

# **AN EVALUATION OF THE HEALTH CARE FINANCING ADMINISTRATION'S RESOURCE BASED PRACTICE EXPENSE METHODOLOGY**

**PREPARED FOR:  
HEALTH CARE FINANCING ADMINISTRATION  
#500-95-0059 /TO#6**

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# An Evaluation of the Health Care Financing Administration's Resource- Based Practice Expense Methodology

Final Report

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Health Care Financing Administration  
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**II. TABLE OF CONTENTS**

**EXECUTIVE SUMMARY.....i**

**CHAPTER I: INTRODUCTION.....1**

**CHAPTER II: PRACTICE EXPENSE METHODOLOGY.....4**

**CHAPTER III: EVALUATION OF SMS DATA .....13**

**CHAPTER IV: OVERSAMPLING AND SUPPLEMENTAL SURVEY DATA .....28**

**CHAPTER V: VALIDATING PATIENT CARE HOURS .....34**

**CHAPTER VI: INDIRECT COST ALLOCATION.....58**

**APPENDIX TO CHAPTER VI.....73**

**CHAPTER VII: CONCLUSION.....75**

**III.**

#### IV. EXECUTIVE SUMMARY

On January 1, 1992, Medicare began reimbursing for physician services using a fee schedule that was based on national uniform relative value units (RVUs). This relative value system was designed to replace the long standing charge-based system with one that pays physicians based on the relative resources required to provide specific services to Medicare beneficiaries. Payments from the Medicare physician fee schedule reflect three elements: physician work, practice expenses (PE) net of malpractice expenses, and malpractice insurance expenses. Only the RVUs for physician work were truly resource-based, upon implementation of the initial fee schedule. The original PE RVUs were derived from allowed charges and service-specific practice expense percentages. Many groups criticized the original methodology for depending on historic allowed charges rather than on the *actual* resources used in providing physician services.

Provisions in the Social Security Amendments of 1994 required HCFA to develop and implement a budget-neutral, resource-based PE reimbursement system by the beginning of 1998. HCFA responded by proposing a “bottom-up” approach in the June 18, 1997 *Federal Register*. In design, a bottom-up PE methodology begins with values for the actual PE inputs (staff time, supplies and equipment) for each specific procedure and then uses these values to create direct practice expense RVUs. HCFA faced significant challenges in implementing its practice expense methodology, because no comprehensive data set existed that provided estimates of the costs associated with specific physician services. In an effort to gather these data, HCFA held a series of 15 Clinical Practice Expense Panels (CPEPs) to determine the direct costs of performing a set of reference codes. At the same time, it commissioned a practice expense survey to collect indirect cost data and service volume data for CPEP reference services and other medical services. However, HCFA subsequently discontinued the survey because of a poor response rate and, instead, used existing Medicare and American Medical Association (AMA) data to determine the proportion of indirect expenses.

Criticism of the proposed rule was sharp and came from many different organizations, including many physician specialty societies. The proposed rule was criticized both for its perceived methodological shortcomings and for the applicability and accuracy of the data used to develop it. Before HCFA had the opportunity to respond to these criticisms, Congress passed new requirements for the resource-based PE RVU system in the 1997 Balanced Budget Act (BBA).

In developing and implementing the new resource-based practice expense system, the BBA required HCFA to:

- Delay implementation until January 1, 1999
- Phase in the new resource-based PE RVUs over four years
- Use generally accepted cost accounting principles
- Recognize all practice expenses, not just those linked to specific procedures

- Consult with physician organizations regarding the data and methodology behind the PE RVUs
- Develop a refinement process for improving and updating the system during the phase-in period

As a result of the requirements set forth by the BBA, HCFA completely revised its methodology and proposed a “top-down” approach for computing resource-based PE RVUs. The methodology was presented in the June 5, 1998 *Federal Register* and published as a final rule with modification on November 2, 1998. In contrast to the bottom-up approach, the “top-down” PE methodology begins with values for total direct and indirect practice expenses at the physician specialty level and then allocates these costs down to the procedure code level. The methodology combines data from numerous sources including the AMA’s Socioeconomic Monitoring System (SMS) and the CPEPs.

HCFA contracted with The Lewin Group (Lewin) in May 1999 to evaluate and identify refinements to the top-down practice expense methodology and to help seek the input of provider organizations. Lewin was assigned four tasks:

1. Assess the SMS data in terms of its applicability to HCFA’s practice expense methodology.
2. Consider alternative and supplementary data sources to the SMS.
3. Develop options for validating patient care hours from the SMS data.
4. Evaluate HCFA’s indirect cost allocation approach and consider alternatives.

## **MAJOR RECOMMENDATIONS**

Lewin conducted the study in three phases. In the first phase we evaluated the SMS data and considered supplemental data sources. Preliminary recommendations related to these two tasks were presented in our September 24, 1999 draft report. In the second phase of the study, we proposed options for validating patient care hours (Task 3) in our December 6, 1999 draft report. Both of these draft reports are available on the HCFA Website, and they include preliminary versions of the recommendations outlined below. In the third phase, we evaluated HCFA’s indirect cost allocation. The major findings of our work are highlighted below.

### **1. Phase One**

The following are Lewin’s recommendations from the first phase of the study. They include short-term recommendations regarding improvements to the currently available SMS data (up to and including the 1999 SMS survey data), and long-term recommendations suggesting changes to the protocol and design of future PE survey efforts. HCFA responded to several of Lewin’s recommendations in the July

17, 2000 *Federal Register*. HCFA's responses to some recommendations are described in parentheses after the presentation of the recommendation.

### ***Short-term Recommendations for Improvements to the SMS Data***

- No other suitable data sources were identified (Aside from survey results provided by one specialty using the AMA SMS protocol)
- Revise edits and trim points to SMS survey data, both practice expenses and hours, to exclude data that fall outside a set of acceptable ranges (e.g., three standard deviations from the geometric mean). (*Citing AMA concerns regarding sample size and the elimination of valid outliers, HCFA is not taking action on this recommendation at this time.*)
- Create survey weights that account for item nonresponse to questions related to practice expenses and patient care hours. (*Citing AMA comments, HCFA is not making any adjustments in response to this recommendation at this time. However, HCFA is considering whether to study this issue further.*)
- Inflate practice expense per hour values from different survey years to a common endpoint year. (*HCFA accepted this recommendation and will standardize the practice expense data so that it reflects a common base year.*)
- Update SMS survey data currently used by HCFA for practice expense per hour with new data and use a rolling 3-year average to determine practice expense per hour values. (*HCFA has decided to incorporate 1998 SMS data into its methodology, but has decided to base the practice expense per hour calculations on a 4-year average.*)
- Integrate supplemental survey data conducted by any groups, which satisfy the criteria for a valid survey, into 3-year rolling average calculations if PE data exist or use the new practice expense per hour values for those specialties with no PE data. (*HCFA accepted this recommendation as evidenced by the establishment of criteria for specialty group supplemental surveys in the May 3, 2000 Federal Register. HCFA did make modifications to The Lewin Group recommendations for the criteria for a valid survey.*)
- Consider reevaluating the current crosswalk of specialties in the SMS survey to specialties in the HCFA database by examining the degree of overlap in the types of procedures performed by the matched specialties.

### ***Long-term Recommendations for Future SMS or Other PE Survey***

- Emphasize the use of a practice expense summary worksheet and request that the practice's manager or accountant complete the form using the practice's tax information.

- Collect information on practice expenses associated with mid-level providers, pharmacy, and laboratory services that are *not* directly reimbursed under Medicare or by other payers.
- Collect information on the amount of EMTALA-induced care provided by practitioners and use this information to adjust the specialty-specific practice expense pools.
- Collect information on the responding practitioner's percent share of practice expense and hours within practice.
- Integrate supplemental survey efforts into the practice expense survey process to ensure uniformity under either a privately or publicly funded option.
  - **Privately funded option:** underrepresented and non-represented specialty groups and limited-license practitioners sponsor their own surveys using standardized formats, edits, protocol, timeline, and methodology. AMA staff or HCFA and/or a HCFA contractor conduct final integrated analysis to produce practice expense per hour values.
  - **Publicly funded option:** government purchases data from an all-inclusive survey effort conducted through the AMA and/or a HCFA contractor. HCFA contractor would be used to coordinate survey efforts of non-physician specialties if these groups object to a consolidated AMA effort.

Since we prepared our initial report, the AMA has indicated that it may not continue the SMS survey due to low response rates and budgetary concerns. If the AMA discontinues the survey effort, HCFA will either have to conduct its own survey, accept survey data from individual specialty groups or face the prospect of using increasingly outdated information.

## 2. Phase Two

In response to the third task, Lewin identified four approaches that HCFA could use to validate data on provider patient care hours. Although the approaches were originally specific to the SMS, our recommendations can be applied to data collected in other practice expense surveys efforts.

- Method 1: Compare hour data reported at the beginning of the SMS survey to responses from the detailed questions on patient care hours appearing later in the SMS survey. Because of the suspension of the SMS, HCFA can use this method only to validate the SMS data they are currently using and to validate the 1998 and 1999 SMS data not yet used.
- Method 2: Compare practitioner time pools, calculated using data from the SMS or other practice expense surveys, to total Medicare time pools, calculated using Harvard/RUC procedure time data and Medicare claims data.

- Method 3: Compare practitioner time data with historical SMS data to identify outliers.
- Method 4: Compare practitioner time data with hours reported in the Medical Group Management Association's (MGMA) *Physician Compensation and Production Survey*.

Lewin recommends that HCFA, to the extent possible, use all four validation techniques. A multifaceted approach to validation is suggested as each of these methods has particular strengths and weaknesses when used to validate either existing or new time data.

Lewin conducted several preliminary analyses for validating patient care hours. Using Methods 2 and 4, we found that the SMS time data more closely correspond to hours in the MGMA's *Physician Compensation and Production Survey* than to hours based on Medicare data. These findings might indicate that not all of the hours in the SMS data are directly associated with specific medical procedures. In addition, the findings suggest that, although physicians appear to accurately report total hours worked, they have difficulty distinguishing patient care hours from other hours spent working.

### **3. Phase Three**

Lewin's final analysis was an evaluation of HCFA's methodology for allocating indirect PE costs to the procedure code level. Indirect PE costs are defined as those costs that cannot be directly attributed to a specific service and include office equipment and supplies, rent, and accounting and legal fees.

Our analyses determined that:

- Although outcomes vary across allocation methods, HCFA's approach is consistent with the overall allocation results from a variety of alternative methods.
- Of the allocation methods considered, using direct practice expenses as the allocation mechanism causes the greatest deviation from HCFA's indirect practice expense allocation.
- Substituting physician time for work has only a small affect on the allocation of indirect practice expenses.

While there is no "best" way in which to allocate indirect costs, our findings suggest that, relative to the alternatives, HCFA's allocation of indirect costs is reasonable and fairly consistent. Each approach has its potential shortcomings. For example, we are concerned about using Harvard/RUC time data because these data have not been validated. Similarly using only direct costs to allocate indirect costs could be criticized on practical and theoretical grounds. From a broad perspective, we would find it difficult to argue that any of the alternative allocation methods is superior to the method currently used by HCFA to allocate indirect costs.

In general, we believe that a "top-down" approach is a reasonable method for developing PE RVUs and that HCFA makes effective use of the available data. However, it is important that HCFA continue

to make refinements. The application of accurate, current data to the methodology and consistency between the CPEP data and practice expense data from the SMS survey or any other survey is critical.

The use of supplemental survey data is an ongoing, important issue for both HCFA and specialty groups. We believe that a coordinated survey effort that involves all specialties needs to be explored; this is even more important now that the AMA has indicated that it will no longer continue to support the SMS survey effort. Moreover, data on practice expenses should be collected from practice managers and accountants and should be based on information contained in the practice's tax records. Future refinements, such as those discussed in this report, would increase the validity of the practice expense methodology and, with it, the acceptance of the provider community.

## V. CHAPTER I: INTRODUCTION

### VI.

On January 1, 1992, Medicare began reimbursing for physician services using a fee schedule that was based on national uniform relative value units (RVUs). This relative value system was designed to replace the long standing charge-based system with one that pays physicians based on the relative resources required to provide services to Medicare beneficiaries. Payments from the physician fee schedule reflect three elements: physician work, practice expenses (PE) net of malpractice expenses, and malpractice insurance expenses. Only the relative value units for physician work were truly resource based, upon implementation of the fee schedule. The original PE RVUs were derived from allowed charges and service-specific practice expense percentages. Many groups criticized the original methodology for depending on historic allowed charges rather than on the *actual* resources used in providing physician services.

In its 1993 annual report, the Physician Payment Review Commission recommended to Congress that the practice expense component of the physician fee schedule be made resource based. Congress agreed and, as part of the Social Security Amendments of 1994, required HCFA to develop and implement a budget-neutral, resource-based PE reimbursement system by the beginning of 1998. The new PE RVU methodology was required to take into account the staff, equipment, and supplies used in providing medical and surgical services.

To comply with the law, HCFA originally proposed a “bottom-up” approach in the June 18, 1997 *Federal Register*. In design, a bottom-up PE methodology begins with values for the actual PE inputs (staff time, supplies, and equipment) for each specific procedure and then uses these values to create direct practice expense RVUs. HCFA faced significant challenges in implementing its practice expense methodology, because no comprehensive data set existed that provided estimates of the costs associated with specific physician services. In an effort to gather these data, HCFA first held a series of 15 Clinical Practice Expense Panels (CPEPs) to determine the direct costs of performing a set of reference codes. At the same time HCFA commissioned a practice expense survey to collect indirect cost data and service volume data for CPEP reference services and other medical services. However, it subsequently discontinued the survey because of a poor response rate and, instead, used existing Medicare and AMA data to determine the proportion of indirect expenses.

Criticism of the proposed rule was sharp and came from many different organizations, including many physician specialty societies. The proposed rule was criticized both for its perceived methodological shortcomings and for the applicability and accuracy of the data used to develop it. Before HCFA had the opportunity to respond to these criticisms, Congress passed new requirements for the resource-based PE RVU system in the 1997 Balanced Budget Act (BBA).

The BBA delayed implementing HCFA’s new methodology until January 1, 1999 and required HCFA to:

- Phase in the new resource-based PE RVUs over 4 years using a blend of the 1998 PE RVUs (75% in 1999, 50% in 2000, 25% in 2001) and the new resource-based PE RVUs (25% in 1999, 50% in 2000, 75% in 2001, 100% in 2002).
- Use generally accepted cost accounting principles that recognize all staff, equipment, supplies, and expenses, not solely those that can be linked to specific procedures.
- Consult with physician organizations regarding the data and methodology behind the PE RVUs.
- Develop a refinement process for to improve and update the system during the phase-in period.

In response to the requirements set forth in the BBA, HCFA completely revised its methodology and proposed a “top-down” approach for computing resource-based PE RVUs. The methodology was originally presented in the June 5, 1998 *Federal Register* and published as a final rule with modification on November 2, 1998. In contrast to the bottom-up approach, the “top-down” PE methodology begins with values for total direct and indirect practice expenses and then allocates these costs down to the procedure code level. The methodology combines data from numerous sources including the American Medical Association’s (AMA) Socioeconomic Monitoring System (SMS) and the CPEPs.

HCFA contracted with The Lewin Group (Lewin) in May 1999 to evaluate and identify refinements to the top-down practice expense methodology and to help seek the input of physician organizations. Lewin was assigned four tasks:

1. Assess the SMS data in terms of its applicability to HCFA’s Practice Expense Methodology.
2. Consider alternative and supplementary data sources to the SMS.
3. Develop options for validating patient care hours from the SMS data.
4. Evaluate the methodology used by HCFA to allocate indirect practice expense pools, based on the SMS data, to the procedure code level.

