: Human Nutrition

This component consists of 2 operational areas i) *CHN Clinic (Center for Human Nutrition)* and ii) *Wound Ostomy*. It also consists of 12 associated PheWAS codes as shown in Table S33.

Table S33. PheWAS codes associated with organizational component C₃₃: *Human Nutrition*.

| Code | Description | Probability |
|-------------|--|--------------------|
| 585.1 | Acute renal failure | 1.000000 |
| 509.1 | Respiratory failure | 0.624727 |
| 038 | Septicemia | 0.522147 |
| 797 | Shock | 0.487351 |
| 260 | Protein-calorie malnutrition | 0.460661 |
| 509.2 | Respiratory insufficiency | 0.414498 |
| 260.2 | severe protein-calorie malnutrition | 0.350210 |
| 567 | Peritonitis and retroperitoneal infections | 0.343182 |
| 401.1 | Essential hypertension | 0.330971 |
| 560.1 | Paralytic ileus | 0.328393 |
| 707.1 | Decubitus ulcer | 0.325046 |
| 569.2 | Gastrointestinal complications | 0.310331 |

Component C₃₄: Vanderbilt Medical Group Support Systems

This component consists of 2 operational areas i) *VMG (Vanderbilt Medical Group) Central Call Center* and ii) *VMG (Vanderbilt Medical Group) Guest Service*. It also consists of 13 associated PheWAS codes as shown in Table S34.

Table S34. PheWAS codes associated with organizational component C₃₄: *Vanderbilt Medical Group Support Systems*.

| Code | Description | Probability |
|-------------|--|--------------------|
| 401.1 | Essential hypertension | 1.000000 |
| 1008 | Internal injury to organs | 0.914767 |
| 585.1 | Acute renal failure | 0.577532 |
| 805 | Fracture of vertebral column without mention of spinal cord injury | 0.571890 |
| 509.2 | Respiratory insufficiency | 0.522869 |
| 819 | Skull fracture and other intracranial injury | 0.497249 |
| 318 | Tobacco use disorder | 0.455846 |
| 250.2 | Type 2 diabetes | 0.454464 |
| 1000 | Burns | 0.437925 |
| 411.4 | Coronary atherosclerosis | 0.434181 |
| 278.11 | Morbid obesity | 0.369151 |
| 285.1 | Acute post hemorrhagic anemia | 0.360102 |
| 807 | Fracture of ribs | 0.308027 |

S3: Survey Questions and Respondents

The respondents to our survey were targeted and not randomly selected. The decision for targeting was so that our inferred components could be interpreted by experts who are knowledgeable on interactions of health workers in healthcare system. 23 administrative experts completed the survey. The profession of, as well as the number of years worked at the VUMC, are depicted for each respondent in Table S35. Our respondent selection approach was in the model of concentric circles.

- The center circle represents professions that are most directly patient focused (physicians, nurses, pharmacists). There are 12 respondents in this group (52%).
- The next circle are those professions that directly support a healthcare system (biomedical or system engineering, hospital administration, clinical librarians, organizational behavior in healthcare). There are 8 respondents in this group (35%).
- Finally the outer circle are those whose backgrounds touch the patients through their current operational roles (project management and business management). There are 3 respondents in this group (13%).

The 34 survey questions are shown in Table S36.

Table S35. Administrative experts of the VUMC who participated in the survey. The average number of years working at the VUMC is 12.39.

| Survey Respondent | Profession | Number of Years |
|--------------------------|--------------------------------|------------------------|
| 1 | Nurse | 4 |
| 2 | Organizational Behavior | 15 |
| 3 | Nurse | 10 |
| 4 | Hospital Administration | 23 |
| 5 | Healthcare Administration | 5 |
| 6 | Nurse | 4 |
| 7 | Project Management | 3 |
| 8 | Nurse | 10 |
| 9 | Physician | 38 |
| 10 | Physician | 14 |
| 11 | System Engineer (Hospital) | 23 |
| 12 | Hospital Administration | 14 |
| 13 | Nurse | 25 |
| 14 | Biomedical Engineer | 7 |
| 15 | Clinical Librarian | 23 |
| 16 | Project Manager | 2 |
| 17 | Physician | 1 |
| 18 | Pharmacist | 8 |
| 19 | Physician | 15 |
| 20 | Nurse | 8 |
| 21 | Business Management (Hospital) | 9 |
| 22 | Hospital Administration | 14 |
| 23 | Nurse | 10 |

