

## Outpatient Osteopathic Single Organ System Musculoskeletal Exam Form Series: Validation of the Outpatient Osteopathic SOS Musculoskeletal Exam Form, a New Standardized Medical Record

Sandra L. Sleszynski, DO  
Thomas Glonek, PhD  
William A. Kuchera, DO

The authors validate the Outpatient Osteopathic SOS (Single Organ System) Musculoskeletal Exam Form (SOS MSEF), a 1-page form contained within the 4-page Outpatient Osteopathic Single Organ System Musculoskeletal Exam Form Series (SOS-FS). Handwritten physician progress notes (PPNs) in the medical record (considered to be the "gold standard" for clinical records) were compared with information placed on the SOS MSEF for the same patient encounter. Data recorded by 14 trained and certified investigators on the standardized SOS MSEF—which was designed for use with the previously validated Outpatient Osteopathic SOAP (Subjective, Objective, Assessment, Plan) Note Form (SNF)—was compared with data recorded by the same investigators in PPNs. The authors compared the accuracy and efficiency of physicians recording musculoskeletal information in these two formats for 165 patient encounters. Descriptive statistics and *t* tests were used to compare data recorded after patient encounters. Ninety-seven variables input from the PPNs or SOS MSEFs were significantly different at the  $P \leq .05$  level, whereas 38 variables were not. Insufficient data was recorded for a determination of significance in 3 variables. For 121 variables, more data were recorded using the SOS MSEFs than PPNs; for 84 variables, the amount of data recorded exceeded twice that recorded using PPNs. For 10 variables, more data were recorded in PPNs; however, these differences were not significant. The authors conclude that the SOS MSEF is superior to PPNs for recording

patient-encounter data in the osteopathic care setting. Moreover, they argue that the use of the validated SOS MSEF nationwide would ensure that osteopathic physicians would be recording data in a similar manner for uniform insurance claim coding, easy tracking of physicians-in-training and patient outcomes, and data collection for future research.

There have been many clinical reports of the efficacy of osteopathic evaluation and osteopathic manipulative treatment (OMT) in the management of many types of diseases and disorders of structure and function.<sup>1-5</sup> Researchers in the osteopathic medical field have faced one persistent problem, however: a lack of reliable methods for recording patient outcomes after receiving OMT in a format that is standardized for subsequent data collection and research. Because of this lack of agreed-upon data collection methods, the osteopathic medical profession does not have a referable database from its practitioners on the prevalence, frequency, and severity of somatic dysfunctions—and the effects of OMT on the observed somatic dysfunctions in various classes of patients.

Although there have been attempts to present a standardized format for osteopathic musculoskeletal examinations,<sup>6</sup> and standardization for research protocols has been discussed in various forums,<sup>7</sup> most of these proposals and discussions have been attempts to provide comprehensive guidelines for documenting osteopathic diagnostic methods for somatic dysfunctions and are too cumbersome to be practical for outcomes research that involves large groups of geographically diverse osteopathic physicians.

Over the past several years, there has been an increased emphasis on outcome measures in the practice of medicine.<sup>1,4</sup> Medical outcomes research investigates how coded medical procedures<sup>8</sup> used in the care and treatment of patients diagnosed with given disorders or diseases affect the health status of those patients. This result-based research does not investigate mechanisms or causes of change in these outcomes; it is concerned only with the end result on the designated objective.

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From the Chicago College of Osteopathic Medicine at Midwestern University in Downers Grove, Ill (Sleszynski, Glonek) and the Kirksville College of Osteopathic Medicine in Mo (Kuchera).

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Address correspondence to Sandra L. Sleszynski, DO, Crossroads Premiere Health Care, SC, 1010 35<sup>th</sup> St, Kenosha, WI 53140.  
E-mail: [sandrasleszynski@crossroadsphc.com](mailto:sandrasleszynski@crossroadsphc.com)

## ORIGINAL CONTRIBUTION

Outcomes research may include physical data, patient psychological data, patient satisfaction measures, patient quality of life and function evaluations, health care costs, or a combination of these factors. With a new and growing demand for outcomes-based research within the osteopathic profession,<sup>9,10</sup> there is an increasingly urgent need for a standardized reporting format that addresses the incidence, severity, treatment of, and patient outcomes related to somatic dysfunction. If the osteopathic profession is to survive and remain financially viable to its practitioners in an increasingly competitive climate of health care provision, it must provide statistics on the diseases and disorders it treats and illustrate how these conditions are distributed within the patient population it serves. The profession must also provide new research based on these patient outcomes and the use of concepts that are central to osteopathic principles and practice (OPP).

The Outpatient Osteopathic SOS (Single Organ System) Musculoskeletal Exam Form (SOS MSEF) is a 1-page form contained within the 4-page Outpatient Osteopathic Single Organ System Musculoskeletal Exam Form Series (SOS-FS) (*Figures 1 and 2*). The SOS MSEF (*Figure 2*, page 2 of 3) is an outcomes instrument and, as considered in this study, is anticipated for wide use within the osteopathic profession. It is hoped that osteopathic physicians will find the SOS MSEF useful for documenting initial and comprehensive musculoskeletal evaluations in the outpatient setting.

The osteopathic investigators who previously validated the Outpatient Osteopathic SOAP (Subjective, Objective, Assessment, Plan) Note Form (SNF)<sup>11</sup> found this form to be easy to use for accurately recording work performed and outpatient treatments delivered. Further, regular use of the SNF significantly increased physician reimbursement claims without requiring a change in physicians' practice methods.

The purpose of the current study was to validate the SOS MSEF as an instrument for accurately and thoroughly recording patient-encounter data in a standardized format. Medical record data recorded in physician progress notes (PPNs) and on the SOS MSEF were compared as to quality and quantity of data recorded.

### Materials and Methods

#### *Outpatient Osteopathic SOS Musculoskeletal Exam Form*

The SOS MSEF reviewed in this study provides a standardized data-recording instrument for physician use when conducting a comprehensive osteopathic musculoskeletal examination. The previously validated SNF,<sup>11,12</sup> did not include several items added to this form (*Figure 2*, page 2 of 3), namely Gait and Station; Anterior, Posterior, and Lateral Spinal Curves; Leg Lengths; levelness of landmarks (Horizontal Planes diagram); and Methods Used for Examination.

The SOS MSEF also includes areas for physicians to note in Yes/No format if the results from patient examination revealed that the following appeared to be within normal

range: General Appearance, Cardiovascular [observation and palpation], and Lymphatics, as well as Neurologic and Psychiatric [aspects]. There are also specific sections of the SOS MSEF devoted to the appearance of the patient's Skin, Reflexes, and Motor activity. As noted, these items are included for coding purposes and are listed in checkbox form for physicians' ease of use.