Lewin’s initial tasks focused on using SMS data in the PE methodology and collecting supplemental survey data. Since presenting our preliminary recommendations regarding these issues in our September 24, 1999 report, two important developments have transpired. First, the AMA informed HCFA in March 2000 that, because of the escalating cost of data collection and low response rates, it has indefinitely suspended the administration of the traditional SMS survey and the future administration of the newly developed practice-level survey. Second, the Balanced Budget Refinement Act of 1999 (BBRA) required HCFA to define an acceptable process for the collection and submission of supplemental data by outside, interested parties (e.g., provider groups) to affect payments in 2001 and 2002. In the May 3, 2000 *Federal Register*, HCFA published its interim final rule on supplemental practice expense surveys, adopting, with modification, a number of Lewin recommendations.

The importance to HCFA of the AMA’s decision to discontinue the SMS survey is unquestionable. Without PE data from the SMS or a comparable survey, it is unclear how HCFA will be able to update

its PE RVUs in the future. Currently, there are only 2 years of SMS data, from the 1998 and 1999 surveys, that could be used to update the PE RVUs. Although many of the recommendations presented in this report were originally generated under the assumption that the SMS would continue into the future, the vast majority of them are applicable to any future practice expense survey.

In addition, Lewin met with a number of groups interested in performing surveys since publication of the interim final rule on supplemental practice expense surveys. We have worked closely with two specialty groups that have conducted surveys. The experience has provided us with new insights regarding practice expense surveys, and these are reflected in our analyses and recommendations in this report.

Most recently, HCFA responded to some of Lewin's preliminary recommendations regarding the use of SMS data in the PE methodology in the July 17, 2000 *Federal Register*. Although Lewin's recommendations were created to apply to future SMS surveys, HCFA evaluated the recommendations for their application to future practice level surveys or any other survey instrument used to calculate PE RVUs. HCFA accepted or modified several of Lewin's recommendations. HCFA's comments to specific recommendations are provided in Chapter 3 of this report.

The remainder of this report is organized as follows. In **Chapter 2**, we review and comment on the top-down practice expense methodology. In **Chapter 3**, we discuss the SMS survey and suggest both short- and long-term methods for improving the SMS and any future practice expense survey's applicability to HCFA's current PE RVU methodology. **Chapter 4** contains our recommendations regarding the collection and use of supplemental practice expense data. In **Chapter 5**, we explore options for validating patient care hours. **Chapter 6** addresses HCFA's methodology for allocating indirect PE costs to the procedure code level and considers alternative approaches. In **Chapter 7**, we present a brief conclusion.

## VII.CHAPTER II: PRACTICE EXPENSE METHODOLOGY

### VIII.INTRODUCTION

One method of differentiating among the different ways of calculating PE RVUs is to classify an approach as either “top down” or “bottom up.” A top-down approach starts by estimating a practice expense pool for a set of services and then allocates that pool to each individual procedure or service at the code level on a budget neutral basis. This is in contrast to a bottom-up approach where practice expenses are first developed code by code for a set of reference services. Next, practice expenses for non-reference services are imputed. Finally, practice expenses are totaled across codes and then calibrated to correspond to an overall budget target (the practice expense pool).

In its final rule published on November 2, 1998 HCFA adopted a top-down approach using two main data sources to establish its practice expense pools: the AMA’s Socioeconomic Monitoring System (SMS) and the CPEPs. HCFA used data derived from the 1995 through 1997 SMS surveys to create the direct and indirect specialty-specific practice expense pools. The CPEP data were used to allocate the direct expense pools across the services paid under the Medicare Physician Fee Schedule. The indirect pools were allocated to individual codes using the work RVUs and the direct expense information.

Additional information needed to implement the practice expense methodology was obtained from four sources. These sources include: 1) the AMA’s Specialty Society Relative Value Update Committee (RUC); 2) the surveys done by researchers at Harvard University for the initial establishment of the work RVUs; 3) the Medicare Physician Fee Schedule; and 4) the Medicare physician claims database. In this section, we review and comment on HCFA’s practice expense methodology and how each of the data components are used to construct resource-based practice expense RVUs.

#### A. Creating the Practice Expense Pools

The first stage in the practice expense methodology is to construct Medicare practice expense pools by specialty and cost category. The cost categories are those defined by the SMS survey and include clinical labor, medical supplies, medical equipment, administrative labor, office supplies, and other expenses. In creating the pools, the same methodology is applied to each cost category: average practice expenses per hour (derived from the SMS data) are multiplied by total Medicare patient care hours for each specialty. If practice expenses per hour are unavailable for certain HCFA-designated specialties, a crosswalk was used to associate a practice expense per hour value from one of the physician specialties covered in the SMS survey to a “non-covered” HCFA-designated specialty. HCFA then used the practice expense per hour values for the SMS specialties to construct the practice expense pools for the matched HCFA specialties.

##### 1. Calculating Average Practice Expense Per Hour

HCFA used the AMA’s SMS survey data on practice expenses and physician patient care hours to calculate an average practice expense per hour for each specialty. Because the SMS survey is a

physician survey, each physician owner's dollar share of total practice expenses and his/her patient care hours were adjusted for the total number of physicians in the practice to calculate a practice expense per hour at the practice level. The following three steps were used to calculate practice expenses per hour for each practice:

1. Total practice expenses (for responding physician's practice) = dollar share of practice expenses reported by responding physician owner \* number of physician owners in the practice.
2. Total physician hours (for responding physician's practice) = (patient care hours for the responding physician owner<sup>1</sup> \* number of physician owners in the practice) + (average patient care hours per employed physician<sup>2</sup> \* number of physicians employed by the practice).
3. Practice expenses per hour (for responding physician's practice) = Total practice expenses/Total physician hours.

Practice expenses per hour were then averaged across all responding physician owners within each specialty.

## **2. Calculating Total Medicare Hours for Each Specialty**

The specialty-specific practice expense pools were constructed as the product of average practice expenses per hour (calculated as described above) and total hours spent providing services to Medicare patients for each specialty. HCFA used information from the Harvard University and RUC physician time studies and the Medicare claims data to calculate total Medicare hours by specialty and setting. Total hours were calculated in two steps:

1. Total hours per procedure by specialty and setting were calculated as the product of the time it takes to perform a procedure, obtained from the Harvard/RUC data, and the frequency of that procedure, obtained from the Medicare claims data.
2. Hours from Step 1 were aggregated across procedures for each specialty.

## **B. Allocating Costs Across Procedures**

The second stage of the practice expense methodology allocates the practice expense pools across the procedure codes. HCFA used different allocation approaches for direct and indirect costs. The direct cost pools include practice expenses for clinical labor, medical supplies, and medical equipment. Direct

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<sup>1</sup> The SMS excludes physicians who work less than 20 hours per year.

<sup>2</sup> In step 2, the methodology uses average patient care hours per employed physician as a proxy for the average hours worked by physicians employed in the responding physician owner's practice, because the SMS survey does not collect hours worked information on the physician owner's employees. The average is constructed based on the responses of employee physicians in the same specialty as the responding physician owner.

costs were allocated using relative procedure-level CPEP cost data on clinical labor, medical supplies, and medical equipment for each procedure code. The indirect cost pools include practice expenses for administrative labor, office supplies, and other expenses. Indirect costs were allocated across the procedure codes using a combination of the code-level direct practice expenses and physician work RVUs. In the table below, we summarize the different direct and indirect cost categories.

Table 2.1  
 Cost Categories from the SMS Survey  
 Used in HCFA's Practice Expense Methodology

Direct Cost Categories	Clinical Labor	Allocated using CPEP cost data
	Medical Supplies	
	Medical Equipment	
Indirect Cost Categories	Administrative Labor	Allocated using combination of allocated direct costs (clinical labor, medical supplies, and medical equipment) and work RVUs
	Office Supplies	
	Other Expenses	

For each of the direct practice expense categories, a share of each practice expense pool is allocated to an individual procedure code based on the ratio of the procedure's individual cost from the CPEPs to the total specialty-specific CPEP costs. To consider a simple example, suppose that a specialty (and only that specialty) performs two procedures and that these procedures are performed in the physician's office. The first procedure, "A," was performed by the specialty two times with a clinical labor cost of 5 dollars per procedure and the second procedure, "B," was performed five times at a clinical labor cost of 8 dollars per procedure. The allocation formula for the clinical labor (C-L) practice expense pool is

% C-L pool allocated to each procedure i for specialty j	=	$\frac{(\text{C-L CPEP cost per procedure } i)}{(\text{Total C-L CPEP cost for specialty } j)}$
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The allocation formulas for the other direct cost categories are the same as above, with the exception that the appropriate CPEP values are used to allocate the medical supply cost pool and the medical equipment cost pool.

Using this allocation formula, we determined the percent of the clinical labor practice expense pool that would be allocated to each procedure A and procedure B in our example. As shown in Table 2.2, 10% of the SMS practice expense pool for clinical labor would be allocated to each procedure A  $[\$5/[(\$5*2)+(\$8*5)]]$  and 16% of the pool would be allocated to each procedure B  $[\$8/[(\$5*2)+(\$8*5)]]$  for this specialty.

If the SMS practice expense pool for the specialty in this example was 100 dollars, the clinical labor practice expense for each procedure A and each procedure B would be 10 and 16 dollars, respectively.

Table 2.2  
A Simple Direct Cost Example:  
Allocating Clinical (Non-Physician) Labor Cost Pool  
Assumptions: SMS Clinical Labor Practice Expense Pool=\$100

Procedure	Freq.	Clinical Labor CPEP Cost per Procedure	% Share of SMS PE Pool Allocated per Procedure	Allocated Clinical Labor Costs per Procedure	Total % Share of SMS Clinical Labor PE Pool Allocated
A	2	\$5	10%	\$10	20%
B	5	\$8	16%	\$16	80%
Totals					100%

It is useful to notice that the practice expense values based on the direct cost allocation methodology are equivalent to the CPEP values multiplied by the ratio of the SMS practice expense pool to the total practice expenses based on the CPEP costs (CPEP practice expense pool). This ratio or scaling factor is equal to 2.0 (or \$100 SMS/\$50 CPEP) in this example. Using this alternative approach, we could calculate the practice expense values for procedure A as 5 dollars multiplied by 2.0 and for procedure B as 8 dollars multiplied by 2.0.

For the indirect practice expenses, costs were allocated using a different mechanism. A share of the indirect practice expense pool is allocated to an individual procedure code based on a ratio derived from the sum of the procedure's (allocated) direct costs and the value of its work RVUs. HCFA used the 1995 conversion factor (CF) of 34.5, which corresponds to the mid-year of the SMS data currently used by HCFA, to convert the work RVUs into dollars. The allocation formula for indirect practice expense pool for procedure i and specialty j is

% Indirect PE pool allocated to each procedure i for specialty j	=	$\frac{\text{(Sum of Allocated Direct PEs + Work RVUs * 34.5) per procedure i}}{\text{Total Indirect PE Pool}}$
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(Total Allocated Direct PEs + Work RVUs \* 34.5 for specialty j)

Only one formula is needed to allocate all the indirect costs (i.e., administrative labor, office expenses, and other expenses).

In Table 2.3, we present a simple illustration of the indirect cost allocation methodology using the example above. Recall that in this example the specialty performs only two procedures and that these procedures are performed in the physician's office. In addition, we will assume that the only direct costs associated with procedures A and B are clinical labor costs.<sup>3</sup> The allocated clinical labor costs for the procedures have been calculated in the example above. The work RVU for Procedure A is one and for Procedure B is 0.5.

We first convert the work RVUs into dollars using the 1995 CF of 34.5 and then sum the work dollars with the direct costs for each procedure. The value of direct costs and work RVUs is 44.5 dollars (\$10 + \$34.5\*1) for procedure A and 33.25 (\$16 + \$34.5\*0.5) dollars for procedure B. Similar to the direct cost methodology, the percent share of the indirect practice expense pool allocated to each procedure is based on the ratio of the direct costs/work values to the total specialty-specific direct costs/work pool. The total direct costs/work pool is 255.25 dollars [(\$44.5\*2)+(\$33.25\*5)]. Therefore, for this specialty, 17.4% of the SMS indirect practice expense pool would be allocated to each procedure A and 13.0% of the pool would be allocated to each procedure B.

If the SMS indirect practice expense pool for the specialty in this example was 100 dollars, the indirect practice expense for each procedure A and procedure B would be 17.4 and 13 dollars, respectively.

**Table 2.3**  
**A Simple Indirect Cost Example:**  
**Allocating the Indirect Practice Expense Pool**  
 Assumption: SMS indirect PE pool = \$100

Procedure	Freq.	Direct Costs	Work RVUs	Direct Costs Plus Work \$ per Procedure*	% Share of SMS Indirect PE Pool Allocated per Procedure	Allocation of Indirect Costs per Procedure	Total % Share of SMS Indirect PE Pool Allocated
A	2	\$10	1	\$44.5	17.4%	\$17.4	34.8%
B	5	\$16	0.5	\$33.25	13.0%	\$13.0	65.2%
Totals							100%

\* Calculated as Direct Costs + (Work RVUs \*1995 conversion factor of \$34.5).

<sup>3</sup> This is a simplifying assumption for our example. If there were direct costs other than clinical labor associated with the provision of procedures A and B, the allocation formula would use the sum of all the allocated direct costs for each procedure (i.e., allocated clinical labor, medical supplies, and medical equipment costs).

It is again useful to notice that the indirect practice expense values based on the methodology are equivalent to the direct costs/work values multiplied by the ratio of the SMS indirect practice expense pool to the total direct costs/work pool. This scaling factor is equal to 0.392 in this example. Thus, we could have calculated the indirect allocated practice expense values for procedure A as 44.5 dollars multiplied by 0.392 and for procedure B as 33.25 dollars multiplied by 0.392.

Although the examples above assumed that the specialty performed procedures A and B only in the office setting, some procedures may also be performed in a medical facility. In these instances, the CPEP cost pools and the direct costs/work pools are calculated across settings so as to include all costs regardless of where the procedures were performed. Then, using the “in-office” and “out-of-office” CPEP and direct cost/work values, separate allocated direct and indirect costs for each procedure code are constructed for each setting.

Finally, if more than one specialty performs a procedure, the final practice expense associated with that procedure code is a weighted average of the allocated values across all the specialties that performed the procedure, where the weights are the frequencies with which each specialty performed the procedure on Medicare patients. This “weight-averaging” step is used to construct for each cost category a single practice expense value for each procedure code. As an example, suppose that one other specialty performed procedure A. For this other specialty, the allocated direct clinical labor costs for procedure A was 20 dollars (twice the amount for the specialty considered in the example above) and physicians in this other specialty performed the procedure twice. The final practice expense associated with procedure A would be 15 dollars, calculated as  $[(10*2 + 20*2)/4]$ . As demonstrated by this example, the weight-averaging step benefits relatively “low-cost” specialties at the expense of “high-cost” specialties.

From the allocated direct and indirect practice expenses derived as described above, HCFA developed practice expense RVUs for each procedure code and place of service. The practice expense RVUs are constrained to maintain budget neutrality.

### **C. Practice Expense Methodology: Comments and Recommendations**

The soundness of the practice expense methodology depends on a number of factors, including the quality of the data used in the methodology, the validity of the crosswalk for HCFA-designated specialties not covered in the SMS survey, and the assumptions underlying the practice expense per hour formula and the allocation methodology. Although we will consider all these issues in this report, we just comment on the formula used to construct practice expenses per hour values and the “weight-averaging” step in this section.

#### ***Estimating Practice Expenses Per Hour at the Practice Level***

To calculate a practice expense per hour at the practice level, data from the SMS survey on each physician owner’s dollar share of practice expenses and his/her patient care hours were adjusted for the total number of physicians in the practice. HCFA multiplied a responding owner’s dollar share of practice expenses by the number of physician owners in the practice to create a total practice expense.

Total physician hours were calculated by multiplying patient care hours for the responding physician owner by the number of physician owners in the practice and adding this value to the product of average patient care hours per employed physician and the number of physicians employed by the practice.

