

The State of Spine

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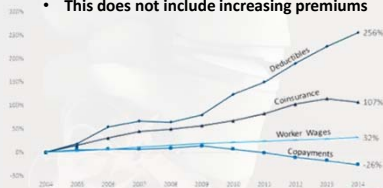
Overview

- Healthcare continues to change dramatically for:
 - Patients
 - Providers
 - Payers
- Costs continue to increase
- Frustration also increasing



Impact on Workers/Patients

- Patient spending on deductibles and co-insurance increasing at a much greater rate than wages – not sustainable for workers
- Not good for employers either
 - This does not include increasing premiums



Overview

- Spine care is changing
 - Increasing focus on
 - Quality of care
 - Cost reduction strategies
 - Increasing demand for outcome assessments
 - More focus on guidelines, appropriate use, reducing waste
- Impacting how care is delivered



Overview

- Spinal disorders in the health economy
 - Defining priorities of care
- Outcome and quality metrics that make sense
- Appropriate use criteria that made sense
 - Appropriate use of spine surgery
 - Incremental value of care
 - Modelling and predicting outcome



Defining Burden of Disease

- Prevalence of the disorder
- Health care utilization
- Economic cost
- Impact of disorder
 - Disability
 - Impact on health-related quality of life

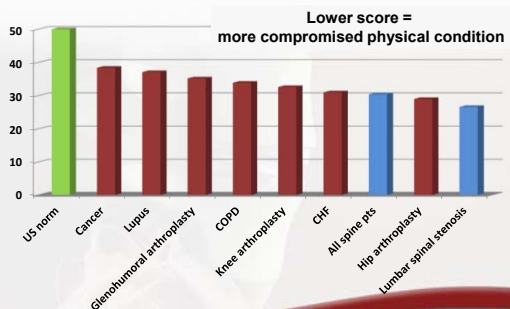


Spine-related Pain and Disability

- Are back and neck pain and related disability appropriately appreciated in US as a major problem?
 - Number of people impacted
 - Impact of pain on quality of life, overall health, work, etc.
 - Is there funding available in proportion with the magnitude of the problem?



SF-36 PCS in Various Illnesses



Fanuele et al, Spine, 2000





The Spine Journal 19 (2010) 805-810

Perspective

Funding research to achieve the Spine "10 x 25" goal

Michael Hanna, PhD*



- Back/neck pain accounts for 6.9% of all burden-of-illness in US
- NIH spends <1% of budget on back/neck pain research
- Mean NIH funding per unit of burden-of-illness for all diseases is \$343 per disability-adjusted life yr
 - Back/neck pain receives at most \$48 per disability-adjusted life yr



Challenges

- More data needed to generate appreciation for back/neck pain
- Need to improve messaging to increase awareness of the significance of back pain in US
- At the same time, need to:
 - Continually improve quality of care
 - Reduce cost of care



Data

- Outcomes
- Patient satisfaction
- Pay for Performance (Value)




More Data Driven Medicine

- P4P
- Cost-effectiveness
- Registries
- Information published from NIS databases




More Data Driven Medicine

- How high is the quality of currently available spine data?
 - Not high at all
 - Difficulty / impossible to collect comprehensive cost data
 - NIS not of research quality - but readily available
 - Currently, no robust spine registry in US



Bundled Payments

- Bundled payments usually cover 30 days pre-op, surgery (including related costs such as anesthesia, hospitalization, implants, etc.) and 90 days post-op
- Margins for implant companies will go down and they'll have to change their distribution model
- Many spine surgeries may be transferred to ASC



Negotiating for Episode of Care

- How well do you really know all of the expenses incurred?
 - Additional imaging, consultations, medications, going to ER or local provider, additional evals, etc.



Hospitals

- Seeing more merging and collaboration of large hospitals
 - Does this reduce costs and increase efficiency and quality as theorized?



Cost-effectiveness

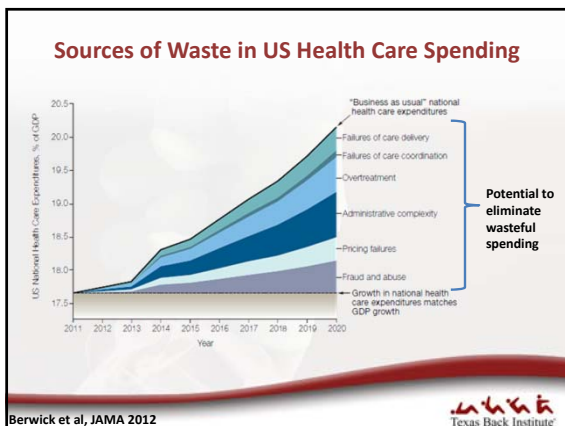
- Can healthcare providers be rewarded for quality of care?
 - Ordering needed tests and treatment while minimizing waste
 - How is it measured?
 - What is the role of insurers?