Table S36. The 34 survey questions. Each question contains one inferred component and one random component of the same size.

| | |
|--|--|
| <p>Question 1: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other.</p> | |
| <p>Corporate Health Services Hospital Administration Informatics Information System Insurance Management Jim Ayers Institute Mental Health Center MOR - Cardiac Surgery Neuro-Epilepsy Division Office of Research Pediatric Endocrinology Physical Therapy VHVI OHO VMG Insurance Collections</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> | <p>4 East OB/GYN 4N Labor & Delivery Baptist Ctr for Womens Imagin Breast Center Center for Human Genetics Rese Center for Womens Health Med School Pediatrics Newborn Nursery Ob/Gyn Housestaff Ob-Gyn Perinatal Education Perinatal Services Radiology-Ctr for Womens Imag</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> |
| <p>Question 2: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other.</p> | |
| <p>Nephrology & Hypertension Ophthalmology-Housestaff</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> | <p>3A Observation Unit Vanderbilt Dance Group</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> |
| <p>Question 3: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other.</p> | |
| <p>Admitting BPC - Franklin Rd Dermatology Echo Lab ECL</p> | <p>10 N Trauma Adult Admin General Counsel Lifelight Main OR - ADMN</p> |

| | |
|---|---|
| <p>IBD Clinic Inpatient Medicine Med Peds - VUH Medicine Clin. Toxicology Nuclear Lab Occupational Health Clin Oral Surgery Orthodontics Pediatric Utilization Mgmt Sleep Center Marriott VCH Cath Lab VCH OR VOR Ophthalmology</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> | <p>Main OR - N/E/W Occupational Therapy Oral Surgery Oral Surgery Clinic Oral Surgery-Housestaff Pastoral Care Physical Therapy Police Department Surgery/Trauma PCC Transplant Center Trauma Vanderbilt Kennedy Center VICTR</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> |
|---|---|

Question 4: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other.

| | |
|---|--|
| <p>100 Oaks Phlebotomy Adult Emergency Burn Center Cancer Clinic Cardiac Cath Lab Center for Clinical Improvemen Child & Adolescent Psychiatry Developmental Medicine Eskind Diabetes - Peds Float Pool-Clin.Staff.Res.Ctr. Health Services Research Informatics Info Tech Integrat Internal Medicine - OHO Laboratory Computer Oper Med School Pediatrics Neuro-Magnetics Division Neuromuscular Div Neurosurgery Clinic NSC Nuclear Med Housestaff</p> | <p>5N CVICU Anticoagulation Clinic Cardiac Cardiac Cath Lab Cardiac Observation Cardiac Progressive Care Unit Cardiac Short Stay/Interventio Cardiology 7N Cardiology Clinic - MCE Cardiovascular Medicine Cardiovascular MRI Clinical Engineering Clinical Pharm - Pharm Clinical Pharmacology-DOM CNO - Adult Hospital Echo Lab EP Lab Exercise Lab Health Promotion Center Heart Station-Ekg Heart Transplant</p> |
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| <p>Nursing Education & Developmen Otolaryngology Perinatal Services Pharmacy Poison Control Center Primary Care/Eskind Diab Acces Pulmonary Function Lab Radiology Admitting Rehab Administration Renal Transplant Rheum Thoracic Surgery TVC Observation Urology/Pediatric Surgical Sci Vanderbilt Kennedy Center Vanderbilt Psychiatric Hosp VCH Case Management VHRPP VPEC</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> | <p>Housing Administration Hypertension Clinic MOR - Cardiac Surgery Nuclear Lab Nuclear Med Housestaff Nuclear Medicine Pulmonary Function Lab Radiology Nursing Telemetry Monitor Techs Thorac Surg-Housestaff Vanderbilt Heart - MUR Vascular Surgery VC Health Affairs VHVI - Offisite Clinics VHVI Administration VHVI Clinical Support VHVI OHO VMG Shelbyville</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> |
| <p>Question 5: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other.</p> | |
| <p>Biomedical Informatics Briley Sterile Proc Cell & Developmental Biology Center For Health Service Ctr for Biomedical Ethics Hematology Medical Pathology Molec Phy & Bio PCCU Peds Liver Transplant Psychology & Human Devel Surgical Oncology Ultrasound VCH Peds Rehab</p> | <p>8th Floor Pod A 8th Floor Pod B 8th Floor Pod C DOT Radiology Emergency Services, MCJCHV Orthopedics Pediatric Gastroenterology Pediatric Surgery Pediatric Urology Training Room VCH Anesthesia Techs VCH GI Lab VCH HR/PACU VCH OR</p> |