This methodology assumes that physician owners share practice expenses equally. An assumption regarding the distribution of physician practice expenses is needed because the SMS survey, as a physician-level survey, did not collect information on all physician owners of a practice or total expenses. Similarly, the methodology also assumes that all physician owners in a practice work the same number of hours providing patient care. In addition, the average employee physician hours for each specialty is used as a proxy for the number of hours worked by employee physicians in the responding physician's practice. The options available to aggregate up from the physician to the physician's practice are limited by the types of SMS data available.

The 1999 SMS survey collected information on total practice expenses in addition to information on responding physician's share of PEs. We believe that this is the first time that the AMA has tried to collect such information using the SMS survey. In addition, a physician is asked if practice expenses are shared equally across owners. We believe the collection of these types of information is important and an improvement in the SMS survey. First, it will potentially make it unnecessary to construct total practice expenses using the assumption that physician owners' share practices expenses equally, if HCFA chooses to use the 1999 SMS data. At the very least, adding these questions to the SMS survey will provide an avenue to research questions important to HCFA and its methodology. For example, to what extent are individual physicians able and willing to obtain and report information on total practice expenses? To what extent do physician owners in a practice share expenses equally? Being able to address these fundamental questions is important, because it allows HCFA to test some of the assumption underlying its current methodology. Moreover, it could be examined whether or not differences exist across specialties. Unfortunately, SMS data will only be available for 1 year to explore these issues. For some specialties the number of observations is likely to be too small to be meaningful.

The 1999 SMS survey only attempts to identify if a physician shares expenses equally with other physician owners in the practice. We believe that it may be useful for any future physician-level practice expense surveys to attempt to identify the responding physician's percent share of practice expenses. This would allow an estimate of total practice expenses to be constructed for those physician owners who do not know their practices' total expenses and who do not share expenses equally with other owners of the practice. Total expense for the practice could be estimated by dividing the physician's percent share of expenses into his/her dollar share of practice expenses. However, it may be reasonable to expect that any physician owner that knows his/her dollar and percent share of practice expenses would also know the practices total expenses. On the other hand, physician owners that do not know their share of total practice expenses would be unlikely to know total expenses for the practice. Therefore, collecting information on a physician's percent share of expenses may be of only limited usefulness for HCFA's purposes, for example as a validation.

Additional information is needed on whether a responding physician's patient care hours are "typical" for other physician owners or employees of the practice. If these hours are not typical, the current methodology may bias the practice expense per hour values. Ideally, future practice expense surveys if

conducted should identify the average hours devoted to patient care for all owners and employees of the practice.

AMA staff have told us that they are not sure whether the typical physician owner knows his/her share of practice expenses or how many hours other owners and employees devoted to patient care. We share this concern regarding the ability of some physicians to answer detailed financial and hours worked questions, particularly if the physician's practice has many owners and employees. If future survey efforts attempt to collect such information, response rates could be assessed. An alternative approach to collecting practice expenses that maintains the basic physician-level structure of the SMS survey would be to have practice managers or accountants complete the questions on practice expenses. Whereas the SMS survey has permitted a proxy to answer specific questions for a responding physician, future surveys could explicitly instruct the responding physician to identify the practice manager or accountant and have that individual report the required financial information. As the AMA has noted, any future surveys that attempt to collect detailed information on practice expenses are likely to be expensive and time consuming.

### ***The Effects of the Weight Averaging Step***

One issue that has received attention from commentators of the top-down methodology is the affect of weight averaging the allocated practice expenses across specialties for procedures performed by more than one specialty. The averaging is done to calculate a single allocated cost per code. However, averaging, as noted by the commentators, can have the effect of distorting the specialty-specific practice expense pools if allocated direct and indirect costs for a given specialty depart from the overall average for a procedure. Another way of looking at this issue is to recognize that the weight averaging effects depend on the value of the scaling factor. If all of the scaling factors (i.e., SMS pool/ CPEP pool) for the direct cost categories equaled 1.0, then weight averaging would have no affect on the final allocated direct cost for any code: the resulting allocated direct practice expense value for a shared code before and after the weight-averaging step would be equal to its CPEP value. The weight-averaging step will also have only a small or no affect on the allocated direct cost values if the scaling factors are the same or vary little across all specialties. For example, if the clinical labor scaling factors equaled 1.2 for all specialties, then the clinical labor direct costs for a share code would be equal to 1.2 times its CPEP clinical labor costs for all specialties.

Under either of the scenarios described above, the direct practice expense pools remain in tact; that is, any direct practice expense pools constructed using the procedure-specific allocated direct costs would be equivalent to the SMS direct practice expense pools. For the indirect costs, if all the direct cost scaling factors and the indirect cost scaling factors were the same across all specialties that perform a procedure, then the weight-averaging step would again have no impact.

Improvements in the consistency between the costs captured in the SMS data (or future practice expense surveys) and the CPEP data are likely to move the direct cost scaling factors closer to one. This will reduce the distorting effects of the weight averaging. HCFA has noted in the November 2, 1999 Federal Register that one of its "key interests" is in maximizing the consistency between the SMS and CPEP data through future refinements. This will be important for increasing the medical

community's acceptance of the practice expense methodology. The indirect cost methodology is more problematic. There is no theoretical basis to believe that the scaling factors for the indirect cost categories should approach 1.0, because the allocated direct costs and work RVUs are not directly related to SMS indirect costs. Moving forward, consideration should be given to identifying, if any, those cost components currently measured as indirect expenses in the methodology that were captured in the CPEPs. Any of these identified expenses may be captured through future practice expense surveys and allocated as a direct cost to increase the consistency between future practice expense data and the CPEP data.

## **IX. CHAPTER III: EVALUATION OF SMS DATA**

### **X. INTRODUCTION**

The SMS data represent a key component of the practice expense methodology. Incomplete or incorrect data in either practice expenses or hours could bias the specialty-level practice expense per hour values and, thus, the practice expense pools. The quality of the data used to calculate practice expenses per hour depends on a number of factors, including the representativeness of the sample, the care and accuracy with which physicians respond to the survey questions, the equivalence between practice expenses as defined in the SMS survey and those practice expenses allowed under Medicare, and the consistency in patient care hours in the SMS survey data and the Harvard/RUC time data.

Lewin discussed the SMS survey with the AMA on several occasions and has carefully reviewed the SMS instrument and other relevant documentation. We have a good appreciation for the effort the AMA has dedicated to designing and implementing the SMS survey in past years and generally believe that its survey methodology and protocol are sound. However, the survey was not designed for the purpose of developing practice expense relative value units, and the AMA has expressed concern regarding small sample sizes for some specialties, non-response bias, and the lack of practice-level data.<sup>4</sup> Additionally, Lewin hosted a meeting at our facility in September 1999 for physician and non-physician specialty groups on data refinement issues. This meeting, and the subsequent input submitted to us in the form of specialty groups' comments, allowed us to develop a better understanding of the concerns the medical community has about using SMS survey data to develop practice expense RVUs. If the practice expense methodology is to gain the widespread acceptance of the medical community, it is important that any future practice expense survey efforts develop ways that address these concerns. In the sections below, we examine these issues and other problem areas identified by HCFA and present our recommendations. We also present HCFA's response to several of our recommendations as expressed in the July 17, 2000 *Federal Register*.

#### **A. Survey Methodology, Protocol, and Sampling Issues**

In March 2000, the AMA informed HCFA that, because of the escalating cost of data collection and low response rates, it has indefinitely suspended the administration of the traditional SMS survey. The AMA has also discontinued future administration of the promising practice-level PE survey it pilot tested in 2000. (The response rate on the practice survey was disappointing, with only 22% of the surveyed practices responding.) The AMA has convened a committee to decide the future of the SMS survey. The AMA has asked the committee to consider the scope and content of any future survey and the purposes it would serve and to weigh the benefits of the survey against its costs. The AMA's decision whether to resume collecting practice expense data is important to HCFA. Without practice expense data from the SMS survey, it is unclear how HCFA would, if it chooses, update the practice expense component of the physician fee schedule. If the AMA should decide to resume its survey activities,

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<sup>4</sup> Letter to HCFA from the AMA, March 31, 1998.

HCFA has an opportunity to work with the AMA in developing a new survey that could benefit both parties.

Despite the uncertainty surrounding the SMS survey, we review recent SMS surveys and the survey methodology to identify potential improvements that could be applied to future survey efforts or existing SMS data. In addition, we recently helped two groups conduct supplemental survey based on the 1999 SMS survey. Some lessons learned are reflected in the discussion below.

### ***Description of Survey and Data Collection***

The SMS survey is an annual nationally representative physician survey. The core components of the survey that are instrumental to the practice expense methodology solicit information from physicians on practice expenses, practice characteristics, and hours worked. Practitioners in non-physician specialties, such as nurses, physical therapists and psychologists, are not covered in the SMS survey.

The survey samples all non-federal physicians who spend more than 20 hours per week engaged in patient care activities, including office- and hospital-based physicians but excluding residents. The sample is developed from the AMA's Physician Masterfile, which includes "current and historical information on every doctor of medicine in the United States, including both members and nonmembers of the AMA".<sup>5</sup> A random sample of physicians is selected from the Masterfile, and the AMA makes efforts to "ensure that each specialty group and region are represented in the sample in proportion to their representation in the physician population." While it is uncertain what shape future AMA survey efforts will take, the Masterfile should remain an important component of any physician-level survey that attempts to collect practice expense information to ensure the representativeness of the survey data.

In addition to excluding from the sample federal physicians, residents, and those physicians practicing outside the United States, the following exclusions are also made:

- Doctors of osteopathy<sup>6</sup>
- Graduates of foreign medical schools who are only temporarily licensed to practice in the United States
- Inactive physicians
- Physicians who were sampled in SMS surveys during the last 5 years
- Physicians listed as "do not contact" on the AMA's Physician Masterfile

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<sup>5</sup> *Physician Characteristics and Distribution in the US*, AMA. 1999, p. 262.

<sup>6</sup> At the September 15<sup>th</sup> meeting with the specialty groups, a representative raised the issue of the sampling of doctors of osteopathy. An AMA staff member indicated that it might be possible to include them in future survey efforts. HCFA should consider discussing this possibility with the AMA.

- Physicians not practicing in the United States
- Physicians who have no license.

Although not excluded, discussion with AMA staff suggests that academic-based physicians have not been clearly identified on previous SMS surveys. In Lewin's experience, we found that practice expenses associated with academic-based physicians were difficult to identify because of the complex nature of academic practices and the way academic medical centers keep their accounts. In practice, academic medical centers often cannot allocate expenses down to individual specialty groups with any level of precision. We see no simple solution to identifying practice expenses for academic-based physicians and believe that academics will continue to be underrepresented in the HCFA methodology.

The AMA typically begins fielding the SMS survey to coincide with tax preparation season to increase the probability that financial information, such as a practice's expenses, is readily available. Information is collected using a computer-assisted telephone interviewing process, where responses are entered directly into the data system.<sup>7</sup> The system is capable of doing range checks, whereby if data are entered that fall outside of a reasonable range the interviewer is prompted to verify the information. Furthermore, interviewers receive 2 days of study-specific training and additional general training.

### ***Non-response and Weighting***

The ability of a sample survey to describe characteristics of the population depends on the size and representiveness of the sample. Even though the SMS survey identifies physicians from the population based on the Masterfile, variations in response rates across known subpopulations will affect the representiveness of the survey. There are two types of nonresponse: unit and item. Unit nonresponse occurs when a physician cannot be located or contacted or refuses to respond to the survey. Item nonresponse occurs when physicians agree to be interviewed but do not complete certain questions or sections of the questionnaire. Both types of nonresponse are important to HCFA and the AMA, since low response rates reduce the ability of a sample survey to accurately describe the population of interest and may introduce bias into the practice expense and hours estimates.

The AMA takes a number of steps to maximize the survey response rate. First, a pre-notification letter is sent to each physician 2 weeks before the interview, which includes a description of the interview and other relevant information. A brochure is sent with each letter that includes a practice expense summary worksheet. The worksheet indicates the practice expense information that physicians will be asked to report during the interview. Second, physicians who refuse to participate are sent a letter addressing specific concerns and a select group of interviewers conduct refusal conversion attempts. Third, a minimum of four callbacks is made to nonrespondents before abandoning efforts to conduct the

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<sup>7</sup> Over the past few years, the AMA has contracted with RAND, Westat, and, Mathematica Policy Research, Inc. to conduct the survey.

interview. Finally, physicians are provided with a toll-free number so that they may call back at their convenience to complete the interview.

To account for unit nonresponse, the AMA constructs sample weights using information about the physician population available from the Masterfile. The weights are derived by first dividing the Masterfile and SMS survey respondents into 200 cells defined by specialty (10 categories), year since M.D. (five categories), AMA membership status (two categories), and board certification status (two categories). After this first step, the weights are calculated by taking the ratio of the number of physicians in the Masterfile to the number of SMS respondents for each cell. In calculating the average practice expense per hour by specialty for HCFA, the AMA constructed a weighted average, where the sample weights correspond to the sample weights in the SMS data and only account for unit nonresponse.

**Recommendations:** Adjustments could be constructed for unit and item response by using two sets of weights. Although developing weights for item response may be time consuming and costly, we believe it is important to account for item nonresponse to reduce any potential bias in the estimates. Moreover, we think a feasible approach could be developed based on dividing the SMS sample of respondents with useable practice expense and hours information into the cells used for the unit nonresponse weights, or some smaller set, and then recalculating the weights.

Statisticians often use imputation for item nonresponse as an alternative to weighting. Compared with weighting, imputation may be a better alternative since no observations are lost. However, it is important that a sufficient amount of information be available on respondents to construct reasonably accurate imputations. We do not currently recommend imputed values for missing observations.

After consultation with the AMA, HCFA has decided not to move forward with adjusting the weights to account for item response at this time. As stated in the *Federal Register*, the AMA believes “there is no evidence that a pattern of non-response bias exists for practice expense, although it is a possibility.”<sup>8</sup> However, HCFA is considering a future study of this issue.

The AMA is limited to the data elements on the Masterfile to construct appropriate weights to adjust for unit and item non-response. Moreover, its methodology for calculating these weights was not designed with HCFA’s practice expense methodology in mind. Nevertheless, an appropriate set of weights to use in developing estimates of practice expenses for the population of physician practices would relate to the practices. Such information as the size of the practice, whether or not it is a multispecialty practice, and geographical location are some examples of the types of data that would be useful to use in constructing the weights. Consideration should be given to the types of data available on the Masterfile and whether or not it would be feasible to amend the Masterfile with these and similar data elements in the future.

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<sup>8</sup> *Federal Register*. July 17, 2000.

### ***Exclusions, Small Samples, and HCFA's Crosswalk***

Not only are the samples in the SMS survey for some specialties small or non-existent, but the AMA does not include non-physician specialties, including mid-level and limited-license practitioners. The small sample sizes and limited scope of the SMS survey, from HCFA's perspective, are serious limitations of the survey for constructing practice expense relative value units. For those specialties not included or poorly represented, HCFA developed a crosswalk between HCFA specialties and those reported in the available SMS data. Obviously, it would be better if the crosswalk was not needed by HCFA. Eliminating the crosswalk is possible through the use of oversamples and supplemental surveys covering limited-licensed practitioners. Before these survey activities can proceed, however, several issues must be resolved, including:

- Who will conduct the surveys?
- How will the samples be determined?
- What protocol will be used?
- How should the survey instrument be designed?
- Who will conduct the analyses?

**Recommendations:** Although we discuss these questions in greater detail in Section IV, in the short-term, it is important that HCFA and the public have confidence in the crosswalk. We recommend that HCFA consider evaluating specific challenges to the current crosswalk by examining the overlap in the types of procedures performed by the matched specialties. This method was mentioned in additional comments provided to us by a participant in our September 15<sup>th</sup> meeting with specialty groups. It seems to us that the most appropriate crosswalk would be between specialties whose practice patterns most closely resembled each other. If a crosswalked specialty appeared to share codes equally with more than one other specialty, HCFA could consider using an average practice expense per hour across the specialties in the SMS data.

