Coordinating Electrodiagnostic Studies between Neurology and Physical Medicine & Rehab
Historical Information

- Volume for EMGs has remained stable for many years in Neurology and PM&R despite overall increase in patient volume
- Separate referral & reporting systems
- Little or no collaboration between Neurology and PM&R
- Inpatient referrals lower than expected
  - (2 per month)
- Patients leaking to competitors
- Inadequate marketing of inpatient EMG services
- Minimal EMG service available in the UUHSC community clinics and outreach locations
Proposed Project

Focus:

- Increasing volume of EMG procedures performed by
  - Improving collaboration of EMG services
  - Identifying marketing opportunities
  - Expanding outreach services to community clinics
Aim Statement

Beginning April 1, 2004, increase the number of referrals to Neurology and PM&R by 25% and increase the number of EMG services performed by Neurology and PMR by 20% by Sept 30, 2004, compared to the period April 1-Sept 30, 2003.

- Increase referrals by 15% / procedures by 10%
  - April to June
- Increase referrals by 25% / procedures by 20%
  - July to Sept
Specific Aims

- Develop a process that enhances collaboration between Neurology and PM&R in the performance of EMG services
  - Develop and apply methods of measuring referring physician expectations and satisfaction with current services
  - Identify ways to standardize and coordinate referrals, scheduling, forms, phone numbers, documentation, and reporting
Specific Aims (cont.)

- Maximize accessibility of electrodiagnostic studies at UUHSC, outlying clinics, and surrounding communities via outreach program
- Increase referrals by 25%
- Increase number of EMGs performed by 20%
- Maximize fair reimbursement (professional and hospital)
- Create marketing plan to educate School of Medicine of available services
Team Members

- Dr. Mark Bromberg – Neurology
- Dr. A. Gordon Smith – Neurology
- Dr. John Greenlee - Neurology
- Dr. Joe Webster – PM&R
- Dr. Phil Bryant – PM&R
- Sunny Vance-Lauritzen, Rehab Service Line Director
- Matt Huish – Manager, Neuroscience Clinic
- Christine Lipscombe – PM&R
- Candy Dolan – EMG Tech
- Darv Andersen – UUMG Project Coordinator
- Shirlayne Quayle – Neurology Admin Manager
Team Structure

- **Steering Committee**
  - 12 team members from PM&R and Neurology
- **Operations**
  - Mark, Phil, John, Sunny, Gordon, Matt, Joe
- **Data and Measurement**
  - Darv, Matt, Shirlayne, Chris, Candy
- **Marketing and Outreach**
  - Sunny, Matt, Shirlayne, Darv
Types of Electrodiagnostic Studies

- Needle Electromyography (EMG)
  Recording of muscle electrical activity using a special needle electrode placed intramuscularly

- Nerve Conduction Studies (NCS)
  Electrical stimulation of peripheral nerves and recording of their responses
Electromyography (EMG)
Motor and sensory

Active electrode picks up motor potential over the abductor pollicis brevis muscle.

Median motor nerve stimulation
Referral Flowchart

Patient is evaluated by physician and neuromuscular symptoms are recognized

Referring physician contacts EMG Services at UUHSC to schedule EMG

Referring physician faxes patient history

Patient scheduled (usually within the week)

Patient receives EMG

Patient is given verbal report from EMG Tech and/or EMG physician

EMG report is forwarded to Referring Physician via fax or mail or e-mail (PM&R)
Under-Referred, Under-Utilized, non-Collaborative EMG Service-Line Personnel

- Equipment
  - Cumbersome
  - Poor database for monitoring data
  - Education
  - Reporting system not e-mail compatible

- Service
  - Not portable
  - No QA mechanism
  - Poor follow-up reporting to physicians
  - EMG report not part of medical record

- Promotion
  - No consistent marketing plan
  - No follow-up thank you card

- Location
  - Corner of Valley
  - Lacks incentives
  - No outreach program
  - Poor location within Hospital
  - Service and physician not tracked

- Referrals
  - Low inpatient volume
  - No follow-up thank you card

- No Incentives
  - No consistent marketing plan
  - No follow-up thank you card

- Availability
  - No Incentives
  - No consistent marketing plan

Cause and Effect Diagram
Initiated an e-mail report delivery system (PMR)

Developing a process for scanning reports

Creating a collaborative quarterly quality assurance program (peer review)

Tracking referring sources (name, specialty, location, diagnosis)