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| <p>VU/Meharry Ctr in Sickle Cell</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> | <p>VCH Pre - Testing</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> |
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Question 6: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other.

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| <p>Cancer Center Exec Director VCH Gastroenterology Medicine MPCC - Medical Specialities Neuro-Headache Division Pathology-Housestaff Patient Accounting Psychiatry Department Radiology-Housestaff Surgery/Trauma PCC Trauma VMG Patient Collections VU 1042 Non-Employee Payments</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> | <p>100 Oaks Phlebotomy Bone Marrow Processing Lab Bone Marrow Registry Cancer Call Center Cancer Infusion Center Cytogenetics Hematology/Oncology Hematology/Stem Cell Clinic Myelosuppression (11N) Out Patient Clinic Pharmacy Rad Oncology Housestaff Radiation Oncolgy Radiation Oncology VICC Clinical Trials Shared Re</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> |
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Question 7: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other.

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| <p>MCE OR A & S Deans Office Office of the Dean</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely</p> | <p>MCE OR MCE Recovery VPEC 100 Oaks</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely</p> |
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| <input type="checkbox"/> Completely likely | <input type="checkbox"/> Completely likely |
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| Question 8: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other. | |
| <p>324 Cool Springs Blvd 7th Floor Pod B 9 South Bone Marrow Registry Bronchoscopy Center for Human Genetics Rese Central Registration Child Life Services CNO - Adult Hospital Colorectal Surgery Communication Center Cumberland Ped Foundation Cytopathology Dept of Pharmacology Diagnostic Radiology DOT Radiology Emergency Medicine Admin ENT Covey Lane Esoteric Chemistry Hearing And Speech Infection Control & Prevention Interpretive Services Interventional Pain Center Laboratory Admin Main OR - N/E/W MRI Neonatal Transport Nephrology Clinic Network Computing Services Neuro - Administration Neurology Clinic OR Informatics Ortho & Rehab-Housestaff Ortho Clinic P.I.C.C. Service Patient / Family Centered Care Patient Exp. & Svc Excellence Pediatric Infectious Disease Pediatric Surgery Pediatric Urology</p> | <p>6th Floor Pod C-Cardiology 7th Floor Pod A 7th Floor Pod B 7th Floor Pod C Adolescent Medicine Biomed Grad Studies Briley Sterile Proc Center For Health Service Child Life Services CHOC Claims & Risk Management CV Surgery Developmental Medicine Diagnostic Radiology ECMO Eskind Diabetes - Peds Exec Director VCH Medical Affairs MRI Neonatal Transport Neonatology NICU Patient Accounting PCCU Pediatric Cardiac Surgery Pediatric Cardiology Pediatric Clinical Research Pediatric Critical Care Pediatric Emergency Dept Pediatric Endocrinology Pediatric Hospital Medicine Pediatric Pulmonary Pediatric Rheumatology Pediatric Social Work Pediatric Utilization Mgmt Pediatrics-Housestaff Peds Emergency Medicine Peds IV Team Peds Respiratory Care Perioperative Admin</p> |

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| <p>Respiratory Care Social Work Student Affairs Sch Student Athletics Surgical Science Telephone Triage Toxi Thera Drug Monitorin Transplant Center Admin TVC HR/PACU/OBS VASAP VCHA Admin VMG Appeals VMG Coding & Charge Entry VMG Physician Billing Services Voice & Balance Center</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> | <p>Radiology Administration Student Athletics University Peds V B & J OR VCH Admitting VCH Case Management VCH ED Registration VCH EP Lab VCH Float Pool VCH Nutrition Support Service VCH Peds Rehab VCH Pharmacy VCH Retail Pharmacy VCH/ED Discharge Station VMG Practice Support</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> |
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Question 9: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other.