## **B. Issues Related to Practice Expense**

The SMS survey collects information on practice expenses in six cost categories through a series of questions. These questions identify a physician owner's dollar share of tax-deductible practice expenses for: 1) non-physician payroll expenses; 2) clerical payroll expenses; 3) office expenses; 4) medical supplies expenses; 5) medical equipment expenses; and 6) other expenses. It is important that physicians report these expenses accurately and that practice expenses as defined in the SMS survey are equivalent to those practice expenses allowed under Medicare.

### ***Ensuring the Accuracy and Validity of Self-reported Practice Expenses***

We consider first the issues of practice expense accuracy and validation in the SMS survey. In preparation for the SMS survey, the AMA sends physicians a brochure that includes information on the

survey and a practice expense summary worksheet 2 weeks before the interview. The worksheet indicates those questions that physicians will be asked regarding expenses. A blank line follows each question where responding physicians may fill in the appropriate value, if so desired. The expense summary worksheet identifies the same information collected in the survey; it consists of questions relating to the physician's dollar share of expenses in each of the cost categories.

During the survey administration, interviewers are prompted to read the following:

*“Now, I’m going to ask about [your] practice’s tax deductible professional expenses...In answering these expense questions you may find it helpful to refer to the Expense Summary in the Brochure that we mailed the office. Do you have the Expense Summary available at this time?”* (Final 1998 SMS Survey Questionnaire)

Interviewers may also offer to wait on the telephone while the responding physician or their proxy obtains the expense summary worksheet.

The purpose of the expense summary worksheet is to improve the accuracy of the self-reported practice expense data. The worksheet provides physicians the opportunity to identify their dollar share of their practice's expenses before the survey is administered. We believe that the use of such an instrument improves the accuracy and validity of the practice expense data. Toward these ends, we believe that an enhanced version of the worksheet should become a formal part of the survey and that the expense questions should be more closely linked to tax information for the respondent's practice. However, a potential cost of making the worksheet more rigorous and a mandatory part of the survey is the possible adverse effect on response rates.

**Recommendations:** Our discussions with AMA staff regarding an enhanced version of the worksheet that links to tax information have been constructive. We recognize their legitimate concerns over reducing the response rates to the SMS survey or other practice expense surveys. We believe, at the very least, that the worksheet instructions should indicate that:

1. The worksheet should be completed before the interview.
2. The practice manager or practice accountant should complete the form.
3. Tax records should be referenced to complete the worksheet. (However, tax records would not be submitted or audited.)

A more stringent set of conditions for fulfilling the questionnaire would be to *require* that all three conditions be satisfied before the expense information would be used by HCFA in its calculations. The process could be verified by having the practice manager sign the completed worksheet and then fax or mail it to the survey contractor. Verification may be tedious and costly, but without verification of the practice expense data there is little sense in making the worksheet instructions more burdensome. A possible consequence of requiring these conditions is lower response rates and, thus, a lack of representativeness of the sample. One option to requiring that all conditions be met is to identify those respondents who do complete the worksheet before the interview and those who use a practice

manager (or accountant) to complete the form. HCFA could then choose not to use information from a respondent who did not complete the worksheet before the interview and/or who did not use a practice manager, or HCFA could choose to weight these responses less in the calculation of practice expense per hour. Alternatively, HCFA could conduct additional analyses to see if practice expenses differ between those individuals who comply with suggestions 1-3 and those who do not, and then choose whether or not to use all responses based on the outcome of that analysis.

We believe that using a worksheet that instructs respondents to have a practice manager complete it before the interview and that links to the practice's tax information will increase the accuracy and validity of the expense information. In addition, we believe that, to the extent possible, the worksheet should refer respondents to specific lines on their tax forms. By providing respondents with detailed information on where to find the information requested on the worksheet, question misinterpretation would be limited. One could push this approach further by indicating that some physicians may be selected at random and their responses checked against their tax forms. However, we do not recommend this approach; the AMA and specialty groups would most certainly not agree to proceed in this way, and we share their strong concern that such an approach would likely have an extremely detrimental effect on response rates.

### *Accounting for Mid-level Providers, Pharmacy, and Lab Charges*

In evaluating the SMS data, HCFA asked Lewin to consider which specialties may be affected by including mid-level or limited-license practitioners in the SMS practice expense data and to develop alternative methodologies to address it. HCFA is concerned that it may be paying for services twice if mid-level practitioners bill separately when their costs are included in the SMS data as a practice expense. The potential problem also applies to pharmacy and laboratory charges.

Currently, the SMS survey instrument does not explicitly instruct physician owners to exclude those expenses associated with mid-level and limited-license providers, pharmacy, and laboratory that were billed separately to Medicare. The survey asks physicians about their tax-deductible practice expenses and, because salaries of employees of the practice and pharmacy and laboratory charges are legitimate tax-deductible expenses, we believe that physicians are including these costs in their calculations of practice expenses.

Without surveying those specialties that use mid-level providers, it is difficult to ascertain to what extent the practice expense per hour values from the SMS survey may be overstated due to expenses attributable to self-billed mid-level providers. To demonstrate those specialties where the potential **may** be large, we calculated the percent of practice expenses per hour attributable to clinical labor for each specialty, using the SMS data calculations submitted to HCFA. These results are reported in the table below.

AMA Specialty Designation	Clinical Labor as % of Total Practice Expense per Hour
Anesthesiology	40.1%
Allergy/Immunology	28.7%
Emergency Medicine	26.2%
General/Family	22.0%
Card/Thor/Vasc Surgery	21.8%
Obstetrics/Gynecology	20.3%
Dermatology	19.8%
Pediatrics	19.1%
Ophthalmology	19.0%
Cardiovascular Disease	18.5%
Pathology	17.8%
Phys Med/Rheumatology	17.5%
Pulmonary Disease	17.0%
General Internal Medicine	16.8%
Radiology	16.2%
Orthopedic Surgery	16.0%
Otolaryngology	15.9%
Other Specialty	15.7%
Gastroenterology	13.8%
Oncology	12.7%
General Surgery	12.6%
Urological Surgery	11.6%
Neurological Surgery	11.0%
Plastic Surgery	10.0%
Neurology	7.8%
Psychiatry	7.8%
Average	17.5%
Standard Deviation	6.7%

The percentages reported in the table above indicate in which specialties the issue of separately billed mid-level providers may be the most (and least) problematic. For example, certified nurse anesthesiologists are allowed to bill separately and **could** account for the large share of clinical labor practice expense for anesthesiologists. Meanwhile, psychiatrists seem to use relatively little clinical labor and, thus, their practice expense per hour cannot be significantly inflated due to mid-level providers.

**Recommendations:** Although the table displaying clinical labor practice expenses as a percentage of total practice expenses may be instructive, the information reported cannot be used in any accurate and fair manner to adjust practice expenses for offsetting revenue generated by mid-level providers. To account for Medicare payments for separately billed services provided by mid-level providers, HCFA must obtain information on these payments for each specialty. We recommend that future practice expense surveys be amended to include questions relating to mid-level providers that separately bill Medicare. We believe that the survey conducted by the Society of Thoracic Surgeons (STS), which the AMA helped design, demonstrates the types of information that should be collected. The questions

identified the physician's dollar share of practice expense attributable to mid-level providers' salaries and the physician's share of offsetting revenue received for services provided by mid-level providers. With this information, it would be possible to reduce the practice expense values by the offsetting revenue generated by mid-level providers for each practice. A similar approach could be used for prescription drugs and laboratory expenses. Respondents could be asked to identify revenue received for prescription drugs and laboratory services, which could then be excluded from the practice expense per hour calculation.

For existing survey data, it may be possible to back out of the practice expense pools those expenses associated with separately billed pharmacy and laboratory. These expenses could be identified using Medicare claims data. Total Medicare payments for these items could be subtracted from the practice expense pools derived from the SMS data. This approach is unlikely to be successful for separately billed services performed by mid-level providers, because different specialties use mid-level providers to provide similar services. Therefore, it would be difficult to identify how much of Medicare's reimbursements for mid-level providers to subtract from each specialties' practice expense pool. An allocation approach may be developed that could determine what percent of the total reimbursements to subtract from each specialty, but any approach would likely be susceptible to criticism. We will be examining this approach of adjusting the practice expense pools for pharmacy and laboratory Medicare payments in future work.

### ***Uncompensated Care***

Lewin was tasked by HCFA to determine if the effect of uncompensated care is significant and, if so, to develop methodologies for adjusting the SMS data. Our meetings with specialty groups highlighted the concern that practice expenses incurred while providing care under the Emergency Medical Treatment and Labor Act (EMTALA) be considered a legitimate practice expense and accounted for in the HCFA PE methodology. However, data on expenses attributable or hours expended by physicians as a result of EMTALA are limited. Data from the 1994 SMS indicate that 67.7% of all physicians provided *charity care*, defined as care provided for free or at reduced fees because of patients' financial need. Of the physicians providing charity care, physicians spent, on average, 7.2 hours or 12.4% of their working hours providing charity care. These findings demonstrate that physicians do commit resources in the form of practice expense and physician work to the provision of charity care. However, past and current SMS surveys do not collect information on the extent of EMTALA-induced care. The 1999 SMS survey included questions on charity care and bad debt.

**Recommendation:** Providing EMTALA-induced uncompensated care requires practices to commit resources, for which there exists no direct reimbursement mechanism. The problem can be viewed as one of missing data. If a bill was generated for each procedure that was uncompensated and the bill was provided to HCFA, the practice expense pools, through total hours worked, could be made to reflect time spent providing uncompensated care. (Recall that the practice expense pools are equal to the product of the practice expense per hour values and total Medicare hours worked.)

It would be difficult to adjust the practice expense pools using existing SMS data. We are not aware of any data that would permit us to estimate EMTALA-induced patient care hours from the charity care

hours collected in previous SMS surveys. In the future, the necessary data on patient care hours could be collected through the SMS or similar surveys. We are concerned, however, that respondents may have a limited ability to distinguish between EMTALA-induced patient care and more general charity care. Carefully defining EMTALA-induced patient care and providing examples may alleviate part, or all, of this problem.

Two pieces of information are needed from each practice to appropriately adjust the practice expense pools to account for EMTALA care, total Medicare patient care hours and EMTALA-induced patient care hours. If these data are available, we can calculate the ratio by which the practice expense pools would need to be adjusted to account for EMTALA-induced care. This ratio is equal to the sum of the total Medicare patient care hours and the EMTALA-induced patient care hours divided by the total Medicare patient care hours.

$$\text{Ratio to Adjust PE Pools for EMTALA} = \frac{\text{Total Medicare patient care hours} + \text{EMTALA-induced patient care hours}}{\text{Total Medicare patient care hours}}$$

This ratio can be constructed at the specialty level by using the following steps:

1. Calculate estimates of Medicare patient care hours for each practice by multiplying the total patient care hours reported for the practice (excluding uncompensated EMTALA-induced care) by the percent of total practice revenue received from Medicare.
2. Create total Medicare patient care hours for each specialty by summing across practices, applying the appropriate weights to develop population estimates.
3. Repeat Step 2 using the amount of EMTALA-induced patient care hours reported by each practice.
4. Create ratio to apply to practice expense pools by adding the results from Steps 2 and 3 and dividing through by the results from Step 2.

With this ratio calculated for each specialty, the specialty-specific practice expense pools could be inflated and then HCFA's allocation method would be applied to the new pools.

HCFA may also consider adjusting the EMTALA-induced patient care hours collected from respondents to account for the fact that some payments are ultimately received for these services. Lewin's recent work with emergency physicians and other groups suggests that providers could expect to recover 10% of payments owed to them after 120 days. Therefore, an adjustment to hours of roughly this amount may be appropriate.

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## C. Issues Related to Patient Care Hours

### 1. How Patient Care Hours Are Defined

The patient care hours data that HCFA uses in its methodology are SMS values based on the number of hours of direct patient care provided during a typical week. The SMS survey defines patient care hours as only those hours spent in “direct patient care,” which, for most specialties, is defined as hours spent “seeing patients, performing surgery, or providing other related patient care services.”<sup>9</sup> This question, however, is placed at the beginning of the SMS survey as a screening question to guarantee that all physicians responding to the survey spend greater than 20 hours per week in patient care. A more extensive series of questions on patient care hours (Questions A1-A8 in the Final 1998 SMS survey questionnaire) in the *Physician Weekly Activities* section of the SMS survey details more clearly how the AMA defines patient care hours. In this section, the physician is asked a series of eight questions that refer to the time spent by the physician respondent “during the most recent complete week of practice”. According to the SMS survey instrument, this series of questions collects time data on physician activities spent in the following activities:

- Seeing patients in the office
- Seeing patients in the ER/outpatient clinic
- Making house calls/seeing patients in extended care sites
- Seeing patients in the operating/labor/delivery room
- Making hospital rounds, but not hours on call spent idle
- Holding phone conversations, physician consultations, or reviewing test results
- Conducting administrative/professional activities not related to patient care
- Total hours spent performing medical and administrative activities

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<sup>9</sup> The specialties for which the AMA tailors its definition of patient care hours are: Anesthesiology, Dermatology, Nuclear Medicine, Radiology, Radiology/Oncology, Forensic Pathology, and Pathology. Patient care hours in Anesthesiology are defined as “personally anesthetizing patients, supervising nurse anesthetists, managing patients in ICUs, conducting pre-anesthesia visits, hospital rounds, and consultations.” For Dermatology, Nuclear Medicine, Radiology, and Radiology/Oncology, patient care time is defined as “reading films, performing radiodiagnostic procedures, providing radiotherapy, supervising technicians and paraprofessionals, and participating in consultations.” For Forensic Pathology and Pathology, patient care time is defined as “surgical consultations, time spent examining surgical specimens, performing autopsies, conducting non-surgical laboratory procedures, and supervising technicians and paraprofessionals.”

By breaking out the hours spent in patient care by the eight different patient care tasks listed above, the SMS survey provides a clear definition of patient care activities. In contrast, the screening question toward the beginning of the SMS survey does not clearly define hours spent in patient care. Additionally, the discrepancy between hours spent in patient care in a “typical” week and hours spent in “the most recent” week of practice will contribute to different values of patient care hours. “Typical hours” spent providing patient care per week is more representative of a physicians’ general practice patterns whereas “most recent week” will probably be easier for the physician or their proxy to answer. One specialty group also raised issue with HCFA’s decision to use SMS time data, which is based on a “typical” week rather than a physician’s “average” week. For a given specialty, hours for an “average” week of practice would include those weeks where a physician worked either much more or much less than normal. Hours spent in a “typical” week of practice, however, might cause the physician to ignore these nontypical values in their response.

**Recommendations:** The practice expense per hour calculation in the HCFA methodology uses data on hours from the “screening” question in the SMS survey. We believe that data reliability and accuracy would be increased by explicitly stating which activities to include and exclude in reporting patient care hours. The set of detailed questions on hours worked in patient care provides a clearer description of hours spent in patient care and other activities and, in general, appears more consistent with the data needed by HCFA. However, the hours worked questions should relate to the number of hours spent in patient care in an “average” week, rather than hours spent in the “most recent” week. If the screening question continues to be used, HCFA might consider recommending that the AMA change the question from “typical week” to “average week.”

One option for ensuring the accuracy of hours that was discussed at our September 15<sup>th</sup> specialty group meeting would be to incorporate a question in the SMS survey that asks each physician owner the number of hours that his or her office is open. This information could then be used to construct indirect, and direct practice expenses per hour. Alternatively, practice expenses per hour could be calculated by dividing practice expenses by 40 hours per week or 2,080 hours per year. The advantage to this approach is that less (or no) error is introduced into the physician time data. Intuitively, these approaches may also make sense since, as has been argued by some outside commentators, the majority of practice expenses are usually incurred during office hours. The problem with these approaches, however, is that the hours in the practice expense per hour values under the modifications are not consistent with the total Medicare patient care hours derived from the Harvard/RUC time data and the HCFA utilization data.

