



State of Florida,
Division of Risk
Management

Reliably Diagnosing Carpal Tunnel Syndrome: Implications for Treatment, Outcomes and Preventive Strategies

Chad Gray, President IMC
Mark Miller, Vice President IMC

INTERAGENCY ADVISORY COUNCIL ON LOSS PREVENTION
8/12/2014



Magnitude of the Problem

- \$849 Billion = annual estimated cost in the U.S. for those with musculoskeletal pain and injury (2004).
- This represents 7.7% of the gross domestic product.¹
- In 2004, musculoskeletal injuries accounted for more than 57 million health care visits; back pain accounted for more than 53 million health care visits.
- Back pain was the cause of more than 500 million bed or lost work days in 2004 and was the number one reason for disability in the workplace.
- One in two adults reported a chronic musculoskeletal condition in 2009, twice the rate of reported chronic heart or respiratory conditions.²
- Employers lose 5.9 hours of productivity per work week for those on the job suffering with lower back or musculoskeletal pain.³

¹ U.S. Dept. of Health and Human Services, Agency for Healthcare Research and Quality, 1996-2004

² National Center for Health Statistics, Centers for Disease Control NHI survey, 2009.

³ Stewart W, Ricci J., JAMA, Nov. 12, 2003-vol 290, no



Trends in Musculoskeletal Care

- Medications: 21% of claimants with spinal pain received early opioids: increases disability, symptom duration, risk of surgery, and cost.
- Imaging: Use of CT/MRI and EMG/NCV varies 5.5-fold across geographic areas. Higher utilization rates predict higher rates of high cost procedures.
- Injections (1994-2003):
 - 271% inc. in epidurals (553 to 2055 per 100k)
 - 231% inc. in facet injections (80 to 264 per 100k)
 - Costs per injection doubled (\$115 to \$227 per inj'n)
 - Total costs increased by 729% (\$24m to > \$175m)



Trends Cont.

- 8-fold variation in rates of lumbar/cervical discectomies
-
- More surgeries where there are more surgeons
- Between 1992-2003:
 - In-patient lumbar surgery *rate* more than doubled
 - *Cost* of lumbar fusion increased > 500% (from \$75 to \$482 million)
 - Fusions went from 14% to 47% of total lumbar surgery cost.
 - *No reduction in re-operation rates*



What Does the Evidence State About These Trends

- Orthopedic medicine has an inexplicable level of diagnostic variability relative to other areas of medicine
- Diagnostic codes correlate with training & scope of practice laws
- When outcomes are unfavorable, incorrect diagnosis is most often the cause
- Costs in orthopedic medicine are driven by diagnostic variability
- Cost containment efforts must focus either on decreasing diagnostic variability or restricting networks to those with “good referrals” or lower costs



1987 Quebec Task Force

“There is so much variability in making a diagnosis that this initial step routinely introduces inaccuracies which are then further confounded with each succeeding step in care.”

The diagnosis “is the fundamental source of error..... Faced with uncertainty, physicians become inventive.”

Spitzer, et al: *Scientific approach to the assessment and management of activity-related spinal disorders (The Quebec Task Force)*. Spine, 1987. 12(7S): p. S16-21.



Implications

“Lack of a reliable diagnosis and ineffective interventions, *not the number of claims*, is the driver of escalating medical costs”.



Current CTS Diagnostic Strategies

- EMG/NCV studies are unreliable and lead to unnecessary services
- Physical examination special tests lack reliability and specificity
- History taking, pain responses and mechanical change provides the most reliable data towards correct diagnosis¹

¹Donelson R, Silva G, Murphy K. The centralization phenomenon: its usefulness in evaluating and treating referred pain. *Spine* 1990;15:211–213.



Determining True Incidence and Prevalence

- Scientific research is disjointed and cannot agree
- Very little normative data establishing a baseline
- Poor diagnostic ability pollutes available data
- Very few clinicians keep humanistic outcomes which limits true understanding of treatment outcomes
- Change is disruptive to current practice

We see what we think and find what we know:



If all you have is a hammer,
everything looks like a nail.

**Each specialty has their
favorite treatments.**

General Practitioner

Neurologist

Neurosurgeon

Orthopedic surgeon

Pain Management

Physical Medicine

Rheumatologist

Chiropractor

Physical Therapist



Reliable Assessment of CTS

- Clinician should ask relevant questions that determine duration, location, symptom behavior and patient beliefs/fears
- A thorough mechanical examination looking at movement patterns and pain responses must be performed¹
- Special tests and palpation have limited/no value in assessment

¹Skytte L, May S, Petersen P. Centralization: Its prognostic value in patients with re-referred symptoms and sciatica. *Spine*

2005;30:E293–E299.