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| <p>Computed Tomography WIC - Hwy 96</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> | <p>Dermatology Preventive Medicine</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> |
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Question 10: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other.

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| <p>10 N Trauma Addiction Psychiatry Adult Urology Baptist Ctr for Womens Imagin Bone Marrow Processing Lab Cardiac Short Stay/Interventio Cardiology 7N</p> | <p>7th Floor Round Wing 8N Inpatient Medicine 8S Inpatient Med. Admitting Adult Emergency Biomedical Informatics Clinical Research Center</p> |
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| <p>Cytogenetics Dietetic Interns EP Lab Exec Nursing Admin Forensic Psychiatry GI Clinic Hospital Guest Services Kidney Transplant Liver Transplant Main OR - ADMN MCE Pharmacy MCE Recovery MCJCHV Nursing Education Neuro-Consulting Division Neuro-Immunology Div Oral Surgery-Housestaff Pediatric Pulmonary Peds Emergency Medicine Peds Respiratory Care PICC-Pediatric Radiology Preventive Medicine Pulmonary Clinic Radiology Administration Vanderbilt Home Care VCH ED Registration VCH Pharmacy VCH Radiology Recovery VMG Central Call Center VOI Radiology VUH Nurse Practitioners Westhaven</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> | <p>Clinical Staffing Resource Ctr Computed Tomography Disease Management Emergency Med-Housestaff Emergency Medicine Eskind Biomed Library Float Pool-Clin.Staff.Res.Ctr. Health Services Research Hillsboro Medical Group Informatics Information System InPatient Medicine Internal Medicine Jim Ayers Institute Med Sch Radiology Medical Information Services Medicine Medicine - Rheumatology Medicine-Housestaff Neuro-Cognitive Dis Div Nutrition Support Pharmacy Radiology-Housestaff Senior Care Inpatient Service Free Stipends Social Work TVC Observation Utilization Management Vanderbilt Internal Medicine VMG at Green Hills VMG Coding & Charge Entry VUH Admitting</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> |
| <p>Question 11: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other.</p> | |
| <p>7th Floor Pod C Division of Epidemiology</p> | <p>Coagulation Thrombosis Dietetic Interns</p> |

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| <p>Eskind Diabetes - Adult IV Therapy Team Neuro-Sleep Division Out Patient Clinic Pharmacy Police Department Renal Dialysis VPEC 100 Oaks VUH Admitting</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> | <p>Informatics Info Tech Integrat MICU Office of Emergency Communicatn Rehab Administration Respiratory Care SICU Surgical Science VMG Claims Management</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> |
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Question 12: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other.

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| <p>Ctr for Surgical Weight Loss Digestive Disease & Urology PC ECMO VCH Sedation Svcs VUH Nutrition Clinic</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> | <p>Kidney Transplant Pediatric Kidney Transplant Pr Renal Dialysis Renal Transplant Transplant Center Admin</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> |
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Question 13: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other.

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| <p>Chaplain Transplant Center</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> | <p>Otolaryngology Otolrn Surg Housestaff</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> |
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Question 14: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other.

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| <p>8S Inpatient Med. Nuclear Pharmacy Pediatric Emergency Dept Pediatric Social Work SPMC Temporary Services Vascular Surgery VCH Pre - Testing</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> | <p>6A Myelosuppression 6B Hematology/Oncology Cancer Registry Clerical Float Pool Pediatric Hematology Psychology & Human Devel VCH Nutrition Clinic VHRPP</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> |
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Question 15: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other.

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| <p>CV Surgery Myelosuppression (11N)</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> | <p>Telephone Triage Virology Laboratory</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> |
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Question 16: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other.

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| <p>Breast Center Phototherapy VCH Nutrition Support Service VHVI Clinical Support Virology Laboratory</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> | <p>Corporate Health Services Main OR - Ortho Ortho & Rehab-Housestaff Ortho Clinic Orthopedics & Rehab</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> |
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Question 17: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other.