For HCFA’s purposes, the patient care hours reported by respondents should include “billable” hours. We foresee potential problems if the hours data collected by future practice expense surveys and used by HCFA are not consistent with the time values in the Harvard/RUC database. Specifically, if the two definitions of “patient care hours” do not agree, error may be introduced into the HCFA methodology. The HCFA methodology uses SMS practice expense and physician time data to calculate practice expense per hour for each cost category. Time data is taken primarily from the AMA’s RUC surveys and Harvard study results, which are used to determine the total number of physician hours for each specialty. To determine the practice expense pool for each cost category (by specialty), the practice

expense per hour, calculated from the SMS survey data, is multiplied by total physician hours for each specialty. Therefore, if the two time values used to calculate practice expense pools are inconsistent, the practice expense pools may be biased. For example, if the Harvard/RUC time data were based on a broader definition of patient care hours than the SMS survey data, “too many” hours may be assigned to a particular specialty relative to the SMS data. This may result in overestimating the practice expense assigned to each procedure for this specialty. Similarly, using the hours that a doctor’s office is open, if different than the amount of hours spent providing patient care, would bias the practice expense pools. Therefore, we recommend against using the 40 hours per week approach.

We provide further discussion of issues related to patient care hours and validating the accuracy of reported hours in the Chapter 3.

## **XI. OTHER ISSUES**

Our recommendations also focus on additional issues not yet discussed within this report. They include revising the way the AMA currently trims and edits SMS data, updating the SMS data to a common year, and calculating a 3-year or multi-year rolling average updated with new SMS data when appropriate.

### ***Data Trims and Edits***

In the practice expense data the AMA provided to HCFA, the data were trimmed by making the following exclusions:

1. Physicians who practiced medicine fewer than 26 weeks the prior year
2. Cases with a missing response to the question on typical hours in direct patient care per week or cases where any of the individual expense items identified in the SMS survey were missing
3. Cases where total expenses were zero.

**Recommendations:** We recommend further data edits and trims that include setting criteria for practice expense and hours spent in patient care, such that data would be excluded if they deviate significantly from the mean. One approach would be to eliminate observations where the data fell more than three standard deviations away from the geometric mean for the specialty group. This recommendation would control for outlying and erroneous data values, which might otherwise adversely affect the final practice expense per hour values for specialties.

As reported in the July 17, 2000 *Federal Register*, HCFA has decided not to take action based on this recommendation, citing a fear of reducing sample size and eliminating valid outliers.

### ***Inflating Practice Expense Values to a Common Endpoint Year***

The current methodology uses data from 1995 through 1997 SMS surveys. We are concerned that variations in sample sizes for a given specialty across the years will disadvantage those specialties that

were more heavily sampled in the early years. In addition, if supplemental surveys are incorporated, the practice expenses for these specialties would be inflated due to an increase in the cost of providing medical services.

**Recommendations:** We recommend that the practice expense per hour information from various SMS surveys be standardized into a common base year. In particular, we believe that data from past surveys should be inflated to a common endpoint year.

At the time of this writing, HCFA has accepted this recommendation and will standardize the practice expense data to reflect a common base year.

### ***Update Practice Expense per Hour Using a Rolling Three-year Average***

Given that the medical care field is a dynamic, changing system with constant technological improvements, we believe it is important that the SMS data used by HCFA be updated with new SMS data on a routine basis. In addition to natural fluctuations in practice expense per hour attributable to real changes over time, change will be observed in the SMS data from year to year due to sampling error.

**Recommendations:** We recommend that HCFA update practice expense RVU values each year using a 3-year rolling average, including the most recent SMS data collected from physicians. While one could justify not updating practice expense data by assuming that relative practice expenses per hour for the specialties do not change significantly from year to year, we believe that this assumption is questionable and would require further analysis of future data.

HCFA accepted this recommendation, but will be using a 4-year rolling average in an effort to minimize the effect of sampling error.

## **XII. CONCLUSIONS**

In this chapter we have assessed the SMS survey's compatibility to the "top-down" methodology used by HCFA in implementing resource-based PE RVUs. Our recommendations regarding the SMS survey are an attempt to increase the reliability and validity of the survey results regarding practice expense and hours so that HCFA and the physician community may be more confident in their use. Recommended short-term improvements to the currently available data concentrate on data refinement issues. Any changes to future survey efforts, including changes in methodology and protocol, as well as systematic inclusion of underrepresented or excluded provider groups cannot be implemented until 2001. Thus, these recommendations are characterized as long-term. We feel that both short- and long-term recommendations will improve the practice expense per hour data obtained from the SMS survey as well as the data gathered by other future practice expense surveys.

We also are encouraged by the possible implementation of an AMA practice-level survey that is designed to collect practice-level data on practice expense and hours spent in patient care. Although the AMA has presently suspended any future survey activity, we are hopeful that the AMA, perhaps with HCFA support, will carry out a practice-level survey. If so, much attention and concern will be focused

on the way the practice frame is constructed, because there is no identifiable universe of practices. The SMS is based on the AMA Masterfile, which is considered the “gold standard” for the universe of physicians. No such standard sample frame exists for physician practices. Therefore, we believe that careful validation studies of any practice sample are warranted.

### **XIII.CHAPTER IV: OVERSAMPLING AND SUPPLEMENTAL SURVEY DATA**

#### **XIV. INTRODUCTION**

HCFA's practice expense methodology has attempted to account for underrepresented specialties by constructing a crosswalk of AMA specialty designations to HCFA specialty designations. In addition, limited-license and mid-level providers are not included in the SMS survey sample, and HCFA has developed a similar crosswalk for these groups. There has been some debate in the medical specialty community as to the appropriateness of some of HCFA's crosswalks.

The best way to avoid concerns about the validity of the crosswalk is to increase the sample sizes for those provider groups that are currently underrepresented in the SMS survey so that a crosswalk among groups is no longer necessary. Oversampling those underrepresented groups in the SMS data would increase the size of the data sample on practice expenses and, thereby, the validity of the estimates for these groups. Similarly, survey efforts by underrepresented or non-represented groups would also provide the necessary data to construct practice expenses per hour.

The STS, for example, administered a practice expense survey to 349 sampled thoracic surgeons to supplement the data from the SMS survey. In the original SMS data used by HCFA, there were approximately 40 completed SMS surveys from thoracic surgeons (10 of whom were vascular surgeons). The survey instrument used in the STS survey was the same instrument used in the SMS survey, with select questions removed and seven additional questions included. According to the AMA, the STS received 105 useable supplemental practice expense surveys of 210 eligible surveys (i.e., surveys of physician owners), for a response rate of 50%. We believe that this example is significant because it demonstrates that supplemental surveys can be conducted which maintain uniformity with the SMS survey by following the AMA's survey format, using the same contractor, and allowing the AMA's SMS project team to analyze the data. Based on our recommendation, HCFA has accepted the supplemental data submitted by STS and incorporated these data into the Medicare fee schedule as reported in the final rule published November 2, 1999 in the *Federal Register*.

Both Lewin and the specialty groups recognize the value of a uniform survey format in supplemental data collection efforts, but acknowledge certain areas of concern. At our meeting with specialty groups on September 15, 1999, the issue of sample selection procedures for underrepresented and nonrepresented provider groups was discussed. It was noted that constructing samples for nonrepresented groups is problematic because they are not included in the AMA Physician's Masterfile. Therefore, to collect practice expense data, these groups would have to sample individuals from their membership. There are two potential problems with this type of sample selection. First, the sample may not be representative because it is not drawn from the population, but rather, from a given group's membership. Second, after data collection is complete, sample weights need to be constructed to account for nonresponse using information on the survey's population, which includes members and nonmembers. If little is known about nonmembers, it would be difficult to construct appropriate sample weights and, thus, properly control for nonresponse.

In addition, it was noted that it might be difficult to achieve adequate response rates for specialties that are underrepresented if surveys are fielded without securing the approval and assistance of that specialty's professional organization. It may also be hard to obtain enough responses for specialties with particularly low numbers of practitioners. As mentioned earlier in this report, the AMA waits at least 5 years before including the same physician twice in the SMS survey's sample. If smaller specialties are oversampled, it may be difficult to survey enough physicians to yield a sufficient number of completed responses without surveying the same physicians more frequently than once every 5 years. Repeated contacts may limit response rates.

### ***The Balance Budget Refinement Act of 1999 and HCFA's Interim Final Rule***

Since our initial recommendations to HCFA regarding supplemental practice expense surveys, detailed in our September 24, 1999 report, there have been two important developments. First, Congress passed the Balance Budget Refinement Act of 1999 (BBRA), which required HCFA to establish a process under which groups could submit practice expense data to affect payments in 2001 and 2002. Second, the AMA has indefinitely suspended future SMS surveys.

On May 3, 2000, HCFA published an interim final rule on submitting supplemental practice expense data to conform to the requirements established by the BBRA. The rule adopts with modification the guidelines and protocols we recommended in our previous report and sets standards for survey response rates and levels of precision. We briefly enumerate the criteria for supplemental surveys established by HCFA below:

- Physician groups must draw their sample from the AMA's Masterfile, whereas non-physician groups must develop a method to draw a nationally representative sample of members and nonmembers.
- Groups must conduct the survey based on the SMS survey instruments and protocols, including administration and follow-up efforts and definitions of practice expense and hours in patient care
- Groups must use a contractor that has experience with the SMS survey or a firm with experience conducting national multispecialty surveys of physicians using nationally representative random samples.
- The data should meet a level of precision such that the ratio of the standard error of the mean to the mean expressed as a percent is not greater than 10% for overall practice expenses or practice expenses per hour.
- The survey should achieve a high response rate of, for example, 80 to 90% and meet the other criteria before HCFA would presume national representativeness.

As stated in the rule, HCFA believes "that it is impossible and impractical to set rigid cutoffs for most of these criteria, especially for national representativeness." Instead, it suggests that if a random sample, a national representative list of providers to sample from, or a high response rate is not achieved, then the implications for data accuracy and validity need to be explored and documented.

Lewin was asked by HCFA to develop a document outlining a set of guidelines and protocols for specialty groups to follow to conduct supplemental practice expense surveys. This document emphasizes the need for the supplemental PE data collected by specialty groups to be reliable and consistent with existing SMS PE data to help ensure the reliability and validity of the data collected. The document also indicates which sections of the 1999 SMS survey should be administered, how the sample should be selected, and what field procedures should be followed.

The 1999 SMS survey is composed of 10 sections, which collect information on physicians, their practices, and their patients. Because some of this information is not relevant to the calculation of practice expense RVUs, specialty groups conducting supplemental surveys are not required to administer the complete SMS questionnaire to respondents. Only three sections of the survey were required:

1. *Main Study Screener Specifications (Contact Procedures and Eligibility)*. This section is located at the beginning of the 1999 SMS Survey.
2. *Section A: Practice Characteristics*
3. *Section E: Physician Expenses*

In selecting the sample, groups were instructed to use the same criteria used in the SMS survey. Non-physician groups that are not represented in the AMA Physician Masterfile were instructed to make every effort to select a random sample of *both* members and nonmembers. One way to locate non-physician group nonmembers was by working off membership lists to identify former members. The document also suggested that it might be possible for non-physician groups to locate nonmembers through contact information obtained from the HCFA Medicare billing database. HCFA was working on putting an appropriate file together for specialty groups to use, although it was not made available in time for groups that wanted to submit data by August 2000 to affect payments in 2001. If more than one professional organization exists for a specialty, they were strongly encouraged to work together to increase the representativeness of their sample.

Groups were required to send a Practice Expense Worksheet (identical to the one sent out to SMS survey respondents) to potential respondents. It was recommended that specialty groups undertaking supplemental surveys request that survey respondents fill out the PE worksheet *prior* to being surveyed, and answer PE questions during the survey directly off of the worksheet. In addition, an advance letter had to be sent to potential respondents, which included a brief description of the interview, the project sponsorship, identification of the survey contractor, notification that the practitioner would be receiving a call from an interviewer, and a pledge of data confidentiality. In addition, it was recommended that a contracted survey firm adopt the following SMS field procedures:

- Schedule appointments for interviews at the convenience of the practitioner.
- Establish a toll-free number that allows practitioners to complete the interview at their convenience.

- Conduct repeated callbacks (a minimum of 4) to nonrespondents before abandoning efforts to interview the physician.
- Send letters encouraging participation and addressing specific objectives to practitioners who initially refuse to be interviewed.
- Use a select group of interviewers for refusal conversion.

In response to the interim final rule on submitting supplemental practice expense data, Lewin has met with representatives from a number of groups interesting in conducting practice expense surveys. We worked closely with two groups (one a physician and one a non-physician group) that are currently conducting practice expense surveys. The other groups have expressed interest in collecting data that affect payments for 2002.

Helping the groups develop and conduct field surveys was challenging and reinforced our belief that a comprehensive, integrated survey effort for all specialties is the appropriate mechanism for collecting accurate practice expense data. Among the many challenges, securing a survey contractor was particularly difficult. Previous SMS contractors declined to participate in the survey efforts. The historical difficulty in conducting the SMS, the extremely short time period to conduct the survey, and the small number of potential respondents were, we suspect, all important considerations in their decisions.<sup>10</sup>

### ***The “Winners-Losers” Problem and the Cost Burden of Additional Survey Activities***

If collecting additional data is the responsibility of the underrepresented and nonrepresented specialty societies and other provider organizations, this process presents certain problems, namely:

- Different incentives for the “winners” and “losers” under HCFA’s current practice expense methodology to collect additional data; and
- Cost burdens for underrepresented provider groups to conduct oversampling and for nonrepresented specialties and other provider groups to conduct entire practice expense surveys.

The cost of administering a survey will be disproportionately burdensome for the smaller specialties and provider groups. Concern over the cost burden of additional surveys exposes additional issues related to cost, most importantly, the potential for differing incentives on the part of “winners” and “losers” under the current HCFA methodology to improve the reliability and validity of practice expense data through additional survey efforts.

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<sup>10</sup> Groups wanting to submit data to HCFA to affect payments for 2001 had 3 months to field a survey and tabulate responses.

If societies and associations are asked to pay for their own survey efforts, those who receive what they see as adequate or favorable practice expense per hour values in HCFA's existing methodology could choose not to collect additional data. These "winners" will instead defer to HCFA's current values, whether correct or incorrect, as their valuation of practice expense per hour. On the other hand, the perceived "losers" under the current HCFA methodology will have exceptional incentives to fund additional survey efforts to collect data that more accurately reflect their practice expenses. Our experience with groups expressing interest in conducting practice expense survey as a result of provisions in the BBRA confirmed our expectation.

In addition, even those specialty societies that decide to sponsor their own practice expense surveys are not obligated to share their data with HCFA. Our expectation is that only those societies that believe their supplemental practice expense data will support higher practice expense payments to their members will decide to share these data with HCFA. In the end, if the responsibility for the decision to collect supplemental data lies only with the underrepresented and nonrepresented specialties themselves, the integrity of the system is likely to suffer.

**Recommendations:** We see two options that could help avoid some of the potential problems of collecting supplemental survey data. The first option is to work towards a privately funded, but fully integrated survey effort. This system would integrate the supplemental survey efforts into the AMA's SMS survey activities in the sense that the survey formats, edits, protocols, timelines, analysis, and contractors would be the same. This option would increase the reliability of the data by stressing uniformity in data collection efforts and would take advantage of contractor knowledge gained through practice expense survey experience. However, it would not lessen the biases introduced by the winners/losers scenario and the cost burden on provider groups that must administer their own surveys.