#### **Investigators**

We sought and received institutional review board approval from each of the six agencies with oversight at the colleges of osteopathic medicine and hospitals where our investigators were employed. We also received institutional review board approval at our primary study site, the Biotechnical Institute's Human Subjects Committee at the University of Wisconsin at Parkside in Kenosha. Fourteen of the 15 investigators who were trained and certified in the use of the trial SOS MSEFs were asked to submit cases. One investigator dropped out of the validation phase of the project because of personal reasons. Seven investigators were osteopathic physicians (3 family practice physicians and 4 OMT specialists), 5 were resident physicians (3 osteopathic manipulative medicine plus-one residents, 1 osteopathic medicine resident, and 1 family practice resident), and 2 were predoctoral osteopathic medicine undergraduate fellows.

Each investigator filled out a demographic information form. These forms requested information about investigators' professional status and educational backgrounds as well as personal information (*Table 1*). As noted, some investigators did not answer all the questions provided on the form.

#### **Validation Protocol**

Investigators were randomly divided into two groups. The first group collected and documented patient information in the PPN format they were accustomed to using and were then—within 24 hours of documenting those records—asked to transcribe the data from their PPNs to a trial SOS MSEF.

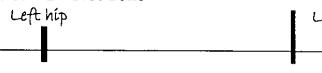
The second group was asked to record data in the opposite order. Investigators in the second group began by documenting patient information on the trial SOS MSEFs and then, within 24 hours, transcribed the records onto the PPN format they were accustomed to using.

Investigators did not use the form as published and presented in this paper. They used a preliminary, "trial" form, which was later modified in response to volunteer investigators' suggestions as a result of working with the trial SOS MSEFs in the clinical setting, and making suggestions to study investigators during handwritten exit surveys and in a group exit interview.

Data from 165 sequential patient encounters were collected. To preserve patients' privacy, their names were removed from the PPN and 3-digit identification numbers were assigned instead. The same identification number was placed on the corresponding trial SOS MSEF. At the completion

**Figure 1.** The Outpatient Osteopathic Single Organ System Musculoskeletal Exam Form Series is a format for documenting a complete musculoskeletal examination. The form series consists of four pages. The first page is a detailed Outpatient Health Summary form used for noting initial and on-going history. It is placed on the left side of most charts for easy accessibility. (Reprinted with permission of the American Academy of Osteopathy.) Copies of the Outpatient Osteopathic Single Organ System Musculoskeletal Exam Form Series can be obtained from the American Academy of Osteopathy, 3500 DePauw Blvd Ste 1080, Indianapolis, IN 46268 or call (317) 879-1881.

## ORIGINAL CONTRIBUTION

Outpatient Osteopathic SOS History / Exam Form																																		
Patient's Name	Jamie Smith																																	
Date	11/20/01																																	
wak SOS version 5:091102																																		
HISTORY																																		
<b>S</b> (See Outpatient Health Summary Form for details of history)																																		
Patient's Pain Analog Scale: <input type="checkbox"/> Not done <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 10px;"> <div style="text-align: center;"> <small>Left hip</small>   </div> <div style="text-align: center;"> <small>Low back</small>   </div> </div> <div style="display: flex; justify-content: space-between; align-items: center; margin-top: 10px;"> <span>NO PAIN</span> <span>WORST POSSIBLE PAIN</span> </div>																																		
CC "Low back and hip pain" Hands on chiro worked better than activator. Never tried PT Diet—high CTO, few veggies 1993—Fx Rt wrist—fell off bike																																		
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Q Lungs—expiratory wheeze bilaterally, Ø accessory muscle use or SOB Lumbar x-rays reviewed—disc space narrowing at L5-S1 area																																		
Signature of transcriber:		Signature of examiner: <u>Sleszynski DO</u>																																
Funded by a grant from the Bureau of Research. © 2002 American Academy of Osteopathy. Designed to coordinate with the Established Outpatient Osteopathic SOAP Note Form. Recommended by American Association of Colleges of Osteopathic Medicine.																																		

**Figure 2 (1 of 3).** The Outpatient Osteopathic SOS (Single Organ System) Musculoskeletal Exam Form Series is a format for documenting a comprehensive osteopathic patient visit. The form series consists of four pages, where pages 2 through 4 are used for each patient visit as physician progress notes. Page 1 of 3 is the Outpatient Osteopathic SOS History/Exam Form and is used to document the chief complaint; to record a detailed review of systems; and to note personal past medical, family, and social history, as well as objective findings. (Reprinted with permission of the American Academy of Osteopathy.) Copies of the Outpatient Osteopathic Single Organ System Musculoskeletal Exam Form Series can be obtained from the American Academy of Osteopathy, 3500 DePauw Blvd Ste 1080, Indianapolis, IN 46268 or call (317) 879-1881.