Reducing Costs

- Texas litigation
- Malpractice insurance- Decreased !!





Spine
HEALTH SERVICES RESEARCH
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OPEN

The Impact of Commercial Health Plan Prior Authorization Programs on the Utilization of Services for Low Back Pain

Robert M. Goodman, DO, MBA,¹ Corey C. Powell, PhD,¹ and Paul Park, MD²

- Reviewed results of prior authorization (PA) program requiring physiatrist consultation before surgical evaluation, with subsequent additional LBP surgery PA

Texas Back Institute

Impact of PA for Spine Surgery

- Per-member, pre-surgical costs increased \$2,233 with physiatrist PA and an additional \$1,370 for LBP surgery PA
- Injections and inpatient administration costs are major contributors to increased costs

Basically, more regulation and paperwork intended to contain spine surgery costs only increased costs and caused delays in patients receiving care

Goodman et al, Spine, 2016

Texas Back Institute


Outpatient Spine Surgery

- Becoming more common in recent years
- Minimally invasive procedures led the way
- Many surgery types have been performed as outpatient, including discectomy




Outpatient Spine Surgery

- Potential advantages
 - Reduced costs
 - Reduced risk of infection
- Potential disadvantages
 - Monitoring for complications
 - Higher readmission rate



Outpatient Spine Surgery

- Often perceived as having a procedure performed and leaving the facility in a few hours, before nightfall
- Outpatient surgery can also be defined as not being admitted to the hospital and staying in the facility for <24 hrs, including an overnight stay
 - This is how many spine surgeries are performed as outpatient procedures



Barriers to Outpatient

- Originally, reactions to anesthesia, such as nausea, was one reason to admit pts to hospital
 - No longer a problem for most pts
- Managing post-op pain was greater challenge yrs ago than now
 - Less invasive surgery, better understanding of how to treat



Barriers to Outpatient

- Monitoring for complications
 - Greater understanding of risk factors for complications helps determine who is not a good candidate for out patient surgery
 - Ongoing learning of methods to prevent various complications



Criteria for Outpatient Spine Surgery

- Must be within 30 min of a hospital
- BMI \leq 42
- Pts with chronic illnesses must be cleared by family practitioner or specialist
- Pts with hx of heart disease must be cleared through cardiologist evaluation including echocardiogram and/or stress test
- Must have responsible adult staying with them for \geq 24 hrs post-op
- Low to moderate anesthesia risks (ASA score 1–3)

Chin et al, Clin Spine Surg, in press



Patient Education

- Patient education
 - Address possible concerns about going home too early
 - Check that someone is available to provide / assist with care for several days
 - Plan for post-op pain management
 - Provide education to pt and care provider
 - Bandages, when to call office or go to ER, etc.



Discharge

- Discharge criteria should include:
 - Stable vital signs
 - Return to baseline orientation
 - Return to baseline ambulation
 - No dizziness
 - Acceptable pain level
 - Minimal bleeding at incision
 - Not extremely nauseous or have other significantly uncomfortable condition



Eur Spine J (2016) 25:3536–3542
DOI 10.1007/s00586-016-4680-4



ORIGINAL ARTICLE

Postoperative monitoring with a mobile application after ambulatory lumbar discectomy: an effective tool for spine surgeons

Bertrand Debono¹ · Philippe Bonoquet¹ · Pascal Sabatier¹ · Jean-Yves Plas¹ · Jean-Paul Lescure¹ · Olivier Hamel²

- Used cell phone app to monitor pts post-op
- Based on responses, blue, yellow, or red flag alert issued for nurse to contact patient
- 60 pts, monitored for 15 days post-op



App for Monitoring Post ASC Spine Surgery

- Example of screens used by pts

Debono et al, Europ Spine J, 2016

Distribution of Alerts Received

- 29 alerts from 19 pts
- Most received 1-2 days after surgery
- No alerts received after day 8

Blue flag: no response alert
 Yellow flag alert: VAS 5 - 8; fever 37.8 - 39 C; painless voiding difficulty; blood stain not overflowing dressing
 Red flag alert: VAS 9 -10; fever >39 C, painful voiding difficulty; new neuro deficit; blood stain overflowing the dressing