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| <p>Department of Finance Senior Care Inpatient</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> | <p>Pediatric Infectious Disease PICC-Pediatric Radiology</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> |
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Question 18: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other.

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| <p>Anticoagulation Clinic Cancer Call Center Cancer PCC Child and Family Center Diabetes Ctr General Surgery Heart Transplant Inpatient Admin Magnetic Resonanc Imag Neuro-Oncology Division Nuclear Medicine Pediatric Hospital Medicine Perinatal Education Perioperative Admin Plastic Surgery Plastic Surgery-Housestaf Radiation Oncology Specimen Receiving Surgical Pathology Thorac Surg-Housestaff Urolog Surg Housestaff Utilization Management V B & J OR VCH PCC VHVI - Offisite Clinics</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely</p> | <p>6N Neuroscience Laboratory Admin Magnetic Resonanc Imag Main OR - Neuro Neuro - Administration Neuro - Epilepsy Lab Neuro Care Unit Neuro-Consulting Division Neurodiagnostic - EEG Neuro-Epilepsy Division Neuro-Headache Division Neuro-Immunology Div Neurology Neurology-Housestaff Neuro-Magnetics Division Neuro-Movement Dis Div Neuromuscular Div Neuro-Oncology Division Neuro-Sleep Division Neuro-Stroke Division Neurosurgery Neurosurgery Clinic Neurosurgery-Housestaff University Library VUH Nurse Practitioners</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely</p> |
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| <input type="checkbox"/> Completely likely | <input type="checkbox"/> Completely likely |
| Question 19: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other. | |
| Pediatric Gastroenterology VMG Executive Leadership <input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely | Infection Control & Prevention P.I.C.C. Service <input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely |
| Question 20: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other. | |
| Clerical Float Pool Clinic Operations Rheumatology Clinic Vanderbilt Oncology <input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely | Cancer Biology Cancer PCC Surgical Oncology Thoracic Surgery <input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely |
| Question 21: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other. | |
| Neuro - Epilepsy Lab Neurosurgery-Housestaff <input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely | Diabetes/Endocrinology Eskin Diabetes - Adult <input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely |
| Question 22: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other. | |
| 6N Neuroscience Cardiac Observation Neurosurgery | 4S GYN Holding/PACU Adult Urology Float Nurses |

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| <p>Pediatric Hematology VICTR</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> | <p>Urolog Surg Housestaff Urology</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> |
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Question 23: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other.

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| <p>Case Management Training Room</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> | <p>TVC HR/PACU/OBS TVC OR</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> |
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Question 24: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other.

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| <p>Adolescent Medicine Hematology/Stem Cell Clinic Xray</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> | <p>Dept of Surgery Admin General Surgery Surgical PCC</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> |
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Question 25: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other.

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| <p>CHOC Pastoral Care</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely</p> | <p>Medical Pathology Pathology-Housestaff</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely</p> |
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| <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely | <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely |
| <p>Question 26: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other.</p> | |
| <p>DNA Molecular Genetics Emergency Med- Housestaff FEL OR</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> | <p>Plastic Surgery Plastic Surgery-Housestaff Plastics & Cosmetic Surgery</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> |
| <p>Question 27: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other.</p> | |
| <p>6B Hematology/Oncology Adult Psychiatry Cancer Biology Clinical Research Center Directors Administration Lung Transplant Medical Information Services Neurology-Housestaff Orthopaedics SICU Vanderbilt Heart - MUR VCH GI Lab</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> | <p>Addiction Psychiatry Admin-Mental Health Adult Psychiatry Child & Adolescent Psychiatry Forensic Psychiatry Mental Health Center Psychiatry Department Psychiatry-Housestaff Student Health & Wellness Student Health Services Toxi Thera Drug Monitorin Vanderbilt Psychiatric Hosp</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> |
| <p>Question 28: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other.</p> | |
| <p>OHO Dermatology Pediatric Critical Care</p> | <p>Ophthalmology Ophthalmology-Housestaff</p> |

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| <input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely | <input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely |
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Question 29: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other.