**Outpatient Osteopathic SOS Musculoskeletal Exam Form**

wak SOS version 5:091102

<b>O</b> <input type="checkbox"/> Not done		Patient's Name <u>Jamie Smith</u>		Date <u>11/20/01</u>	Sex: Male <input type="checkbox"/> Female <input checked="" type="checkbox"/>	Office of: _____		
Age <u>25</u>		* Vital Signs (3 of 7)		Wt. <u>125 lb</u>	Ht. <u>5' 2"</u>	Temp. <u>97.6</u>	For office use only: _____	
Resp. <u>20</u>		Pulse <u>84</u>	Irreg. <input type="checkbox"/>	Reg. <input checked="" type="checkbox"/>	Pt. position for recording BP: Standing <input type="checkbox"/> Sitting <u>124/86</u> Lying <input type="checkbox"/>			
<b>* Gait and Station:</b>				<b>Notes</b>				
Body Type: Endo. <input type="checkbox"/> Meso. <input checked="" type="checkbox"/> Ecto. <input type="checkbox"/>				Gait forward bent Facial acne Rt forearm scar Dull affect				
Posture: Excl. <input type="checkbox"/> Fair <input checked="" type="checkbox"/> Poor <input type="checkbox"/>								
Gait: Symmetrical <input type="checkbox"/> Asymmetrical <input checked="" type="checkbox"/>								
<b>Ant/Post. Spinal Curves:</b> I <input type="checkbox"/> N <input checked="" type="checkbox"/> D <input type="checkbox"/>								
Cervical Lordosis <input type="checkbox"/>								
Thoracic Kyphosis <input type="checkbox"/>								
Lumbar Lordosis <input checked="" type="checkbox"/>								
<b>I = increased; N = normal; D = decreased</b>								
<b>Scoliosis (Lateral Spinal Curves):</b>								
None <input type="checkbox"/>		Sitting <input type="checkbox"/>						
Functional <input type="checkbox"/>		Standing <input checked="" type="checkbox"/>						
Mild <input type="checkbox"/>		Prone/Supine <input type="checkbox"/>						
Moderate <input type="checkbox"/>		Unable to Examine <input type="checkbox"/>						
Severe <input type="checkbox"/>								
<b>Short leg?</b>		Right: <u>1/8</u> <input type="checkbox"/>	<u>1/4</u> <input type="checkbox"/>	<u>1/2</u> <input type="checkbox"/>			<b>Level of SOS</b>	
Equal <input type="checkbox"/>		Left: <u>1/8</u> <input checked="" type="checkbox"/>	<u>1/4</u> <input type="checkbox"/>	<u>1/2</u> <input type="checkbox"/>			<input type="checkbox"/> II 1-5 elements	
						<input type="checkbox"/> III 6+ elements		
						<input type="checkbox"/> IV 12+ elements for musculoskeletal exam		
						<input checked="" type="checkbox"/> V Perform all * elements		
<b>* Skin:</b> N Ab N Ab N Ab								
Head / neck <input type="checkbox"/>		L. upper extremity <input checked="" type="checkbox"/>		L. lower extremity <input type="checkbox"/>				
Trunk <input checked="" type="checkbox"/>		R. upper extremity <input type="checkbox"/>		R. lower extremity <input type="checkbox"/>				
<b>* Reflexes:</b>								
Biceps L <input type="checkbox"/>		3 <input type="checkbox"/> 4 <input checked="" type="checkbox"/>		0 <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/>		Motor: 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input checked="" type="checkbox"/>		
R <input type="checkbox"/>		Patella L <input type="checkbox"/>		R <input type="checkbox"/>		C5 L <input type="checkbox"/> R <input type="checkbox"/>		
Triceps L <input type="checkbox"/>		Achilles L <input type="checkbox"/>		R <input type="checkbox"/>		R <input type="checkbox"/> C6 L <input type="checkbox"/>		
R <input type="checkbox"/>		Babinski L <input type="checkbox"/>		up <input type="checkbox"/>	down <input checked="" type="checkbox"/>	C7 L <input type="checkbox"/> R <input type="checkbox"/>		
Brachio- L <input type="checkbox"/>		R <input type="checkbox"/>		up <input type="checkbox"/>	down <input type="checkbox"/>	R <input type="checkbox"/> C8 L <input type="checkbox"/>		
Radialis R <input type="checkbox"/>						S1 L <input type="checkbox"/> R <input type="checkbox"/>		
<b>Methods Used For Examination</b>								
		<b>Key to the Severity Scale</b>		0 = No SD or background (BG) levels 1 = More than BG levels, minor TART 2 = Obvious TART (esp. R and T), +/- symptoms 3 = Key lesions, symptomatic, R and T stand out				
		<b>Region Evaluated</b>		<b>Severity</b>		<b>Somatic Dysfunction and Other Systems</b>		
All <input type="checkbox"/>	T <input type="checkbox"/>	A <input type="checkbox"/>	R <input type="checkbox"/>	T <input type="checkbox"/>	0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/>	MS / SNS / PNS / LYM. / CV / RESP. / GI / FAS. / etc.		
		Head and Face <input type="checkbox"/>		<input type="checkbox"/>		Lt SBS torsion		
		Neck <input type="checkbox"/>		<input type="checkbox"/>		C2 TART RL. C7 FSR.		
		Thoracic T1-4 <input type="checkbox"/>		<input type="checkbox"/>		DMC T3 RT.		
		T5-9 <input type="checkbox"/>		<input type="checkbox"/>				
		T10-12 <input type="checkbox"/>		<input type="checkbox"/>				
		Ribs <input type="checkbox"/>		<input type="checkbox"/>		Tender lower left		
		Lumbar <input type="checkbox"/>		<input type="checkbox"/>		L5 F.S RL, Psoas tight bilaterally		
		Sacrum / Pelvis <input type="checkbox"/>		<input type="checkbox"/>		Tight piriformis Lt.		
		Pelvis / Innom. <input type="checkbox"/>		<input type="checkbox"/>		Ant. Ilium Lt.		
		Abd / Other <input type="checkbox"/>		<input type="checkbox"/>		Palpable bowel, poor movement, tender RLQ		
		Upper R <input type="checkbox"/>		<input type="checkbox"/>				
		Extremity L <input type="checkbox"/>		<input type="checkbox"/>				
		Lower R <input type="checkbox"/>		<input type="checkbox"/>		WNL		
		Extremity L <input type="checkbox"/>		<input type="checkbox"/>		+ straight leg raising, ↓ cuboid, FROM hip		
Signature of transcriber: _____				Signature of examiner: <u>SL Sleszynski DO</u>				

Funded by a grant from the Bureau of Research. © 2002 American Academy of Osteopathy.  
Designed to coordinate with the Established Outpatient Osteopathic SOAP Note Form. Recommended by American Association of Colleges of Osteopathic Medicine.

**Figure 2 (2 of 3).** The Outpatient Osteopathic SOS (Single Organ System) Musculoskeletal Exam Form Series is a format for documenting a comprehensive osteopathic patient visit. The form series consists of four pages, where pages 2 through 4 are used for each patient visit as physician progress notes. Page 2 of 3 is the Outpatient Osteopathic SOS Musculoskeletal Exam Form and contains the musculoskeletal examination table and additional objective examination items. This form has been validated statistically in the current study. (Reprinted with permission of the American Academy of Osteopathy.) Copies of the Outpatient Osteopathic Single Organ System Musculoskeletal Exam Form Series can be obtained from the American Academy of Osteopathy, 3500 DePauw Blvd Ste 1080, Indianapolis, IN 46268 or call (317) 879-1881.