How Do You Irritate A Nerve

- Compression
- Scar Tissue/Adherence
- Thermal
- Chemical/Inflammatory
- Behavior



Clinical Signs of Nerve Involvement

- Radiating pain into an extremity in a dermatomal pattern
- Tingling and Numbness in the extremity
- Motor weakness (in some cases)
- Loss of reflexes
- Range of motion loss
- Pain/N&T should be reproducible, or made worse/better with motion at the site of impingement

Clinical Presentations in Neck vs. CTS

Cervical Radiculopathy

- Radiation of pain or Numbness/Tingling into the upper extremity/hand (C5-C8)
- Weakness of Triceps/Biceps, Wrist Extensors/Flexors, and hand
intrinsic/flexors/extensors of fingers
- Typically gross loss of Neck extension, rotation, side bending or flexion

Carpal Tunnel Syndrome

- Tingling/Numbness/Pain in the extremity/hand (C5-C8)
- Weakness in the hand
intrinsic, flexors/extensors of the fingers
- No loss of cervical ROM
- No radiation of pain in the extremity above the level of the wrist



Effective Treatment

- Must be directed by a reliable clinical assessment
- Scientifically validated care methods should be implemented
- Clinical outcomes monitored using scientifically validated/reliable tools
- Measure patient satisfaction with care
- Earn the right to see patients
- Emphasize self-management and preventive strategies
- Reward clinicians delivering efficient, value driven care



Results of Outcome Driven Care

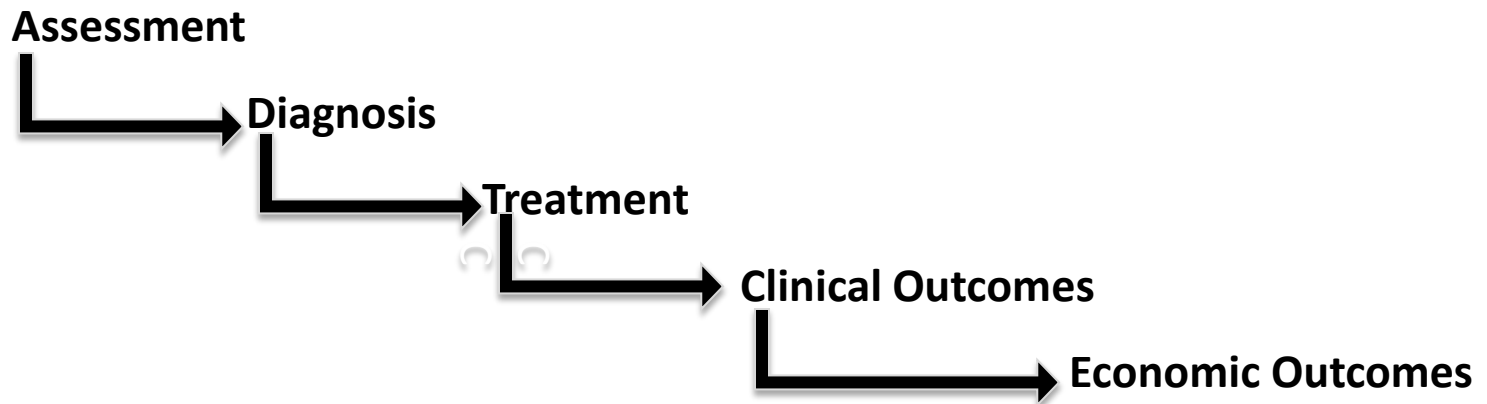
- Better clinical outcomes
- Significant medical claims cost savings
- Improvement in worker productivity
- Fewer lost time claims and lower duration of claims
- Happy, productive employees that remain on the job
- Stewardship of the healthcare resources