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| <p>Endo Labb ? Motility Hillsboro Practice Lab Managed Care Sales & Services Ob-Gyn Otolrn Surg Housestaff Radiation Oncolgy VCH Float Pool</p> <input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely | <p>Cell & Developmental Biology Communication Center Comprehensive Care Center Infectious Disease Int. Travel Clinic Microbiology Molecular Infectious Disease</p> <input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely |
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Question 30: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other.

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| <p>Main OR - Rollup Pediatric Rheumatology</p> <input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely | <p>Nephrology Clinic Rheumatology Clinic</p> <input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely |
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Question 31: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other.

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| <p>Center for Womens Health Internal Medicine Main OR - Support</p> <input type="checkbox"/> Not at all likely | <p>Burn Center Burn Clinic The Burn Center</p> <input type="checkbox"/> Not at all likely |
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| <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely | <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely |
| <p>Question 32: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other.</p> | |
| <p>Housing Administration Medicine-Housestaff Psychiatry-Housestaff Spring Hill VCH Nutrition Clinic VMG Patient Representative</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> | <p>Endo Labb ? Motility Gastroenterology GI Clinic Hematopathology Liver Transplant Office of the Dean</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> |
| <p>Question 33: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other.</p> | |
| <p>6A Myelosuppression Telemetry Monitor Techs</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> | <p>CHN Clinic Wound Ostomy</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely <input type="checkbox"/> Completely likely</p> |
| <p>Question 34: To what extent do you believe VUMC employees in the displayed group of organizational areas collaborate to manage patients? There are two separate groups and we ask that you evaluate each one independently of the other.</p> | |
| <p>Clinical Chemistry Clinical Engineering</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely</p> | <p>VMG Central Call Center VMG Guest Service</p> <p><input type="checkbox"/> Not at all likely <input type="checkbox"/> Slightly likely <input type="checkbox"/> Moderately likely <input type="checkbox"/> Very likely</p> |

Completely likely

Completely likely

S4: PheWAS Codes Associated with the Organizational Components

We normalized the predicted probability into a range of [0, 1] using min-max normalization technologies. In this study, we claimed a PheWAS code was associated with an organizational component when the probability of the association was greater than 0.3. This threshold was empirically determined based on our observation of predicted probabilities of PheWAS codes on all components. Specifically, we observed that for majority of components, the predicted probability around 0.3 is a clear separation between codes with high predicted probability (larger than 0.3) and codes with low predicted probability (less than 0.3). It was found that 119 PheWAS codes associated with the 34 organizational components (as shown in Figure S23). Table S37 provides the list of associated PheWAS codes. The listed order of codes is the same as in Fig. S23.