## ORIGINAL CONTRIBUTION

## Outpatient Osteopathic Assessment and Plan Form

wak SOS version 5:091102

Outpatient Osteopathic Assessment and Plan Form												wak SOS version 5:091102														
A Patient's Name		Jamie Smith			Date		11 / 20 / 01					Office of:														
												For office use only:														
Dx No.		ICD Code			Written Diagnosis						Dx No.		ICD Code			(Written Diagnosis)										
1		722.10			Sciatica possible herniated disc with myelopathy						6		493.00			Asthma										
2		781.0			Spasm—psoas syndrome																					
5		564.1			IBS																					
10		244.9			Hypothyroidism																					
14		739.0			Somatic Dysfunction of Head and Face						4		739.4			Somatic Dysfunction of Sacrum										
11		739.1			Somatic Dysfunction of Neck						7		739.5			Somatic Dysfunction of Pelvis										
12		739.2			Somatic Dysfunction of Thoracic						9		739.9			Somatic Dysfunction of Abd / Other										
13		739.8			Somatic Dysfunction of Ribs								739.7			Somatic Dysfunction of Upper Extremity										
3		739.3			Somatic Dysfunction of Lumbar						8		739.6			Somatic Dysfunction of Lower Extremity										
Physician's evaluation of patient prior to treatment:												First visit		Resolved		Improved		Unchanged		Worse						
<input type="checkbox"/> All not done <b>Region</b>		OMT		Treatment Method												Response										
		Y	N	ART	BLT	CR	CS	DIR	FPR	HVLA	IND	INR	LAS	ME	MFR	ST	VIS	OTH	R	I	U	W				
Head and Face		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
Neck		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
Thoracic		T1-4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
		T5-9	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
		T10-12	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
Ribs		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
Lumbar		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
Sacrum		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
Pelvis		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
Abdomen/Other		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
Upper Extremity		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
Lower Extremity		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
Meds:												PT: use warm salt bath daily use lumbar support at work														
Add Flexeril 10 mg PO tid, Continue Advil tid																										
Exercise: Psoas stretch, walk—gradually ↑ time Constant rest position												Other: DMT q 1 wk x 6 visits Obtain TSH level, PFT Refer to Psychologist Obtain MRI Lumbar spine —script given, talk to PCP --done														
Nutrition: ↑ protein in diet, add veggie supplement																										
Complexity / Assessment / Plan (Scoring) *Default to level 2—same criteria																										
Problem(s)		Risk: (presenting problem(s), diagnostic procedure(s) and management options)										Data		Maximum points												
Self-limiting		1 (2 max.)										Lab		1												
Established problem improved / stable		1										Radiology		1												
Established — worsening		2										Medicine		1												
New — no workup		2 (1 max.)										Dietary with performing physician		1												
New additional workup		4										Obtain records or Rx from others		1												
LBP, Sciatica and Psoas		High: 1 chronic and 1 new problem MRI, LBP, LRE										Review records, discuss with physician		2												
												Visualization of tracing specimen		2												
Level I		Level II		Level III		Level IV		Level V		Level I		Level II		Level III		Level IV		Level V								
* ≤1 pt.		2 pt.		3 pt.		≥4 pt.				Min.		Low		Mod.		High		≤1 pt.		2 pt.		3 pt.		≥4 pt.		
Requires 3 of the above 3 (problems, risk and data). Level of complexity = average of included areas.																										
Traditional Method—Coding by Components												Optional Method—Coding by Time														
												When majority of the encounter is counseling / coordinating, the level is determined by total time														
History		I	II	III	IV	V					I		II		III		IV		V							
Examination		I	II	III	IV	V					10		20		30		45		60							
Complexity / Assessment / Plan		I	II	III	IV	V					10		15		25		40									
Final level of service		I	II	III	IV	V					10		15		25		40									
All three areas required. Average of three equals level of service.												Final level of service														
												Dictate total time and counseling / coordinating time plus a brief description of topics discussed														
Minutes spent with the patient:		10	15	25	40	60	Follow-up:		1	2	3	4	5	6	7	8	9	10	11	12	Units:	D	W	M	Y	PRN
OMT performed as Above: 0 areas												1-2 areas		3-4 areas		5-6 areas		7-8 areas		9-10 areas						
Other Procedures		CPT Codes: 97010																								
Performed:		Written Dx: Hot Packs																								
E/M Code:		New					EST								Consults											
Write 992 plus...		02	03	04	05	...		11	12	13	14	15	...		41	42	43	44	45							
Signature of transcriber:												Signature of examiner: SLSleszynskiDO														

Funded by a grant from the Bureau of Research. © 2002 American Academy of Osteopathy  
Designed to coordinate with the Established Outpatient Osteopathic SOAP Note Form. Recommended by American Association of Colleges of Osteopathic Medicine

**Figure 2 (3 of 3). The Outpatient Osteopathic SOS (Single Organ System) Musculoskeletal Exam Form Series** is a format for documenting a comprehensive osteopathic patient visit. The form series consists of four pages, where pages 2 through 4 are used for each patient visit as physician progress notes. Page 3 of 3 is the Outpatient Osteopathic Assessment and Plan Form and contains prioritized diagnoses, treatment recommendations, and treatment(s) given. (Reprinted with permission of the American Academy of Osteopathy.) Copies of the Outpatient Osteopathic Single Organ System Musculoskeletal Exam Form Series can be obtained from the American Academy of Osteopathy, 3500 DePauw Blvd Ste 1080, Indianapolis, IN 46268 or call (317) 879-1881.

of this phase, copies of the PPNs along with the completed trial SOS MSEFs were sent to the data collection center in Kenosha, Wisc.

During the 5-month study period from November 2000 to March 2001, all patients who were new, had not had a comprehensive musculoskeletal examination in the previous 12 months, or were required to have an in-depth examination were included in the study without regard to sex, age, race, or diagnosis. These inclusive criteria allowed for testing of the trial SOS MSEF for all patient complaints—not just those of musculoskeletal origin—and were essential for validating the trial SOS MSEF for use by family practice physicians and specialists within the osteopathic profession. The repetition of filling out the trial SOS MSEF provided insight into physician compliance with the two-group protocol.

At the data collection center, we hired a data coordinator and trained him to transcribe the information from the original PPN onto a color-coded SOS MSEF so that the forms could be compared easily.<sup>11</sup> The data coordinator was a clinical technician with medical training and 6 years of experience and was familiar with all medical shorthand, terminology, and jargon used by clinicians when writing PPNs.

During the transcription of data from the PPNs to the color-coded SOS MSEFs, the data coordinator compiled notes for discussion with the current study's principal investigator (S.L.S.) and coauthors when needed. All coordinator-compiled notes and questions were addressed in a timely fashion to ensure that there were no transcription errors. The data coordinator then entered the data in a useable format for the statistician (T.G.). In addition, the principal investigator (S.L.S.) conducted random verification of the transcription process and the data entry to verify the accuracy of the transcriptions. A total of 330 cases were entered, two for each of the 165 patient encounters—one that was transcribed from the PPNs onto trial SOS MSEFs, and the other that was transcribed from the trial SOS MSEFs onto PPNs.

At the end of the study, each investigator completed a written, 16-question exit survey (*Figure 3*) and attended a group exit interview.

The exit survey queried volunteer investigators on the usefulness of the training they received in the use of the trial SOS MSEF, the clarity of the Usage Guide that was to accompany the SOS-FS, their general opinions on the trial SOS MSEF, and the impact such an instrument might have on the practice of osteopathic medicine in the United States. Issues regarding the feasibility of using a validated SOS MSEF nationwide, physician satisfaction, benefits and drawbacks of using the proposed SOS MSEF, ease of use and efficacy, and other comments regarding use of the proposed SOS MSEF were obtained through the handwritten surveys and were later discussed in the exit interview.