The ADTO Model

Inter-Tester Reliability → Appropriate Treatment

Appropriate Treatment → Better Patient Outcomes

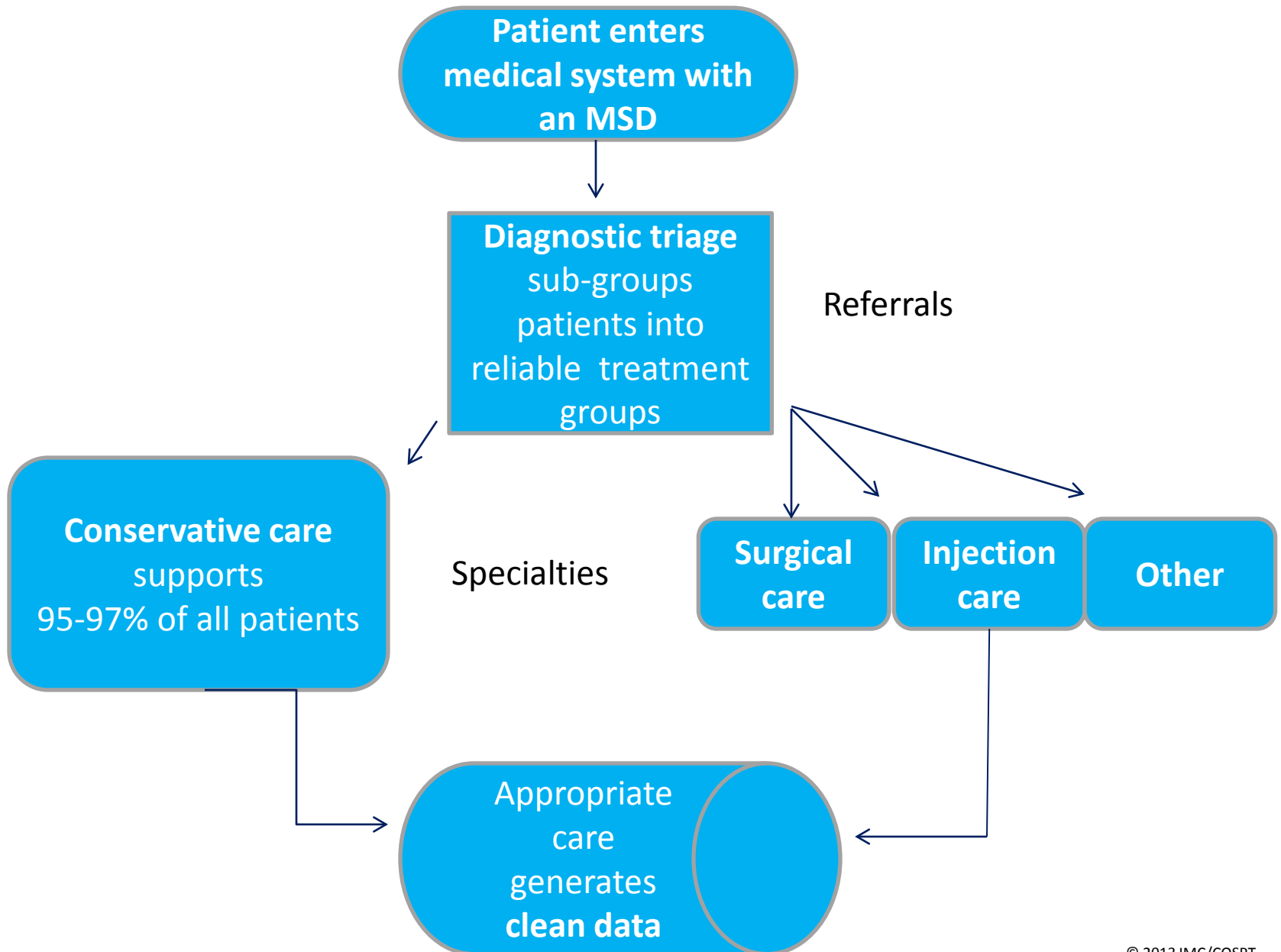
Better Outcomes → Reduced Costs & ↑ Human-Capital ROI



Spratt KF, Use of the assessment-diagnosis-treatment-outcomes model to improve patient care. Mil Med. 2013; 178(10 Suppl):121-31 (ISSN: 1930-613X)



Quality Systems and Performance Improvement





Health Care Transformation

*“Value is the only goal that can **unite the interests of all system participants**”*

-Michael Porter

Health Care Value = Outcomes/Cost

- ✓ Key outcomes are the **health results that matter for a patient’s condition over the care cycle**
- ✓ Costs are the **total costs of care (TCOC) for a patient’s condition, both current & downstream**



Health Care Next Steps

- Measure the impact on quality and cost for treatment of MSD conditions with Outcome Accountable Models of Care
- Steer patients towards Outcomes Accountable Providers to improve access to quality care
- Help purchaser/payers identify OAP's
- Align the stakeholders (TPA's, Case Management Teams, Employers) to effectively direct care towards value