Texas Back Institute

Debono et al, Europ Spine J, 2016

Results of App Program


- 29 alarms from 19 pts:
 - Post-op pain management and optimization of analgesics in 21 events
 - Low-grade fever <38.5°C in 4 cases
 - Voiding delay in 2 cases
 - Problem with surgical wound or dressing 2 cases
- All problems solved by nurses responding to alerts avoiding trips to ER or early office visit

Texas Back Institute

Debono et al, Europ Spine J, 2016

Outpatient TDR and ACF Practice Guidance

- Best practices for outpatient anterior cervical surgery: results from a delphi panel Mohandas et al, Spine, in press
- Used expert consensus and literature review to develop best practices for pt selection, peri-op decision making, and post-op care for outpatient ACDF and cervical TDR
- Has not been tested clinically to determine if helpful or needs revision, but does provide initial guidance




Cost Comparison of Outpatient TDR

- Compared mean EOB charges for 1-level outpatient cervical TDR

Procedure	Mean Cost
Outpatient cervical TDR	11,144.83
Outpatient ACF	29,313.43
Inpatient cervical TDR	68,000.00
Inpatient ACF	61,095.49

Wohns, Surg Neurol Int, 2010



Single-use Instruments

- Like most areas of healthcare, spine surgery is currently in an era of seeking ways to reduce cost and improve cost-effectiveness
- For spine surgery, one major cost of care is implants and instruments



Single-use Instruments

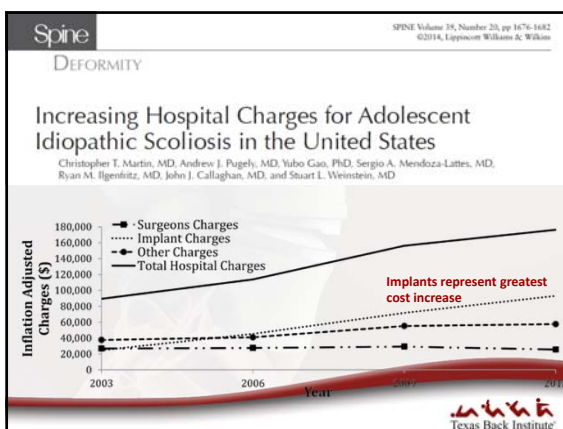
- Desire to reduce cost of instruments has led to new distribution for instrumentation
- Concept is to package single-use disposable instruments and implants for use in surgery
- May fit particularly well with the increasing use of ambulatory surgery centers



Potential Advantages

- Disposable kits stocked in hospital ready to use when needed
- In concept, they replace traditional reusable instruments:
 - Reusable instruments sometimes difficult to clean adequately
 - Possibly reduce risk of infection
 - No wear from previous use






Cost in Scoliosis


- Detailed billing data from 40 cases at one institution indicated implants were key driver of increasing hospital charges
- Percent of total hospital costs due to implants
 - 2003: 28%
 - 2012: 53%

Martin et al, Spine 2014



Scoliosis is Expensive Surgery

- If want to reduce cost of surgery, must reduce implant related costs
 - Can disposables be at least part of the solution?



Manufacturers

- ECA Medical Instruments®
- Xenco Medical (highly reinforced, composite polymer, rather than metal)
- Safe Orthopaedics



Potential Advantages

- Review of a randomized fusion study in France suggested operative and what was termed “logistics” time significantly less using a disposable system
- No logistical problems with the system compared with a 15% occurrence of problems with reusable instruments such as availability, sterilization, and lack of desired screw size
 - No reference for presentation was provided for more details



Costs

- Must consider the cost to the hospital to maintain adequate supply of disposable product in stock
 - Particularly enough various sizes of implants




Potential Cost Savings

- While difficult to measure, there are potential cost savings related to staff time
 - No handling trays for sterilization
 - No removing trays from sterilizer
 - No contacting sales rep to bring kit



Where's the Data?

- There are the manufacturers noted here as well as other who have disposable spine instruments on the market
- Most of their web pages have claims of reducing infection, reducing costs, saving time, etc.
 - However, none were found that provided references to peer-reviewed journal publications or conference abstracts with data to support claims




Eur Spine J (2013) 22:2904–2906
DOI 10.1007/s00586-013-3115-8

OPEN OPERATING THEATRE (OOT)

Disposable instrumentation for lumbar pedicle screw and rod constructs

Antonio Fernandez · Wendy Thompson · J.-C. Le Huec


- In discussion, reported system used on 12 pts
- Noted potential for costs savings of sterilization process (160–204 Euro)
- Implant elimination process (mean of 0.73 Euro cents per surgery) much less than reprocessing traditional instrumentation trays



What Other Changes May We See for Spine Surgeons?