Many of the issues uncovered during the exit surveys and interview were determined by the current study's investigators to be as important as establishing the validity of the instru-

ment if the proposed SOS MSEF was to be used successfully in collecting and analyzing data from many osteopathic physicians' offices for large-scale osteopathic research studies.

As noted, information obtained from volunteer investigators during the group exit interview was essential in the development of the final, published version of the SOS MSEF and the SOS-FS's accompanying Usage Guide. Changes that were added to the published SOS MSEF include the addition of standard Motor testing and individual TART (tissue texture changes, asymmetry, range of motion, tenderness) designations for each region of Somatic Dysfunction and Other Systems (*Figure 2*, page 2 of 3). The section allotted to recording the condition of patients' Skin was reformatted (*Figure 2*, page 2 of 3). Whether a somatic dysfunction region was treated with OMT (Yes/No checkboxes), which osteopathic manipulative technique(s) was (were) used (ie, Treatment Method), and the patient's Response to treatment were moved to the Outpatient Osteopathic Assessment and Plan Form portion of the SOS-FS (*Figure 2*, page 3 of 3). Specific cranial dysfunction findings were removed. None of these format changes affected the validity of the SOS MSEF.

### **Data Reduction and Statistics**

Descriptive statistics were used in combination with cross-tabulation using Pearson's  $\chi^2$  test, allowing us to determine the significance of differences between the two groups of volunteer investigators (handwritten PPNs first vs trial SOS MSEFs first). Both methods were used to evaluate the 138 variables derived from the trial SOS MSEF.

The combination of results from these two statistical tests provided an estimate of variability in areas of the trial SOS MSEF that called for scaling of the data collected. These tests also determined the accuracy of the transcription of data performed by each group of investigators. The chosen power of 150 forms was based on experience obtained by investigators that had worked on the SNF study.<sup>11</sup>

We believe 150 forms provide a reasonable representative sample of practicing osteopathic physicians. Further, in considering cost-containment measures for this study, we decided to restrict the number of data points gathered for evaluation.

Since the study was essentially a null-hypothesis study, a determination of statistical power was essential. Following the statistical analysis, the statistical power determination of Dupont and Plummer<sup>13</sup> was used to determine whether the number of cases (ie, 150) was sufficiently large to provide a statistical power of 80% in those instances where no significant differences were found between the two groups. Consensus data and averages were used to evaluate the exit surveys.

In addition to the 138 variables required for the trial SOS MSEF, the required data fields also included case numbers (eg, 1-330), investigator and patient identification codes, and SOS MSEF and PPN form codes. Three variables (ie, Pulse regularity, blood pressure [standing or lying]) contained no

**Table 1**  
**Demographic Characteristics of Investigators Trained and Certified\***  
**In the Use of the Outpatient Osteopathic Single Organ System**  
**Musculoskeletal Exam Form (N=14)**

Characteristic	No (%)†
<b>Professional Status</b>	
■ Employment‡	
□ University affiliation	9 (64)
□ Medical educator	7 (50)
□ Osteopathic physician in training	7 (50)
□ Private practice physician	5 (36)
■ Practice Type	
□ Outpatient	11 (79)
□ Inpatient	1 (7)
□ Unknown	2 (14)
■ Primary Specialty§	
□ Musculoskeletal medicine	8 (57)
□ Family practice	5 (36)
□ Acupuncture	1 (7)
■ Years in practice (mean),   15.4 y	
■ Board Certification	
□ Family practice¶	9 (64)
□ Neuromusculoskeletal medicine	5 (36)
■ Fellowships	
□ Fellow of the American Academy of Osteopathy	4 (29)
□ Fellow of the American College of Osteopathic Family Practitioners	2 (50)
□ Osteopathic Cranial Fellow	1 (25)
■ Education	
■ Undergraduate Degree	
□ Bachelor of Arts	9 (64)
□ Bachelor of Science	5 (36)
■ Undergraduate Fellowships	
□ Osteopathic manipulative medicine	8 (57)
□ Other	5 (63)
□ Research	2 (25)
■ Research	1 (13)

(continued)

\* As noted in the authors' previously published piece (Sleszynski SL, Glonek T, Kuchera WA. Outpatient osteopathic single organ system musculoskeletal exam form: training and certification. *J Am Osteopath Assoc.* 2004;104:76-81. Available at: <http://www.jaoa.org/cgi/reprint/104/2/76>. Accessed September 10, 2004), all 15 investigators were trained and certified in the use of the Outpatient Osteopathic Single Organ System Musculoskeletal Exam Form. Twelve were trained in a didactic training session and 3 received instruction via telephone conference call. All 14 investigators who completed this phase of the study performed at an acceptable level; there were no outliers. One investigator did not continue on into the validation phase of this project.

† Percentages reported were rounded for each characteristic. Therefore, the sum of these percentages may not equal 100%.

‡ Several investigators reported more than one professional role on their demographic information forms.

§ Participants were instructed to indicate their primary specialty by specifying if more than 60% of their practice hours were devoted primarily to one activity type.

|| Data for the demographic information form (including years in practice) was gathered from investigators in October 2000.

¶ One investigator indicated eligibility for family practice board certification on the demographic information form.

**Table 1 (continued)**  
**Demographic Characteristics of Investigators Trained and Certified\***  
**In the Use of the Outpatient Osteopathic Single Organ System**  
**Musculoskeletal Exam Form (N=14)**

Characteristic	No (%) <sup>†</sup>
<input checked="" type="checkbox"/> Residency Training	
<input type="checkbox"/> Family practice	6 (43)
<input type="checkbox"/> Osteopathic manipulative medicine	4 (29)
<input type="checkbox"/> Osteopathic manipulative medicine plus one-year residency	3 (21)
<input type="checkbox"/> Unknown	1 (7)
<input checked="" type="checkbox"/> Colleges of Osteopathic Medicine (Graduates)	
<input type="checkbox"/> University of North Texas Health Science Center at Fort Worth Texas College of Osteopathic Medicine	6 (43)
<input type="checkbox"/> Midwestern University's Chicago College of Osteopathic Medicine (Downers Grove, Ill)	2 (14)
<input type="checkbox"/> Des Moines University College of Osteopathic Medicine and Surgery (Ia)	1 (7)
<input type="checkbox"/> Kirksville College of Osteopathic Medicine of A.T. Still University of Health Sciences (Mo)	1 (7)
<input type="checkbox"/> Michigan State University College of Osteopathic Medicine (East Lansing)	1 (7)
<input type="checkbox"/> New York College of Osteopathic Medicine of New York Institute of Technology (NYCOM) (Old Westbury)	1 (7)
<input type="checkbox"/> University of Health Sciences College of Osteopathic Medicine (Kansas City, Mo)	1 (7)
<input type="checkbox"/> University of New England College of Osteopathic Medicine (Biddeford, Me)	1 (7)
<b>Personal Information</b>	
<input checked="" type="checkbox"/> Birth year (range), 1944-1970	
<input type="checkbox"/> Age (mean), 45 y	
<input checked="" type="checkbox"/> Sex	
<input type="checkbox"/> Male	9 (64)
<input type="checkbox"/> Female	5 (36)
<input checked="" type="checkbox"/> Race <sup>#</sup>	
<input type="checkbox"/> White (non-Hispanic)	12 (86)
<input type="checkbox"/> Asian	1 (7)
<input type="checkbox"/> Hispanic	1 (7)
<input type="checkbox"/> Native American	1 (7)