Creating centralized data access for all EMG procedures for education and research
Creating shared didactic curriculum for electrodiagnostic topics
Creating marketing plan to increase volume
Acknowledge referring physicians with thank you notes
Expand EMG service to community outreach program in selected clinics
Measurement Indicators

- Number of referrals per month
  - referring service and physician
  - patient EMG-relevant diagnosis/complaint
- Number of EMG services performed per month
- Number of no-shows (rate)
- Number of delays in service (rate)
Measurement Indicators

- Utilization of available patient slots
- Overall charges/revenue and contribution margin
  - PMR and Neurology
- Cost and reimbursement (if available)
<table>
<thead>
<tr>
<th>Date of Service</th>
<th>Provider Name</th>
<th>Specialty</th>
<th>Internal/External</th>
<th>City/State</th>
<th>Preliminary Diagnosis</th>
<th>Final Diagnosis</th>
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PM&R EMG and Nerve Conduction Patient Volume by Month

**Individuals**

Temporary: UCL=64.25, Mean=32.80, LCL=1.36 (mR=2)
Neurology EMG and Nerve Conduction Patient Volume by Month

*Individuals*

Temporary: UCL=158.11, Mean=105.39, LCL=52.87 (mR=2)
Procedures by CPT for **PM&R - 7/2000 to 4/2004**

8,115 Total Procedures

- **NERV CONDUC STDY EA NRV; MOTOR WO F**
  - 3043
- **NERV CONDUC STUDY EA NERV; SENSORY**
  - 3034
- **NEEDLE EMG;1 EXTREM W/WO REL PARASP**
  - 927
- **NEEDLE EMG;2 EXTREM,W/WO REL PARASP**
  - 357
- **H-REFLEX AMP STUDY; GASTNEM/SOLEUS**
  - 278
- **NERV CONDUC STDY EA NERV; MOTOR W/F**
  - 237
- **NEEDLE EMG OTHER THAN PARASPINAL**
  - 192
- **H-REFLEX STUDY; NOT GASTNEM/SOLEUS**
  - 14
- **NEEDLE EMG;THORACIC PARASPINAL MUSCLE**
  - 7
- **NEEDLE EMG CRAN NERV-MUSCL; UNILAT**
  - 6
- **NEEDLE EMG;4 EXTREM,W/WO REL PARASP**
  - 6
- **NEEDLE EMG;3 EXTREM,W/WO REL PARASP**
  - 6
- **NEUROMUSCL JUNCT TST EA NERV 1 METH**
  - 4
- **NEEDLE EMG CRAN NERV-MUSCL; BILAT**
  - 3
- **NEEDLE EMG STDY ANAL/URETHRAL SPHIN - PROF**
  - 1
Procedures by CPT for **Neurology - 7/2000 to 4/2004**

21,334 Total Procedures

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PM&R Electrodiagnostic Referrals
Internal, 1445 Patients vs. External, 68 Patients

- PM&R 46%
- Orthopedics 16%
- Sports Medicine 20%
- Other 18%
- Neuro-Surgery 21%
- Family 9%
- PM&R 15%
- Internal, Gen 3%
- Internal Med 4%
- Internal, General 3%
- Ortho-Hand 4%
- Neurosurgery 4%
- Family 4%
- Other 4%
- Internal Med 2%
- Internal, General 2%
Neurology Electrodiagnostic Referrals
Internal, 4047 Patients vs. External, 844 Patients

- Neurology: 67%
- Int Med: 6%
- Neurosurgery: 6%
- Orthopedics: 4%
- Family Med: 2%
- Rheumatology: 2%
- Peds Oto: 1%
- Other: 11%
- Neurology: 21%
- Int Med: 15%
- Family Med: 14%
- Neurosurgery: 10%
- Other: 11%
- Gen Pract: 6%
- Orthopedics: 2%
- P.A.: 1%
Collaborative Efforts

- Standardize methodology for collecting, managing, and reporting of statistics for clinical and financial tracking
- Standardize referral system
  - Phone number and scheduling
  - Forms and reports
  - Measurement indicators
- Standardize equipment and reporting
Collaborative Efforts

- Avoid purchase of unnecessary equipment
- Expand Outreach program
- Market and educate referral sources
  - Internal and external
- Improve expertise in the performance of electrodiagnostic studies
- Improve quality & timely availability of electrodiagnostics studies & reports
Implementation Process

- Create working task list
- Implement timeline of tasks
- Create flowcharts of current processes
- Create flowcharts of revised processes
- Survey referring physicians
  - Satisfaction
  - Expectations
- Develop Run and Control Charts for measurement indicators
- Focus on process improvement
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