And

How to Maximize Existing Resources




Expanding Opportunities

- OUS practices
- Medical tourism
- Neurostimulation
- Stem cells



Boutique Practices

- Appealing to get cash pay pts
 - No denials from insurers
- Disadvantages:
 - Higher customer service demands from these pts
 - How many pts can afford cash pay surgery?



Additional Services

- Offering additional services for fees
 - Direct access to care provider for a monthly fee
 - Benefit: Increased revenue from subscribers
 - Disadvantage: You must be available to subscribers at all times, they probably won't be happy talking to your PA, Fellow, etc.



Nontraditional Revenues

- Many physicians adding selling creams, vitamins, etc.
- Ambulatory surgery centers
- CRO
- Bundling
- Collaboration



Other Factors

- Personalized medicine
- Protocols
- OUS
- Networking groups for contracting
- Roll ups



Facilities

- Offices
- ASCs
- Hospitals
- Home health
- Rehabilitation
- Nursing homes
- Hospices



Basic Business

- Customer services
 - Many pts are expecting better service
 - One bad encounter can lose the pt and many potential referrals
 - Long wait times, little physician time, phone calls not returned, difficulty scheduling, etc.
- Nothing new, but must be a strong focus area for a successful practice



Media

- Social media can be used for marketing, staying in touch w pts and referral sources
- Pts and referral sources can now preview potential care providers by viewing rankings on various web pages



Patient Education

- Internet – much material, some educational, much marketing, little quality control
 - Suggest to pts to use pages such as Spine-Health and Spine-Universe



Patient Education

- In the clinic
 - Waiting room materials
 - Use Power Point to make customized materials
- Facilitates pts decision making about treatment
- Reduces post-op calls



Efficiency Through Technology

- EMR used optimally
- Online appt reminders and office paperwork
- Develop Apps
- Electronic educational materials (to supplement, not replace)
- Telemedicine



Technology

- Image guidance
- Robotics
- Nanotechnology
- MEMs



Future Technology Opportunities

- Regenerative medicine
 - Peptides
 - Stem cells
- Robotics and image guidance
- Nano and MEMS
- Memory alloys
- Integration of IT with implants



Opportunities

- Population-specific solutions
 - Medicare(Advantage) outcomes and quality measurements
 - Acute care partnerships and joint ventures
 - Alternative primary care delivery models (urgent care, telemedicine)
 - Mental and behavioral health



Opportunities

- Technology-based services
 - Workforce logistics
 - Patient access management
 - Provider engagement
 - Health/wellness compliance
 - Revenue cycle management analytics



Opportunities

- **Software/technology**
 - Cloud-based EMR
 - Claims management and resolution
 - Payer data analytics
 - Benefits administration
 - EMR data analytics



What Do Surgeons Need to Do to Create Best Possible Future?



There Are Multiple Avenues

- **There is likely no one solution, but combinations of several options**
 - Management agreements
 - ASCs
 - Ancillary services
 - Working with other spine groups
 - Increase your awareness in supporting spine societies' advocacy efforts in time as well as dollars




There Are Multiple Avenues

- Those not keeping up with surgical technologies will be left behind
 - MIS
 - Image guidance (when beneficial)
 - Motion preservation
 - Innovative fusion implant designs and materials



There Are Multiple Avenues

- Must also lead practice of spine
 - Data collection to prove efficacy of spine surgery and your outcomes
 - Research
 - Be able to negotiate bundled payments for episodes of care
 - Work with high quality non-op providers to maximize care provided during episode



There Are Multiple Avenues

- Must also lead practice of spine by optimizing use of electronic technology
 - Telemedicine
 - Patient portals
 - Online patient education
 - Marketing
 - Data registries
 - Optimizing EMR applications




Other

- Spine providers must work together to determine and address cost-effectiveness and evidence-based medicine in spine
- Industry must also be involved



Summary

- Times are changing in healthcare, including spine
- Physicians are losing autonomy, often by choice – do they realize possibly long-term implications?
- Must be creative in how to use teamwork, data, and technology to improve situation
 - It is an investment of time and money



Discussion

- Surgeons must work with hospitals and industry to reduce cost
- Outpatient surgery is feasible in many patients
 - Has potential to reduce costs without increasing risks or compromising outcomes
- Requires screening to identify pts who may not be good candidates, primarily due to comorbidities
- Should always have plan in place if a situation arises requiring pt to be admitted to a hospital



Discussion

- Timing of introduction of disposable instruments may fit well with increasing use of surgery centers
- Disposables may have particular benefit in spine trauma centers where there may not be much time to arrange for a traditional reusable instrumentation kit





Thank You