(continued)

\* As noted in the authors' previously published piece (Sleszynski SL, Glonek T, Kuchera WA. Outpatient osteopathic single organ system musculoskeletal exam form: training and certification. *J Am Osteopath Assoc.* 2004;104:76-81. Available at: <http://www.jaoa.org/cgi/reprint/104/2/76>. Accessed September 10, 2004), all 15 investigators were trained and certified in the use of the Outpatient Osteopathic Single Organ System Musculoskeletal Exam Form. Twelve were trained in a didactic training session and 3 received instruction via telephone conference call. All 14 investigators who completed this phase of the study performed at an acceptable level; there were no outliers. One investigator did not continue on into the validation phase of this project.

† Percentages reported were rounded for each characteristic. Therefore, the sum of these percentages may not equal 100%.

# One investigator indicated two races on the demographic information form.

**Table 1 (continued)**  
**Demographic Characteristics of Investigators Trained and Certified\***  
**In the Use of the Outpatient Osteopathic Single Organ System**  
**Musculoskeletal Exam Form (N=14)**

Characteristic	No (%) <sup>†</sup>
■ State of Residence	
□ Texas	6 (43)
□ Colorado	2 (14)
□ Illinois	2 (14)
□ Wisconsin	2 (14)
□ New Jersey	1 (7)
□ New York	1 (7)
■ Marital Status	
□ Married	8 (57)
□ Divorced	2 (14)
□ Single	2 (14)
□ Unknown	2 (14)
■ Physical Traits	
□ Height (mean), 5' 6"	
□ Weight (mean), 176 lbs	
□ Handedness	
— Right	13 (93)
— Left	1 (7)

\* As noted in the authors' previously published piece (Sleszynski SL, Glonek T, Kuchera WA. Outpatient osteopathic single organ system musculoskeletal exam form: training and certification. *J Am Osteopath Assoc.* 2004;104:76-81. Available at: <http://www.jaoa.org/cgi/reprint/104/2/76>. Accessed September 10, 2004), all 15 investigators were trained and certified in the use of the Outpatient Osteopathic Single Organ System Musculoskeletal Exam Form. Twelve were trained in a didactic training session and 3 received instruction via telephone conference call. All 14 investigators who completed this phase of the study performed at an acceptable level; there were no outliers. One investigator did not continue on into the validation phase of this project.

† Percentages reported were rounded for each characteristic. Therefore, the sum of these percentages may not equal 100%.

data and were not included among the total of 135 variables analyzed.

## Results

Fourteen investigators at 9 geographically diverse sites participated in this phase of our study (*Table 1*). They accumulated 330 cases in aggregate, with a range of 10 to 40 cases per investigator. Each case consisted of data from a single patient visit recorded first on the trial SOS MSEFs or in handwritten PPNs; investigators then transcribed these records to the other format. The specific form items constituted 135 statistical elements for a total of 44,550 cells of information in the database. In this comparison, missing information (ie, no data in the cell) is not considered "missing data" statistically because "no data" still requires a physician's decision as to whether data should be entered onto the SOS MSEFs or into PPNs. Thus, all cases tabulated were included in the statistical comparisons of the 135 evaluated variables.

The trial SOS MSEFs and PPNs were compared by tabulating missing data, cross-tabulating the two data sets, and

performing chi-square ( $\chi^2$ ) tests for equality between the two groups. The outputs were of three types:

- Significantly different at the  $P \leq .05$  level (97 variables),
- Not significantly different at the  $P \leq .05$  level (38 variables), or
- There were insufficient data (ie, fewer than two entries each for both groups) to draw a statistical inference (3 variables).

For 83 form elements, the  $P$  value was less than .001. For 125 elements, more data were recorded using the trial SOS MSEFs than the PPNs. For 84 form elements, the amount of data recorded using the trial SOS MSEFs was twice that recorded in the PPNs (ie, a 100% enhancement in the capture of information). For 94 elements, information capture was greater than 50%. For 10 variables (*Table 2*), more data were recorded in the PPNs—but in no instance were these differences significant at the  $P \leq .05$  level.

## Exit Survey and Group Exit Interview

From the exit survey, we received many comments from investigators regarding the training they received on the use of the

**Table 2**  
**Comparison of Variables Collected**  
**From Handwritten Physician Progress Notes vs**  
**Outpatient Osteopathic Single Organ System Musculoskeletal Exam Form**

Variable	No. of Items Noted		
	Physician Progress Notes	Outpatient Osteopathic Single Organ System Musculoskeletal Exam Form	P*
■ Date	163	159	.152
■ Notes	123	121	.802
■ Sidebending and Rotation	14	7	.114
■ Somatic Dysfunction			
□ Thoracic level			
— T1 to T4	119	116	.715
— T5 to T9	107	95	.175
— T10 to T12	58	55	.728
□ Lumbar region	114	108	.481
□ Lower extremity (left)	54	51	.723
■ Osteopathic Manipulative Treatment			
□ Counterstrain	35	29	.404
□ Other	27	19	.204

\* Differences are not statistically significant at the  $P < .05$  level.

SOS MSEF, the usefulness of the SOS-FS Usage Guide, and potential for impact on the practice of osteopathic medicine. We also received suggestions for how the trial SOS MSEF should be revised prior to publication and wide dissemination of a final version.

Nine of the 14 investigators took part in this phase of the study. All nine investigators reported receiving adequate training on the study's protocol and use of the SOS MSEF in the clinical setting. All nine further noted that contact personnel were helpful. Eight of 9 said the SOS-FS Usage Guide was helpful and easy to use.

It was found from practice-impact questions that 7 of 9 said the SOS MSEF was easy to fill out, 8 of 9 investigators said it was useful and helpful in the clinical setting, alerting them to information they would otherwise have omitted from their usual PPNs.