A second option is that, eventually, HCFA and AMA could work toward a (partially or fully) publicly funded, AMA-administered survey effort, which includes a routine oversampling of underrepresented provider groups, as well as expanding the survey effort to include historically nonrepresented groups. This option addresses the bias introduced by the winners/losers scenario and the cost burden on provider groups that must administer their own surveys. Non-physician groups may be reluctant to allow the AMA to collect data for them. If this is so, an alternative organization could be used to coordinate the non-physician group survey effort and work with the AMA to ensure consistency. The decision of the AMA to discontinue survey activities may require HCFA to reevaluate the feasibility of an integrated survey effort under the guidance of the AMA. Nevertheless, we maintain our recommendation presented in our September 24, 1999 report that practice expenses should be updated regularly through an integrated survey effort and believe that discussions between the AMA and HCFA in this respect would be beneficial.

In talking with AMA staff, it was roughly estimated that surveying those specialty groups not represented in the SMS survey would cost approximately \$200-\$250 per useable response. Assuming this rate, and that 75 useable responses for each of 36 specialty groups (the number of groups crosswalked) are needed, the total cost of supplemental survey activities would be \$675,000. Requiring less than 75 useable responses for each survey could reduce costs. For those specialty groups being oversampled, the additional survey data should supplement existing SMS information for

the specialty, and the desired number of additional responses should be based on the existing sample size. In addition, if a multiyear rolling average is used, it might not be necessary to conduct supplemental surveys every year. Finally, AMA staff have suggested that, as an alternative to costly telephone surveys, carefully administered mail surveys may be a viable alternative. Although this is an alternative that HCFA should consider, it is important to recognize that more support and follow-up is likely to be necessary for a mail survey than a telephone survey. In addition, the data would have to be manually entered into a database. All these factors will offset some of the potential savings of conducting a mail survey, but this option should be fully explored. Finally, compensation paid to respondents may be necessary to ensure an adequate response rate.

## **XV.CHAPTER V: VALIDATING PATIENT CARE HOURS**

### **XVI.INTRODUCTION**

This chapter focuses on the two types of physician time data used in deriving PE RVUs: patient care hours obtained from the SMS data and procedure time data obtained from the Harvard studies and the RUC. HCFA uses the SMS data on patient care hours to construct practice expenses per hour and uses the Harvard/RUC procedure time data, along with procedure frequencies from Medicare claims data, to convert the practice expense per hour values to practice expense pools for each specialty.

In the original contract with HCFA, Lewin was asked to develop options for validating the Harvard/RUC procedure time data. Since then, HCFA has contracted with another health care consulting company to develop approaches to validating the Harvard/RUC data. Recognizing that the accuracy and reliability of the patient care hours is crucial to the validity of the methodology, HCFA redirected Lewin to identify and review different approaches to validating the patient care hours obtained from the SMS data. In so doing, we have reviewed the final report on validating the Harvard/RUC data in an effort to make the two studies consistent and complementary. It is important to note that although HCFA directed Lewin to create and identify methods for validating the SMS patient care hours, HCFA did not ask Lewin to simulate or implement these methods. Although Lewin did run a few simulations to create the methodologies and presents the results in this chapter, the primary goal of this chapter is to present and describe the validation methodologies.

As noted above, HCFA's current PE "top-down" methodology relies on PE per patient care hour ratios for each physician specialty. The accuracy and validity of HCFA's methodology thus relies on both accurate PE and patient care hour data. In many respects, validating patient care hour data may be more difficult than validating PE data. Ultimately, PE data must correspond with a physician practice's tax and other financial records. The AMA SMS survey clearly recognizes this by surveying physicians during tax season and by prompting respondents to complete the worksheet and to use their tax and other records when completing the survey.

In contrast, the AMA SMS survey's patient care hour data relies almost completely on the recall of responding physicians. There are many good reasons to suspect that patient care hour data may be over-reported. For example, many studies that have validated self-reported time surveys have found that respondents consistently overestimate the time spent on work and other daily activities.<sup>11</sup> In addition, some consensus also exists that physicians may be more likely than other individuals to overestimate the time spent on their professional activities. On the other hand, as physicians learn that patient care hour responses will be used to determine their PE per patient care hour and ultimately their Medicare PE payments, physicians will have an incentive to under-report patient care hours in an attempt to increase their PE per patient care hour. The possibility that patient care hour data may be

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<sup>11</sup> Juster F. T., and Stafford F.P. (1991). The Allocation of time: Empirical findings, behavioral models, and problems of measurement. *Journal of Economic Literature*, 29 (2), 471-522.

either over or underestimated is a serious concern affecting the reliability and validity of the data used by HCFA in its PE methodology.

Compounding this problem is the lack of reliable ways of validating patient care hour data. The “Gold Standard” for time measurement are time and motion studies where outside researchers follow individuals (here, physicians and other care providers) and record how their time is spent. Time and motion studies are both time-consuming and expensive. This could be especially true in the case of physicians and other care providers, because the observers most likely would have to follow their subjects as they moved from care setting to care setting. Despite being the “Gold Standard,” the results of time and motion studies would likely be disputed and, in any event, could not be easily replicated. Therefore, validating AMA SMS patient care hours data using time and motion studies probably is not a practical option. Less expensive validation alternatives do exist. For instance, some time measurement studies ask subjects to maintain a “time diary” on a daily or weekly basis. Subjects then record each day or week’s activity into the diary immediately following the end of the day or week. Although time diaries tend to be more accurate than relying on a subject’s memory of past events, the diaries are time-consuming to maintain and are often viewed as annoyances and unfair burdens by their subjects. Thus, time diary studies are often plagued by low response rates, and many respondents may not complete their diaries each day or week. For these reasons, using time diaries to validate AMA SMS patient care hours data would be administratively burdensome, expensive, and may not yield accurate, timely results.

Because the SMS survey collects self-reported data on hours worked, which relies on physician recall and is not easily verifiable, it is subject to imprecision and potentially susceptible to manipulation. Supplemental data independently collected by specialty groups and physician time data collected to update PE RVUs in the future will suffer from similar problems; particularly now that the role of SMS collected physician hours information in the PE policy process is well understood by physician leadership.<sup>12</sup> It is therefore important that our validation approaches be capable of accomplishing two goals: 1) identifying inaccurate existing data and 2) identifying potential biased newly collected data, which may be manipulated to produce artificially high practice expense per hour values.

Attempts to validate data on the number of hours worked by physicians are inherently difficult. There exists little external data on physician hours on which to judge the validity of the self-reported hours data in the SMS survey, and any widespread use of time-in-motion studies would be prohibitively expensive. For these reasons, we believe that during the refinement process a continual effort is essential to identifying, testing, and refining various validation approaches to ensure the successful implementation of the “top-down” practice expense methodology.

In this chapter, we present four validation approaches:

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<sup>12</sup> This may or may not imply that individual physicians completing the SMS survey will appreciate these relationships.

- Method 1: Compare the SMS patient care hours reported at the beginning of the SMS survey to responses from the detailed questions on patient care hours appearing later in the SMS survey. These detailed questions ask physicians to break their patient care hours into various components and would permit a check on the internal consistency of the SMS data.
- Method 2: Calculate a ratio of total Medicare patient care hours derived from the SMS data to the total hours obtained from the Harvard/RUC data and Medicare claims data for each specialty. Ratios that differ significantly from 1.0 may be an indication of inaccurate SMS patient care hours. For a given specialty, the value of the ratio using existing SMS data can be compared to data obtained from future practice expense surveys to identify the inaccurate reporting of patient care hours by specific specialties.
- Method 3: Compare newly reported patient care hours data to historical SMS data to identify movements away from observed trends.
- Method 4: Compare SMS data on annual hours worked with annual hours data reported in the Medical Group Management Association's (MGMA) *Physician Compensation and Production Survey*. The MGMA data may be used to identify those deviations in SMS-reported patient care hours that may not be the result of natural fluctuations in physician work over time.

We recommend that HCFA use a multifaceted approach to validating hours. That is, we believe that the validation methods outlined above should be used together as each has strengths and weaknesses. For example, Method 1 is useful exclusively to check the internal consistency of data for a given year and cannot be effectively used on its own to determine if new data on patient care hours have been inaccurately reported to bias the practice expense per hour values. Although Method 2 also has the potential to be used to check the reliability of data from a single year, the primary use of Methods 2 through 4 is to validate new data that is not currently used to construct PE RVUs. Taken together, however, we believe that the validation approaches discussed in this paper could be useful to reliably identify specialties whose reported patient care hours require additional scrutiny. A brief comparison of the four methodologies, their validation applicability, shortcomings, and strengths is presented in **Exhibit 1**.

## Exhibit 1: Description of Four Validation Methods

	Method 1	Method 2	Method 3	Method 4
<b>Brief Description</b>	Comparison of responses to two similar questions from the SMS survey that both collect physician time data	Comparison of the ratio of SMS time pools to time pools based on Harvard/RUC procedure time data and Medicare frequencies	Comparison of new time data from SMS or other PE survey to historical SMS time data	Comparison of the ratio of SMS annual hours worked to annual hours worked collected by MGMA
<b>Validation Applicability</b>	Validation of internal consistency of both existing SMS data and new time data	Validation of both existing and new patient care hours data	Validation of new patient care hours data	Validation of new patient care hours data
<b>Potential Strengths of Method</b>	Easy to accomplish and can be used to identify and remove inaccurate data at the individual respondent level	Validates SMS time data to best available source of external data  Applicability to validate both existing SMS data and new patient care hours data  Numerous assumptions are required to perform the analysis	AMA maintains a substantial database of historical SMS time data	Limits errors because MGMA data is updated annually, which allows comparison of SMS time data to time data collected in the same year
<b>Potential Shortcomings of Method</b>	Limited to internal consistency checks for a given year  Not useful in the identification of biased data	Dependence on HCFA crosswalk  Potentially too broadly defined SMS hours  SMS data not Medicare specific	Historically non- and underrepresented physicians are not included in database and cannot be validated by this method	Two sources define annual physician hours in a slightly different manner  Two sources define specialty designations differently  MGMA is a nonrepresentative sample of physicians

The remainder of this chapter is organized as follows. In **Section II** we describe how the physician time data are used in the practice expense methodology, and we discuss the need for validation. **Section III** presents some of the relevant background on the SMS survey and limitations of the SMS data. We discuss our four validation approaches in detail in **Sections IV** through **VII**. We conclude with a brief summary and discussion of next steps in **Section VIII**.

## **XVII. HCFA'S PRACTICE EXPENSE METHODOLOGY AND THE IMPORTANCE OF VALIDATING HOURS**

### **A. How Time Data Are Used in the HCFA PE Methodology**

HCFA's PE methodology employs the SMS physician-level data on patient care hours as well as the procedure-level time data from the original Harvard studies to develop work RVUs and the RUC updates. The AMA's SMS survey collects information on the number of hours physicians spend in patient care activities per week, whereas the Harvard/RUC data reflect the time involved in performing individual medical procedures.

HCFA's PE methodology has two distinct steps that incorporate physician time data. First, SMS time data are used with practice expense data to calculate an average practice expense per hour by specialty, and, second, HCFA uses the Harvard/RUC time data to calculate total physician hours. Multiplying the average practice expense per hour values for each specialty by the specialty's total physician hours creates the practice expense pools, which are then allocated across procedures. These two steps are described below.

#### **1. Calculating Average Practice Expense Per Hour**

HCFA used the AMA's SMS survey data on practice expenses and physician patient care hours to calculate an average practice expense per hour for each specialty. However, because the SMS survey is at the physician level, each physician owner's dollar share of practice expenses and his/her patient care hours were adjusted for the total number of physicians in the practice to calculate a practice expense per hour at the practice level. The following three steps were used to calculate practice expense per hour for each practice:

1. Total practice expenses = dollar share of practice expenses for the responding physician owner  
\* number of physician owners in the practice;

2. Total physician hours = (patient care hours for the responding physician owner \* number of physician owners in the practice) + (average patient care hours per employed physician<sup>13</sup> within specialty \* number of physicians employed by the practice); and
3. Practice expense per hour = Total practice expenses/Total physician hours.

Practice expenses per hour were then weight-averaged across all responding physician owners within each specialty.

## **2. Calculating Total Physician Hours and the Practice Expense Pools**

HCFA used information from the Harvard/RUC physician time studies and Medicare claims data to calculate total physician hours by specialty. Total hours were calculated in two steps:

1. Total hours per procedure by specialty were calculated as the product of the time it takes to perform a procedure, obtained from the Harvard/RUC data, and the frequency with which that procedure was performed by each specialty, obtained from the Medicare claims data.
2. Hours from Step 1 were aggregated across procedures for each specialty.

The practice expense pools were then constructed as the product of the average practice expense per hour (calculated as described in Subsection 1) and total physician hours spent providing services to Medicare patients.

## **B. Importance of Validating Hours**

As shown above, patient care hours for physician owners and employees are fundamental components to calculate the specialty practice expense pools. The accuracy of the hours data affects the quality of the PE RVUs derived from the “top-down” methodology. Any systematic underreporting (or overreporting) of physician patient care hours by either owners or employees will result in an overestimation (or underestimation) of the average practice expense per hour for the specialty. As a result, the practice expense pool for that specialty will also be overestimated (or underestimated). Similarly, overreporting (or underreporting) of hours will result in an underestimation (or overestimation) of the practice expense pool. Under either scenario, HCFA’s methodology will allocate an inappropriate amount of practice expenses to the procedures done by physicians in the specialty. However, because HCFA is required to maintain budget neutrality, which dictates that total payments remain unchanged, errors in physician hours for a given specialty, or even across all specialties, will have no effect on total Medicare payments in the short-term.<sup>14</sup> However, the equity of the resource-based

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<sup>13</sup> Only employed physicians who work 20 hours per week or more are included in the calculation.

<sup>14</sup> Furthermore, the misallocation of Medicare payments will not occur if physicians across all specialties either overstate or understate patient care hours to the same extent.

practice expense system at the physician specialty level, if not the individual physician level, relies on accurate and reliable information on physician hours worked across the specialty groups.

Ensuring the reliability of the patient care hours reported in the SMS survey requires applying validation techniques. However, the frequency with which validation is needed depends on if and how HCFA incorporates new data on practice expenses and hours worked into the current PE methodology. Earlier in this report, we recommended annually updating the PE RVUs with current time and practice expense data using a 3-year rolling average. Data for those specialties historically not represented or underrepresented in the SMS survey would be updated regularly once data became available. The applicability of validation depends upon HCFA's decision to follow or not to follow our recommendation to regularly update the time and practice expense data. Below, we consider how HCFA might use validation under three scenarios.

- ***Scenario 1: HCFA continues to use the crosswalk for underrepresented specialties and those specialties not represented in the SMS survey and does not update PE RVUs using the most current data.*** Currently, HCFA crosswalks specialties with limited SMS data to specialties designated in the Medicare claims data with available SMS data. Under this scenario, HCFA continues to use this crosswalk and does not incorporate any new data. Validation is only needed to ensure the accuracy of existing SMS data on patient care hours. Method 1 and, perhaps, Method 2 may be useful in this case.
- ***Scenario 2: HCFA decides to update SMS data once to include underrepresented specialties and those specialties not represented in the SMS survey.*** Validation in this case is needed to check existing data and to analyze the credibility of any new data collected from underrepresented specialties or specialties not represented in the SMS survey. The types of approaches that may be used to validate these data are limited because the non-physician groups have no historical SMS data and, whereas the underrepresented specialties have some historical SMS data, the number of observations may be too small to be useful. These SMS data would therefore need to be validated against an external data source. Method 2 could be used in these cases, since it validates against the Harvard/RUC time data. For the physician specialties, Method 4, which uses data from the MGMA, could also be used, but this approach could not be used for non-physician specialties whose hours data are not reported in the MGMA's *Physician Compensation and Production Survey*.
- ***Scenario 3: HCFA regularly updates PE RVUs using most current PE and patient care hours data.*** Lewin's recommendations call for using a 3-year rolling average that incorporates the most recently collected data. These recommendations are based on the view that the health care field is dynamic and specialties will experience changes in practice patterns from year to year. HCFA must be able to distinguish between changes that are natural progressions in labor markets and changes that are the result of inaccurate reporting by physicians. To update SMS data and achieve reliable results, the new data must be validated before it is used to calculate the practice expense pools. We believe each of the four methods outlined above would be useful.