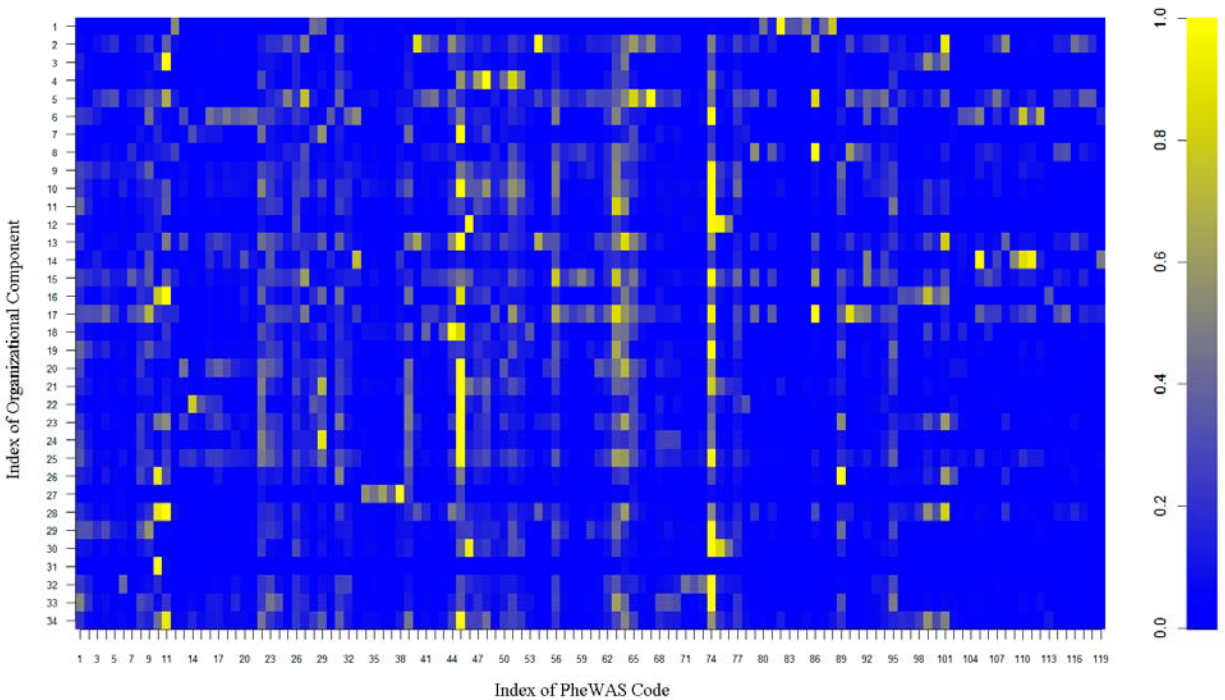


Fig S23. A heatmap of the associations between the 34 organizational components and the 119 PheWAS codes found to be significant. The degree of association ranges from 0 to 1, where the larger value, the stronger relationship.

Table S37. A list of 119 PheWAS codes associated with 34 organizational components.

| Index of code | PheWAS code | Description |
|----------------------|--------------------|--|
| 1 | 38 | Septicemia |
| 2 | 38.1 | Gram negative septicemia |
| 3 | 38.3 | Bacteremia |
| 4 | 41 | Bacterial infection NOS |
| 5 | 41.12 | Methicillin resistant Staphylococcus aureus |
| 6 | 70.3 | Viral hepatitis C |
| 7 | 79 | Viral infection |
| 8 | 80 | Postoperative infection |
| 9 | 81 | Infection/inflammation of internal prosthetic device, implant or graft |
| 10 | 1000 | Burns |
| 11 | 1008 | Internal injury to organs |
| 12 | 1010 | Other tests |
| 13 | 165.1 | Lung cancer |
| 14 | 185 | Prostate cancer |
| 15 | 189.11 | Renal cell carcinoma |
| 16 | 198 | Secondary malignant neoplasm |
| 17 | 198.1 | Secondary malignancy of lymph nodes |
| 18 | 198.2 | Secondary malignancy of lung |
| 19 | 198.4 | Secondary malignant neoplasm of liver |
| 20 | 198.6 | Secondary malignancy of bone |
| 21 | 202.2 | Non-Hodgkins lymphoma |
| 22 | 250.2 | Type 2 diabetes |
| 23 | 260 | Protein-calorie malnutrition |
| 24 | 260.2 | severe protein-calorie malnutrition |
| 25 | 264.2 | Failure to thrive |
| 26 | 276.41 | Acidosis |
| 27 | 276.5 | Hypovolemia |
| 28 | 278.1 | Obesity |
| 29 | 278.11 | Morbid obesity |
| 30 | 284.1 | Pancytopenia |
| 31 | 285.1 | Acute post hemorrhagic anemia |
| 32 | 287.3 | Thrombocytopenia |
| 33 | 288.11 | Neutropenia |
| 34 | 296.1 | Bipolar |
| 35 | 296.22 | Major depressive disorder |
| 36 | 297.1 | Suicidal ideation |
| 37 | 300.9 | Posttraumatic stress disorder |
| 38 | 316 | Substance addiction and disorders |
| 39 | 318 | Tobacco use disorder |