On average, it took investigators 7.27 minutes to fill out the SOS MSEF. Previously, it took these same investigators an average of 11.33 minutes to document a comprehensive musculoskeletal examination adequately in standard handwritten PPNs.

Eight of 9 participants said that they would use the SOS MSEF for recording comprehensive osteopathic musculoskeletal examinations in their outpatient practices.

The rest of the questions on the survey asked investigators for written comments regarding how we might improve or change the SOS MSEF. We requested that investigators provide a list of additions and deletions for form variables.

As noted elsewhere, we used suggestions that arose from investigators' exit surveys and the group exit interview to create the final, published version of the SOS MSEF.

## Discussion

Essentially all information recorded in the PPNs was accurately recorded by investigators in the trial SOS MSEF. Thus, the trial SOS MSEF was shown to be at least as good as handwritten PPNs for physicians documenting patient encounters. There was no significant difference between data appearing in the two formats. Therefore, the SOS MSEF has been validated against PPNs.

Although there were essentially no errors when comparing data recorded in the trial SOS MSEFs with data recorded in the PPNs, considerably greater information was recorded in the trial SOS MSEFs than in handwritten PPNs in less time and with more ease.

Of the 135 form elements (ie, statistical variables) analyzed, there were only 10 instances in which greater amounts of data were recorded by investigators in their handwritten

## ORIGINAL CONTRIBUTION

PPNs relative to the data they recorded on the trial SOS MSEFs. These 10 instances constitute failures of the SOS MSEF to capture data recorded in the PPNs. Most of these count differences, however, were less than 6 per 165 cases (7 variables,  $P < .115$ ). In one instance, sidebending/rotation of the cranium, was there was a borderline significant difference ( $P < .114$ ). As noted, this item, which appeared only on the trial SOS MSEF, was dropped from the final, published version of the SOS MSEF at the suggestion of investigators.

What can be interpreted from the data is that the SOS MSEF is just as accurate as the PPNs in gathering patient information and is superior to the PPNs in the quantity of data gathered.

For the set of information labeled *Somatic Dysfunction and Other Systems* at the bottom of the SOS MSEF (ie, Head and Face [ICD code<sup>8</sup> 739.0] through Lower Extremity L[eft] [ICD code 739.6]), there is no difference between data recorded on the SOS MSEFs and PPNs ( $P = 4$ ). In other words, the probability—although not at a level that is significantly different between the two formats—is not equivalent either, possibly indicating that documenting somatic dysfunction in a musculoskeletal table is common practice for osteopathic physicians and leads to equivalent records no matter what documentation format is used. The space provided for all other sections in the two-page table (eg, on the SOS MSEF, Severity; on the Outpatient Osteopathic Assessment and Plan Form, OMT [Yes/No checkboxes], Treatment Method, and [patient] Response to OMT) was new to most of the investigators. In fact, many investigators noted in the exit interview that these portions of the trial SOS MSEF reminded them to document information that they otherwise might have not noted in their standard handwritten PPNs.

### **Single Organ System (SOS) and SOAP Note Form Series**

The Louisa Burns Osteopathic Research Committee of the American Academy of Osteopathy developed and validated two structured medical record formats for clinical research and educational purposes. Both formats are complete record-keeping systems.

The SOS-FS consists of four pages. The first page is a detailed Outpatient Health Summary form and is used for noting initial and on-going history (*Figure 1*). The second page is the Outpatient Osteopathic SOS History/Exam Form (*Figure 2*, page 1 of 3) and is used to document the chief complaint; to record a detailed review of systems; and to note personal past medical, family, and social history as well as the physician's objective findings. The third page is the Outpatient Osteopathic SOS Musculoskeletal Exam Form (*Figure 2*, page 2 of 3) and contains a musculoskeletal examination table and additional objective examination items. The fourth and last page in the SOS-FS is the Outpatient Osteopathic Assessment and Plan Form (*Figure 2*, page 3 of 3) and contains prioritized diagnoses, treatment recommendations, and treatment(s) given.

Through the exit surveys and interview, we determined that the four-page SOS-FS could be used for the initial history and physical examination of new patients and for returning patients who require detailed or comprehensive musculoskeletal examinations.

The original SNF<sup>11</sup> was revised in 2002 to pattern itself after the SOS-FS and is now called the *Outpatient Osteopathic SOAP Note Form Series (SNFS)*. The SNFS is best used for follow-up visits as well as documenting initial visits for new patients in a primary care or non-osteopathic manipulative medicine specialty practice.

The SNFS and SOS-FS can be used together or separately in an outpatient office in any way a practitioner chooses. Both of these form series can be obtained from the copyright holder, the American Academy of Osteopathy (see <http://www.academyofosteopathy.org/> for more information).

The validated SOS-FS could prove a valuable tool for a vertically integrated, seamless osteopathic curriculum, in a manner similar to those of the SNFS and the Osteopathic Musculoskeletal Examination of the Hospitalized Patient Form (OMEHP), the latter being currently recommended for use by the American Osteopathic Association's Healthcare Facilities Accreditation Program, the American Association of Colleges of Osteopathic Medicine, and the American Academy of Osteopathy.

The SOS-FS could also facilitate the solution of curricular challenges at the colleges of osteopathic medicine, namely the teaching of basic, unique osteopathic documentation. With the approval of institutional faculties, the SOS-FS could be introduced to osteopathic students during the second year of medical school, or it could be incorporated into the current recommendations for Research-in-OPTI (osteopathic postdoctoral training institutions) programs. Others may find the SOS-FS valuable as a standardized reporting tool for use by osteopathic physicians at regional, state, and national levels to collect research data.

### **Financial Implications**

The potential financial advantages to a family practice physician using the new SNFS and SOS-FS are illustrated in *Table 3*, where we present a comparison of billing results for an osteopathic physician in a solo private practice. In this table, the osteopathic physician used the original SNF alone from February 2001 through January 2002. From February 2002 through January 2003, however, she used the new SNFS and SOS-FS. For the year reported, the physician's documented level 2 visits decreased significantly, from 63% of total billable patient visits to 6%, while her documented level 3 visits doubled, from 28% to 58% of total visits. The level 4 visits this osteopathic physician conducted and documented more than tripled, from 7% up to 33% of all billable patient visits. The financial implications regarding coding and the billable visit level are obvious. This physician in solo practice saw a total "annual" increase in billable insurance claims of \$18,112.