## XVIII.A REVIEW OF THE SMS SURVEY AND PHYSICIAN PATIENT CARE HOURS

The SMS survey is an annual, nationally representative physician survey. The core component of the survey that relates to the HCFA practice expense methodology solicits information from physicians on practice expenses, weekly activities, and hours worked. The survey samples all non-federal physicians who spend the greatest proportion of their time in patient care, including office- and hospital-based physicians, but excluding residents. The sample is developed from the AMA's Physician Masterfile, which includes information on every doctor of medicine in the United States, including members and nonmembers of the AMA.

The data on patient care that HCFA uses in its methodology are SMS values based on the number of hours of direct patient care provided by a physician during a typical week. The SMS survey defines patient care hours as those hours spent in "direct patient care," which, for most specialties, is defined as hours spent "seeing patients, performing surgery, or providing other related patient care services."<sup>15</sup> This question appears at the beginning of the SMS survey as a screening question to guarantee that all physicians responding to the survey spend more than 20 hours per week in patient care.

A more extensive series of questions on patient care hours appears in the *Physician Weekly Activities* section (Questions A1-A8 in the Final 1998 SMS survey questionnaire), which details more clearly how the AMA defines patient care hours. In this section, physicians are asked a series of seven questions that refer to the time spent by the physician respondent "during the most recent complete week of practice." According to the SMS survey instrument, this series of questions collects time data on the following physician activities:

- Seeing patients in the office
- Seeing patients in the ER/outpatient clinic
- Making house calls/seeing patients in extended care sites
- Seeing patients in the operating/labor/delivery room
- Making hospital rounds, but not hours on call spent idle

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<sup>15</sup> The specialties for which the AMA tailors its definition of patient care hours are: Anesthesiology, Dermatology, Nuclear Medicine, Radiology, Radiology/Oncology, Forensic Pathology, and Pathology. Patient care hours in Anesthesiology are defined as "personally anesthetizing patients, supervising nurse anesthetists, managing patients in ICUs, conducting pre-anesthesia visits, hospital rounds, and consultations." For Dermatology, Nuclear Medicine, Radiology, and Radiology/Oncology, patient care time is defined as "reading films, performing radiodiagnostic procedures, providing radiotherapy, supervising technicians and paraprofessionals, and participating in consultations." For Forensic Pathology and Pathology, patient care time is defined as "surgical consultations, time spent examining surgical specimens, performing autopsies, conducting non-surgical laboratory procedures, and supervising technicians and paraprofessionals."

- Holding phone conversations, physician consultations, or reviewing test results
- Conducting administrative/professional activities not related to patient care
- Total hours spent performing medical and administrative activities (the sum of time spent performing the seven activities listed above)

By dividing hours spent in patient care into different tasks, the SMS survey provides a clear definition of patient care activities. In contrast, the screening question toward the beginning of the SMS survey does not define hours spent in patient care in terms of its components.

Lewin has offered a recommendation that HCFA consider changing its methodology to use an aggregate value of the detailed work questions rather than the screening question. We believe that the use of the more detailed questions may improve HCFA's methodology by producing more valid data on hours spent in patient care.<sup>16</sup> As it stands, we are also concerned that all patient care activities reflected in the SMS hours data may not be directly associated with a specific medical procedure. This may result from the screening question on patient care hours being too broadly interpreted relative to the time reflected in the Harvard/RUC data. If this is so, the SMS time pools may be overstated relative to the Harvard/RUC time pools. The practice expense per hour values derived from the SMS data may therefore be incorrect for purposes of HCFA's PE methodology. Using data from the detailed questions on patient care hours may alleviate this potential problem. However, it may remain an issue for certain specialties and may need to be further examined during the refinement process.

## **XIX.METHOD 1: COMPARING THE RESPONSES FROM DIFFERENT SMS QUESTIONS ABOUT HOURS WORKED**

The existence of two measures of patient care hours in the SMS data, one obtained from the screening question and the other from the detailed questions in the *Physician Weekly Activities* section, provides a natural opportunity to check the internal consistency of physicians' responses. One option would be to calculate two averages for each specialty using both sets of information. Statistical tests could then be performed to see if the averages are statistically different from each other. If differences are found, however, it is unclear exactly how to proceed, because we do not know which value is more reliable. On balance, though, we have argued above that the hours obtained from the detailed questions may be more accurate, because these questions more clearly indicate what types of activities respondents should consider.

The main advantage of having two sets of SMS values is the ability to check reported hours at the respondent level. Lewin has recommended that the data on patient care hours be trimmed and edited to

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<sup>16</sup> We recommend using the detailed questions only if there is no significant difference in item non-response rates between the screening question and the detailed questions on hours.

account for outliers. Similar sorts of adjustments could be made using the two sets of hours in the SMS data. Specifically, data that are inconsistent could be eliminated from the calculation of practice expenses per hour or edited. Alternatively, the responses from the detailed questions could be used as the measure of patient care hours. We believe that the two measures of hours may not match due, in part, to physicians broadly interpreting the screening question on patient care hours and, thus, including time that should not be included, such as hours on call spent idle. Consequently, it is our belief that the total number of patient care hours derived from the series of detailed questions is likely to be more reflective of a physician's time spent providing care to patients.

The usefulness of Method 1 is to check the internal consistency of data for a given year. We foresee little value in this approach in validating data from year to year or in identifying future biased data on patient care hours. The remaining methods will be more effective at detecting data on patient care hours that may be biased because of systematic underreporting by respondents.

## **XX.METHOD 2: COMPARING SMS TIME POOLS TO HARVARD/RUC TIME POOLS**

If all of a physician's time providing care to patients can be associated with a medical procedure, it should be possible to match the total patient care hours for physicians in a specialty (SMS time pools) to the total time spent performing procedures (Harvard/RUC time pools). In theory then, this approach, Method 2, may be used to validate patient care hours reported in the SMS data.<sup>17</sup> To operationalize this approach, we first need to convert average patient care hours from SMS data to total patient care hours and then "step down" total patient care hours to the Medicare population. Moreover, our method relies on complete and accurate Harvard/RUC time data. Any imprecision in the Harvard/RUC data or in our adjustments to the patient care hours data will cause the time pools to differ. Nevertheless, by comparing SMS to Harvard/RUC time pools for each specialty we can identify those specialties for which a problem may exist and, by examining the relationship between the time pools over time, identify when the average patient care hours reported may be inaccurate.

Lewin's methodology in comparing these two sources of time data consists of three steps:

### Step 1: Calculate Harvard/RUC Time Pools by SMS Specialty

1. Multiply Harvard/RUC procedure time data obtained from HCFA's *timedata.xls* public use file by specialty-specific procedure frequencies from HCFA's *Specutil.exe* file.<sup>18</sup>

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<sup>17</sup> Method 2 is based on a preliminary model developed by staff at the AMA.

<sup>18</sup> The *Specutil.exe* file includes a Microsoft Access file that shows the number of Medicare allowed services for each procedure code by specialty. Due to the Privacy Act, the file does not contain services performed less than 10 times by a specialty. The *Timedata.xls* file provides estimates of the physician time associated with the work relative value units for services on the Medicare physician fee schedule. Both of these data sources are available at <http://www.hcfa.gov/stats/resource.htm>.

2. Aggregate the results from 1, above, across procedures by specialty to create the Harvard/RUC time pools by HCFA specialty.
3. If multiple HCFA specialties are crosswalked to one SMS specialty, aggregate the time pools by HCFA specialty for the crosswalked specialties from 2, above, to create Harvard/RUC time pools by SMS specialty. For non-crosswalked HCFA specialties, the results from 2 are the Harvard/RUC time pools by SMS specialty.

Step 2: Calculate SMS Medicare Time Pools by SMS Specialty

1. Calculate a 3-year mean of the number of physicians (less federal physicians and residents) by specialty for the period from 1995-1997 using data from the AMA's SMS survey.
2. Multiply the mean number of physicians from Step 1, above, by the mean annual hours spent in direct patient care obtained from the SMS survey by specialty. We used a weighted average of hours per year spent in patient care for physician owners and physician employees in a given SMS specialty based on the percent distribution of non-Federal physicians by employment status.<sup>19</sup> Owner physicians were identified as self-employed and employee physicians were identified as either employees or independent contractors.
3. "Step down" annual hours from Step 2, above, by the average percent of each specialty's revenue that was derived from Medicare as collected by the SMS survey in 1995-1997 to create SMS time pools for the treatment of Medicare patients

Step 3: Calculate Time Pool Ratios by SMS Specialty

1. Divide the SMS time pools by the Harvard/RUC time pools for each SMS specialty.

In **Exhibit 2**, we present the ratios of SMS time pools to Harvard/RUC time pools by specialty for those specialties that have sufficient SMS data to calculate the Medicare-specific SMS time pools. A ratio of one would indicate that the time pools matched exactly, whereas other values for the ratios would show the percent by which the time pools differed. The mean of the ratios is 1.12, indicating that the SMS time pools exceed the Harvard/RUC time pools by 12% on average. The standard deviation of 0.39 indicates significant variation in the ratios across specialties.

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<sup>19</sup> For example, General/Family Practice reported that 49.2% of the non-Federal physicians in their specialty were self-employed, 46.6% were employees, and 4.2% were independent contractors. Therefore, the weighted average of physician hours was determined by the formula:  $(0.492 * \text{hours per year in direct patient care for owners}) + ((0.466+0.042) * \text{hours per year in direct patient care for employees})$ . The percent distribution of non-Federal physicians by employment status was reported by the AMA, *Physician Marketplace Statistics*, 1996, p. 171.

### Exhibit 2: Ratios of SMS to Harvard/RUC Time Pools<sup>20</sup>

HCFA SPECIALTY	SMS SPECIALTY DESIGNATION	RATIO
<b>Non-crosswalked Specialties</b>		
03-ALLERGY/IMMUNOLOGY	ALLERGY AND IMMUNOLOGY (AI)	1.12
05-ANESTHESIOLOGY	ANESTHESIOLOGY (AN)	1.12
06-CARDIOLOGY	CARDIOVASCULAR DISEASE (CD)	0.78
07-DERMATOLOGY	DERMATOLOGY (D)	0.58
93-EMERGENCY MEDICINE	EMERGENCY MEDICINE (EM)	1.31
10-GASTROENTEROLOGY	GASTROENTEROLOGY (GE)	1.10
14-NEUROSURGERY	NEUROLOGICAL SURGERY (NS)	1.01
13-NEUROLOGY	NEUROLOGY (N)	1.12
18-OPHTHALMOLOGY	OPHTHALMOLOGY (OPH)	0.67
04-OTOLOGY,LARYN., RHINO.	OTOLARYNGOLOGY (OTO)	0.94
22-PATHOLOGY	PATHOLOGY (PTH)	1.65
37-PEDIATRICS	PEDIATRICS (PD)	N/A
24-PLASTIC SURGERY	PLASTIC SURGERY (PS)	1.24
29-PULMONARY DISEASE	PULMONARY DISEASE (PUD)	1.06
34-UROLOGY	UROLOGICAL SURGERY (U)	1.13
<b>Crosswalked Specialties</b>		
11-INTERNAL MEDICINE	GENERAL INTERNAL MEDICINE (IM)	
38-GERIATRICS	GENERAL INTERNAL MEDICINE (IM)	
39-NEPHROLOGY	GENERAL INTERNAL MEDICINE (IM)	
44-INFECTIOUS DISEASE	GENERAL INTERNAL MEDICINE (IM)	
46-ENDOCRINOLOGY	GENERAL INTERNAL MEDICINE (IM)	
82-HEMATOLOGY	GENERAL INTERNAL MEDICINE (IM)	
84-PREVENTIVE MEDICINE	GENERAL INTERNAL MEDICINE (IM)	
Total		1.52
02-GENERAL SURGERY	GENERAL SURGERY (GS)	
28-PROCTOLOGY	GENERAL SURGERY (GS)	
Total		1.40
33-THORACIC SURGERY	CARDIAC/THORACIC/ VASCULAR SURGERY	
77-VASCULAR SURGERY	CARDIAC/THORACIC/ VASCULAR SURGERY	

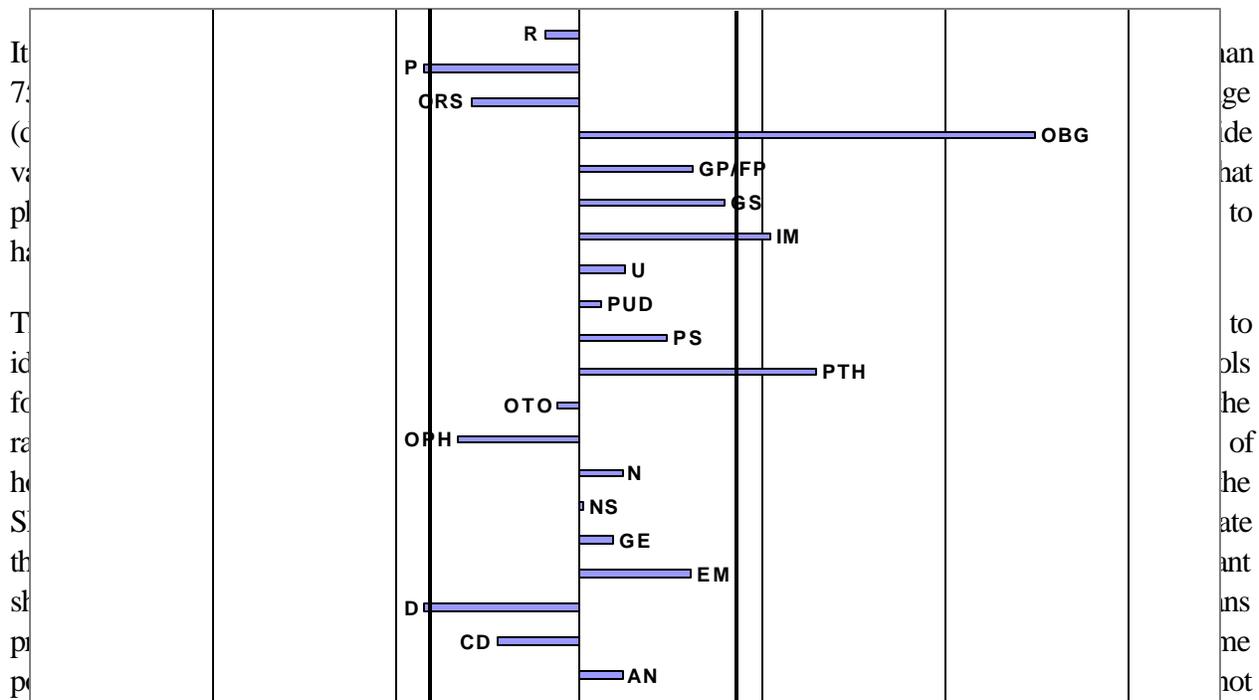
<sup>20</sup> For crosswalked specialties, the “Total” row in Exhibit 2 reflects the ratio of the SMS time pool for the SMS specialty to the Harvard/RUC time pool aggregated across the family of similar HCFA specialties.