| | | |
|----|--------|---|
| 40 | 327.32 | Obstructive sleep apnea |
| 41 | 331 | Other cerebral degenerations |
| 42 | 343 | Infantile cerebral palsy |
| 43 | 345.3 | Convulsions |
| 44 | 348.2 | Cerebral edema and compression of brain |
| 45 | 401.1 | Essential hypertension |
| 46 | 401.22 | Hypertensive chronic kidney disease |
| 47 | 411.2 | Myocardial infarction |
| 48 | 411.4 | Coronary atherosclerosis |
| 49 | 415 | pulmonary heart disease |
| 50 | 427.21 | Atrial fibrillation |
| 51 | 428 | Heart failure |
| 52 | 428.1 | Systolic/diastolic heart failure |
| 53 | 433.21 | Ischemic stroke |
| 54 | 474.2 | Chronic tonsillitis and adenoiditis |
| 55 | 479 | Other upper respiratory disease |
| 56 | 480 | Pneumonia |
| 57 | 480.1 | Bacterial pneumonia |
| 58 | 483 | Acute bronchitis and bronchiolitis |
| 59 | 495.2 | Asthma with exacerbation |
| 60 | 499 | Cystic fibrosis |
| 61 | 506 | Empyema and pneumothorax |
| 62 | 507 | Pleurisy; pleural effusion |
| 63 | 509.1 | Respiratory failure |
| 64 | 509.2 | Respiratory insufficiency |
| 65 | 530.11 | GERD |
| 66 | 532 | Dysphagia |
| 67 | 540.11 | Acute appendicitis |
| 68 | 560.1 | Paralytic ileus |
| 69 | 567 | Peritonitis and retroperitoneal infections |
| 70 | 569.2 | Gastrointestinal complications |
| 71 | 571.51 | Cirrhosis of liver without mention of alcohol |
| 72 | 571.8 | Liver abscess and sequelae of chronic liver disease |
| 73 | 572 | Ascites (non malignant) |
| 74 | 585.1 | Acute renal failure |
| 75 | 585.32 | End stage renal disease |
| 76 | 587 | Kidney replaced by transplant |
| 77 | 591 | Urinary tract infection |
| 78 | 595 | Hydronephrosis |
| 79 | 637 | Short gestation; low birth weight; and fetal growth retardation |
| 80 | 645 | Late pregnancy and failed induction |
| 81 | 647 | Infectious & parasitic conditions complicating pregnancy |

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|-----|--------|--|
| 82 | 649 | Other conditions of the mother complicating pregnancy |
| 83 | 654 | Abnormality pelvic soft tissues & organs complicating pregnancy |
| 84 | 655 | Known or suspected fetal abnormality |
| 85 | 655.1 | Abnormality in fetal heart rate or rhythm |
| 86 | 656 | Other perinatal conditions |
| 87 | 658 | Problems associated with amniotic cavity and membranes |
| 88 | 665 | Obstetrical/birth trauma |
| 89 | 707.1 | Decubitus ulcer |
| 90 | 747.11 | Cardiac shunt/ heart septal defect |
| 91 | 747.12 | Valvular heart disease/ heart chambers |
| 92 | 783 | Fever of unknown origin |
| 93 | 785 | Abdominal pain |
| 94 | 789 | Nausea and vomiting |
| 95 | 797 | Shock |
| 96 | 800.2 | Fracture of unspecified part of femur |
| 97 | 800.3 | Fracture of tibia and fibula |
| 98 | 802 | Fracture of pelvis |
| 99 | 805 | Fracture of vertebral column without mention of spinal cord injury |
| 100 | 807 | Fracture of ribs |
| 101 | 819 | Skull fracture and other intracranial injury |
| 102 | 174.11 | Breast cancer |
| 103 | 198.5 | Secondary malignancy of brain/spine |
| 104 | 204.4 | Multiple myeloma |
| 105 | 284 | Aplastic anemia |
| 106 | 345.1 | Epilepsy |
| 107 | 563 | Constipation |
| 108 | 749 | Congenital anomalies of face and neck |
| 109 | 963.1 | Adverse effects of antineoplastic and immunosuppressive drugs |
| 110 | 197 | Chemotherapy |
| 111 | 204.11 | Lymphoid leukemia, acute |
| 112 | 204.21 | Myeloid leukemia, acute |
| 113 | 740.1 | Osteoarthritis; localized |
| 114 | 656.2 | Other respiratory conditions of fetus and newborn |
| 115 | 747.13 | Congenital anomalies of great vessels |
| 116 | 749.1 | Cleft palate |
| 117 | 752.2 | Other specified congenital anomalies of nervous system |
| 118 | 750.21 | Congenital anomalies of intestine |
| 119 | 285.22 | Anemia in neoplastic disease |