**Table 3**  
**Osteopathic Family Physician in Private Practice:**  
**Physician Reimbursement Before and After**  
**Use of Outpatient Osteopathic SOAP Note Form Series**  
**and Outpatient Osteopathic Single Organ System Musculoskeletal Exam Form Series**

Insurance Claim Level of Service	February 2001 to January 2002*	February 2002 to January 2003†
	Physician Reimbursement (Percentage of Business)	
Level 2	\$72,202 (63)	\$7,475 (6)
Level 3	31,765 (28)	77,439 (58)
Level 4	7,745 (7)	43,542 (33)
Level 5	2,832 (2)	4,200 (3)
Total	\$114,544 (100)	\$132,656 (100)
Profit Increase	...	\$18,112 (14)

\* The Outpatient Osteopathic SOAP (Subjective, Objective, Assessment, Plan) Note Form was used by this osteopathic family physician from February 2001 through January 2002. (For more information, see Sleszynski SL, Glonek T, Kuchera WA. Standardized medical record: a new outpatient osteopathic SOAP note form: validation of a standardized office form against physician's progress notes. *J Am Osteopath Assoc*. 1999;10:516-529.)  
† The Outpatient Osteopathic Single Organ System Musculoskeletal Exam Form under discussion in this article was used by this osteopathic family physician in conjunction with the aforementioned Outpatient Osteopathic SOAP Note Form from February 2002 through January 2003.

A valid, standardized and easily incorporated osteopathic-outcomes examination form is essential for documenting changes patients experience in their symptoms associated with somatic dysfunction as a result of OMT. Standardized documentation of the treatment modalities used by osteopathic physicians is vital to the osteopathic profession for explaining OPP to the medical, legal, and health insurance communities. It is only through valid and consistent documentation that we can hope to obtain outcomes information that supports our profession's teachings.

Wide adoption of the SOS-FS, like the SNFS, is a necessary step toward specific outcomes studies that involve the treatment and care of patients with somatic dysfunction as delivered by osteopathic physicians.

The long-term objective for our studies is to provide evidence for the feasibility of using a standardized record,<sup>14</sup> with the ultimate goal of building a National Osteopathic Clinical Database.

The two series of forms provide for the efficient collection of quality standardized research data that could lead to nationwide data analysis and more formalized reporting. Data housed within a National Osteopathic Clinical Database could then be mined by researchers to strengthen the understanding of osteopathic manipulative medicine by the public, allied health professionals, insurance companies, and the legal system. Extensive use of the SOS-FS and the SNFS would permit internal comparison studies between osteopathic physicians who use OMT and those who do not. Use of the SOS-FS could

allow OPTIs to track more easily patient encounters, diagnoses made, and the procedures performed by resident physicians.

#### **Looking Forward: The Future of the SOS Form Series and the SOAP Note Form Series**

During the group exit interview, we determined physician compliance and performance over time, as well as the difficulties and obstacles investigators encountered while using the SOS MSEF. Outcomes research requires the establishment of a method—such as the use of a validated standardized SOS-FS—for providing reliable, efficient, and accurate recording of examination data and changes in a patient's health status.

Once a basic instrument is selected, an outcomes study can be designed to assess the cost-effectiveness of available treatment modalities, the billing practices of osteopathic physicians who treat their patients using OMT, the effectiveness of OPP and OMT in the primary care setting, the efficacy of OMT for improving the health of underserved populations, and the value of OMT in the field of preventive medicine.

Future studies will be outcomes-based and will report on the use of the SOS-FS when used to study the effectiveness of OMT. Topics will note changes in the natural history of somatic dysfunction, autonomic and visceral correlations of somatic dysfunction with disease entities, and changes in health status brought about through the use of OPP in a physician's treatment program for patient care.

**End of Pilot Study Survey**  
**Single Organ System Osteopathic Musculoskeletal Exam Form**

Upon completion of your last Single Organ System (SOS) Osteopathic Musculoskeletal Exam Form and patient record, please answer the following questions about the form and its use. This information will be used by the research team to modify the form and procedures for a larger study. Please be as specific as possible in your answers and suggestions. When finished, send this survey along with your last patient forms and records to the data collection center.

**Name** \_\_\_\_\_

**Physician Letter** \_\_\_\_\_

**Date** \_\_\_\_\_

**Training**

For each of the three questions below, please circle Yes or No. Feel free to include any additional comments you may have.

1. Did you find the training on the study protocol adequate once the study started?

Yes      No      Comments:

2. Did you find the training on the use of the SOS Form adequate once you started using the form?

Yes      No      Comments:

3. Were the contact personnel helpful in answering any questions you had regarding the study?

Yes      No      Comments:

**Usage Guide**

For questions 4 and 5, below, please circle Yes or No. Feel free to include any additional comments you may have.

For question 6, please write in your answers.

4. Was the SOS Form Usage Guide helpful to you?

Yes      No      Comments:

5. Was the SOS Form Usage Guide easy to use?

Yes      No      Comments:

6. Do you have any suggestions on how to improve the SOS Form Usage Guide?

Comments:

**SOS Form**

Please write in your answers to the following four questions.

7. Do you have any suggestions on how to improve the SOS Form?

Comments:

*(continued)*

**Figure 3.** Sixteen-question exit surveys given to 14 trained and certified investigators.

**End of Pilot Study Survey (continued)**  
**Single Organ System Osteopathic Musculoskeletal Exam Form**

8. Which sections on the SOS Form do you feel should be changed and how? Please provide your comments on each section of the SOS Form.

Section 1:

Section 2:

Section 3:

Section 4:

9. Which (if any) items on the SOS Form do you feel should be deleted?

Comments:

10. What (if any) items do you feel should be added to the SOS Form?

Comments:

**Practice Impact**

Please fill in the blanks, circle Yes or No, or write in your answers to the remaining questions, as appropriate.

11. How much time, in minutes, does it usually take you to fill out a comprehensive musculoskeletal exam note for one patient?

Minutes:

12. How much time, in minutes, did it usually take you to fill out the SOS form for one patient?

Minutes:

13. Was the SOS Form easy to fill out?

Yes              No              Comments:

14. Did the SOS Form alert you to information you had accidentally omitted from your record?

Yes              No              Comments:

15. Do you find the SOS Form useful and helpful? (Please explain your answer in the Comments area.)

Yes              No              Comments:

16. Would you use the SOS Form in your practice for recording a comprehensive musculoskeletal exam?

Yes              No

**Figure 3.** Sixteen-question exit surveys given to 14 trained and certified investigators.

## ORIGINAL CONTRIBUTION

### Conclusion

This study, which culled the work of 14 geographically diverse investigators during 5 months to collectively record 165 patient encounters, statistically validates the SOS MSEF, proving it to be as accurate as standard PPNs in recording patient information but superior in its ability to allow osteopathic physicians to clearly and thoroughly document osteopathic-specific treatment modalities. The form provides a much-needed standardized recording instrument for the collection of patient information and facilitates statistical analyses. The form is easy for osteopathic physicians to use and time efficient. Use of the form provides the medical, legal, and patient communities with thoroughly documented evidence of osteopathic medical outcomes.

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