HCFA SPECIALTY	SMS SPECIALTY DESIGNATION	RATIO
78-CARDIAC SURGERY	CARDIAC/THORACIC/ VASCULAR SURGERY	
Total		N/A
01-GENERAL PRACTICE	GENERAL/FAMILY PRACTICE ( <b>GP/FP</b> )	
08-FAMILY PRACTICE	GENERAL/FAMILY PRACTICE ( <b>GP/FP</b> )	
Total		1.31
16-OB-GYN	OBSTETRICS/GYNECOLOGY ( <b>OBG</b> )	
98-GYNECOLOGY/ONCOLOGY	OBSTETRICS/GYNECOLOGY ( <b>OBG</b> )	
Total		2.25
83-HEMATOLOGY/ONCOLOGY	ONCOLOGY	
90-MEDICAL ONCOLOGY	ONCOLOGY	
Total		N/A
20-ORTHOPEDIC SURGERY	ORTHOPEDIC SURGERY ( <b>ORS</b> )	
40-HAND SURGERY	ORTHOPEDIC SURGERY ( <b>ORS</b> )	
Total		0.71
25-PHYSICAL MEDICINE	PHYSICAL MEDICINE/RHEUMATOLOGY	
66-RHEUMATOLOGY	PHYSICAL MEDICINE/RHEUMATOLOGY	
Total		N/A
26-PSYCHIATRY	PSYCHIATRY ( <b>P</b> )	
79-ADDICTION MEDICINE	PSYCHIATRY ( <b>P</b> )	
86-NEUROPSYCHIATRY	PSYCHIATRY ( <b>P</b> )	
Total		0.58
30-RADIOLOGY	RADIOLOGY ( <b>R</b> )	
36-NUCLEAR MEDICINE	RADIOLOGY ( <b>R</b> )	
92-RADIATION ONCOLOGY	RADIOLOGY ( <b>R</b> )	
94-INTERVENTIONAL RADIOLOGY	RADIOLOGY ( <b>R</b> )	
Total		0.91
OVERALL AVERAGE		1.12
STANDARD DEVIATION		0.39

Notes: The AMA reported the Medicare revenue percentage for Pediatrics as below 2%. Lewin believes that this value is too low to guarantee a reliable step-down of the SMS time pool to Medicare patients and, thus, we do not report the SMS to Harvard/RUC ratio for Pediatrics. All HCFA specialties crosswalked to the AMA's All Physician average were excluded from this analysis, including: Oral Surgery, Clinic or Other, Peripheral Vascular Disease, Critical Care (Intensivists), Maxillofacial Surgery, and Surgical Oncology. Additionally, we were not able to calculate the values of the SMS time pools for the treatment of Medicare patients in Cardiac/Thoracic/Vascular Surgery, Oncology, and Physical Medicine/Rheumatology due to a lack of SMS data on the number of physicians in these categories for the years 1995-1997.

**Exhibit 3**, below, graphically depicts the amount that these specialties deviate from 1.0. Each specialty is denoted by its specific AMA abbreviation, as noted in bold in **Exhibit 2**.

**Exhibit 3: Ratios of SMS to Harvard/RUC Time Pools Relative to 1.0**



relevant for the Medicare population (aside from Medicare copayments). Its inclusion in the SMS hours results in our estimate of the SMS time pools for the treatment of Medicare patients being too large. Emergency Medicine is not the only specialty providing EMTALA-induced uncompensated care, yet we use it as an illustrative example because it provides a large percentage of EMTALA-induced uncompensated care, and demonstrates a large discrepancy between the SMS and Harvard/RUC time pools as a result. Any specialty that provides uncompensated care would experience a similar upward bias in their SMS time pool relative to their Harvard/RUC time pool.

HCFA's specialty crosswalk also might contribute to the imprecision of the SMS time pools relative to the Harvard/RUC time pools. The small sample sizes and limited scope of the SMS survey, from HCFA's perspective, are serious limitations of the survey for constructing PE RVUs. For those poorly represented specialties, HCFA developed a crosswalk between HCFA specialties and those reported in the available SMS data. The ratios from **Exhibit 2** corroborate that, under Method 2, crosswalked SMS specialties are more susceptible to imprecision than non-crosswalked specialties. The seven crosswalked specialties have a standard deviation of 0.57, whereas the 14 non-crosswalked specialties have a standard deviation of 0.27. Previously, we noted that it would be better if the crosswalk could be dispensed with by HCFA. Eliminating the crosswalk is possible through the use of oversamples and supplemental surveys covering limited-licensed practitioners.

Including EMTALA-induced uncompensated care in the SMS data and HCFA's crosswalk are two factors that limit our ability to identify specialties whose existing hours may be inaccurate. We explore

other limitations in the following sections and discuss potential changes that would improve the methodology. It is important to consider, though, that many of the problems we highlight below are not particularly limiting if we are able to observe the ratios over time. This would allow one to focus on changes in the ratios to detect the existence of biased patient care hours. Significant changes in the ratio from one year to another would indicate biased data, if other factors that affect the ratios remain relatively unchanged.

## **A. Possible Shortcomings of Method 2**

The validation of SMS time pools to Harvard/RUC time pools will highlight those specialties whose time pools might not reflect the true hours spent in patient care by physicians within a given specialty. If practice expense survey data were used to continually update PE RVUs into the future, physicians might have an incentive to underestimate hours spent in patient care.<sup>21</sup> As the previous discussion demonstrates, certain specialties seem to have an SMS time pool that is inconsistent with the Harvard/RUC time pool. There are various reasons why the specialty-specific ratios in **Exhibit 2** might deviate from one, other than the inaccurate reporting of patient care hours. We will address three categories of reasons why the ratios might deviate from one. These three categories are: inconsistencies in the definitions of physician time between the SMS and Harvard/RUC surveys, inaccurate and inadequate data available for validation efforts, and methodological issues that might contribute to the deviation of these ratios from one.

### ***Inconsistencies in how Hours are Defined and Reported***

To the extent that the SMS data include physician time that is not captured in the Harvard/RUC time pools, our ratios used in Method 2 will be biased upward. As noted previously, time spent providing EMTALA-induced uncompensated care is one important example. The SMS reports patient care hours dedicated to the treatment of both Medicare and non-Medicare patients, which likely includes uncompensated care for non-Medicare patients. Our method will overestimate the SMS time pools for each specialty relative to the Harvard/RUC time pools, because the Harvard/RUC procedure time data and the Medicare procedure frequencies do not reflect physician time dedicated to providing EMTALA-induced uncompensated care. We have recommended that future practice expense surveys collect information on the number of hours physicians dedicate to EMTALA-induced uncompensated care. If this recommendation were implemented, uncompensated care hours could be removed from our calculated time pools, which would improve our validation approach.

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<sup>21</sup> Also, as noted earlier, over-reporting problems are common to all time surveys. Asking a respondent to record the hours he or she spent on an activity is notoriously inaccurate and is highly susceptible to over-estimation. A somewhat more accurate way to measure time spent in different activities is to have respondents maintain a time diary. Perhaps the most accurate way to measure the time individuals spend in different activities is through time and motion studies, where an individual's activities are recorded by a third party. These approaches would be extremely, if not prohibitively, expensive if performed on the scale required to validate HCFA PE time information.

Additional inconsistencies in hours may exist because the SMS survey collects physician-level data on hours, whereas the Harvard/RUC and Medicare claims data relate to procedures. If patient care activities reflected in the SMS hours data are not directly associated with specific medical procedures, they will not be captured in the Harvard/RUC time pools. In such cases, our ratios from Method 2 will again be biased upward. More importantly, the practice expense per hour values derived from the SMS data may be incorrect for purposes of HCFA's PE methodology. As noted above, we believe this problem is exacerbated by the use of the screening question from the SMS survey to identify physician patient care hours.

### ***Inaccurate and Inadequate Data***

Concerns regarding the lack of certain data and the precision of other data further limit the reliability of our efforts to validate data on patient care hours. Inaccurate Harvard/RUC procedure time data might hinder the validation of the SMS time data using Method 2. Currently, efforts are being conducted to develop methodologies by which HCFA could identify procedure codes in the Medicare Fee Schedule (MFS) with inappropriate work RVUs. Over time, the refinement of the work RVUs, which are based on Harvard/RUC procedure time data, should improve our methodology. Without absolute confidence in the Harvard/RUC procedure time data, it may be difficult to agree on the exact reasons why specific time pool ratios differ from one using only this validation approach.

Another reason the time pool ratios may differ from one is that the specialty recorded in the SMS survey for some physicians may not match the specialty reported in their Medicare billings. We are unaware to what extent this occurs, although we became aware of this problem through unrelated work Lewin conducted for cardiologists. This inappropriate classification of a physician's specialty affects HCFA's practice expense methodology as well. However, as specialty groups become aware of this problem and how it affects their practice expense pools we are confident there will be an effort to correct this problem.

Finally, the applicability of Method 2 is limited by the data available to Lewin in calculating the number of physicians per specialty and each specialty's percent of revenue derived from Medicare. This methodology would be improved if the SMS time pools were calculated using the number of physicians that billed Medicare for each specialty rather than the number of active physicians as reported by the SMS. We believe such information is available to HCFA. Additionally, the "step-down" of SMS time pools by Medicare revenue percentage, which allows for comparison between the SMS and Harvard/RUC time pools, might be improved upon as well. The current step-down by Medicare revenue percentage is reasonable if it reflects the percent of total work RVUs associated with the treatment of Medicare patients. An improvement might be to use information on the percent of direct patient care hours that a physician spends treating Medicare patients, which could be collected in the

future using a practice expense survey mechanism.<sup>22</sup> Using this as a step-down in future validation efforts instead of percent revenue from Medicare may improve the accuracy of Method 2.

### ***Methodological Issues***

The crosswalk of HCFA to AMA specialty designations contributes imprecision to HCFA's PE methodology. Thus, if a validation effort were to highlight questionable time data it would be difficult to classify it as an imprecision resulting from inaccurate data rather than from the crosswalk itself. This, however, is potentially only a short-term concern depending on whether or not HCFA accepts supplementary survey data from specialties either not represented or underrepresented in the SMS survey.

Concerns about the representativeness of the SMS sample might also impose limitations on the use of Method 2. If the sample of a surveyed SMS specialty is not representative of the population then the SMS time pool may not be reliable. The current SMS sample selection criteria create a non-representative sample for purposes of HCFA's methodology and validation using Method 2. Specifically, the SMS survey does not include physicians who report less than 20 hours of patient care per week. As long as some of these physicians bill Medicare, their hours spent providing care to Medicare patients will be included in the Harvard/RUC time pools but not in the SMS time pools. We believe additional analyses should be done to identify the extent of this problem. It may be necessary for HCFA to obtain additional data on these particular physicians to make appropriate adjustments to the practice expense per hour values used in its PE methodology. Such adjustments would improve HCFA's methodology and its ability to validate hours by using Method 2.

## **B. Discussion**

In the previous section, we discussed the weaknesses of Method 2 and noted how some of these may be corrected. Overall, we feel that Method 2 can be a very useful approach to validating SMS data. Ultimately, this validation method will be more reliable if some of Lewin's proposed changes are implemented in future practice expense surveys.

As mentioned in our discussion of the inconsistency in defining patient care hours, the misalignment of the SMS and Harvard/RUC time pools may indicate that not all of the SMS hours data are directly associated with specific medical procedures. If this is the case, the practice expense per hour values derived from the SMS data may be incorrect for the purposes of HCFA's PE methodology. This potential flaw in HCFA's payment allocation methodology is particularly significant because the specialties are not affected evenly as evidenced by the ratios in **Exhibits 2** and **3**. Further investigation

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<sup>22</sup> One of the benefits of using the percent revenue by Medicare approach is that it is more easily recoverable for physicians responding to a practice expense survey than the approach using the percent of "direct patient care hours" spent with Medicare patients.

during the refinement period is needed to identify the underlying reasons for the inconsistencies in the comparison between the SMS and Harvard/RUC time pools.

Taking into account the inconsistency between the SMS and the Harvard/RUC time pools, the full strength of Method 2 may be realized by using ratios calculated with data from different years. A comparison of the ratio calculated using existing SMS data and new patient care hours data would allow one to focus on changes in the ratios over time. If the same types of methodological limitations are reflected in the old and new data, we would expect the ratios to differ from one by the same amount. Any deviation from this expected pattern could be used to detect the existence of biased patient care hours.

### **XXI.METHOD 3: COMPARISON TO SMS HISTORICAL TREND**

A third approach to validation compares new patient care hours data to historical SMS values. In conducting the SMS survey the AMA has compiled a substantial database of physician time data that might be exploited for this purpose. One simple version of this method would compare the average patient care hours for a specialty to its average value using data from the previous year or the previous few years. If the difference was greater than the typical variation in hours from year to year, a closer examination of the specialty group's hours might be warranted. If enough time series data on hours were available, regression analysis could be used to project data for each specialty forward. Average patient care hours from future practice expense surveys could then be compared to the projected value for that year. Data for a specialty whose average hours were found to be statistically different from that projected trend could then be flagged for further review. Follow-up review of suspect data may include applying some of the other methods discussed in this chapter.

#### **A. Possible Shortcomings of Method 3**

One substantial shortcoming of this methodology is that only those specialties that were included in the AMA's Physician Masterfile will have SMS trend data to use for validation. Historical time data for non-physician groups will not exist and time data for underrepresented specialties may be too limited to be useful. In addition, we do not believe that by itself this is a very powerful approach to validating SMS data, since it is unable to distinguish between changes that are the result of inaccurate reporting and changes that are due to changes in the practice patterns of physicians. Moreover, historical levels of physician work may have little relationship with today's physician work levels for some specialties.

### **XXII. METHOD 4: COMPARISON TO EXTERNAL DATA SOURCE**

Validating the SMS time data could be achieved by comparing SMS data to an acceptable alternative source. As long as these external data were collected during the same time frame and with the same frequency as the SMS data, the external data source should be able to capture relevant changes in practice patterns and, thus, be capable of identifying inaccurate or manipulated physician time data. Lewin conducted a search for additional sources of physician time data that represent a sufficiently large, random sample of physicians. We successfully located only one source of external physician time data produced by the Medical Group Management Association (MGMA).

The *Physician Compensation and Production Survey* presents summary statistics regarding the production levels of physicians and mid-level providers.<sup>23</sup> MGMA has been conducting this survey at the medical practice level on an annual basis since 1987. However, information on hours worked has only been collected since 1997. Information is collected on “the average weekly total of clinical and nonclinical professional hours per FTE physician by specialty classification” for various primary care, medical, hospital-based, and surgical specialties.<sup>24</sup> The survey also collects information on the number of weeks worked per year by specialty classification. Annual hours worked by specialty can be determined from the MGMA survey by calculating the product of the average weekly total of professional hours and physician weeks worked per year. A comparison of the MGMA annual hours worked and the SMS annual hours worked by specialty will not result in a precise match due to four factors, which we discuss below. However, to validate newly collected patient care hours data, a comparison of the ratios between the practice expense survey value of annual hours worked and the MGMA value of annual hours worked by specialty could be used to identify inaccuracies in future physician time data.

#### Step 1: Calculate MGMA Annual Hour Value for Each SMS Specialty

1. Where possible, crosswalk MGMA specialties to the SMS specialties used in HCFA’s proposed PE methodology;
2. Multiply mean professional hours per week from the MGMA survey by the number of physician weeks worked per year by each specialty to create mean MGMA annual hours worked by MGMA specialty.
3. If multiple MGMA specialties are crosswalked to one SMS specialty, aggregate the MGMA hours from 2 to create an MGMA annual hour value by SMS specialty. For non-crosswalked MGMA specialties, the result from 2 is the MGMA annual hour value by SMS specialty.

#### Step 2: Calculate a Weighted Average of SMS Hours

1. We used a weighted average of annual hours spent in patient care for physician owners and physician employees based on the specialty-specific percent distribution of non-Federal physicians by employment status.<sup>25</sup> Owner physicians were identified as self-employed and employee physicians were identified as either employees or independent contractors.

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<sup>23</sup> MGMA, *Physician Compensation and Production Survey: 1999 Report Based on 1998 Data*, 1999. P. 8.

<sup>24</sup> *Ibid*, p. 143.

<sup>25</sup> For example, General/Family Practice reported that 49.2% of the Nonfederal physicians in their specialty were self-employed, 46.6% were employees, and 4.2% were independent contractors. Therefore, the weighted average of physician hours was determined by the formula:  $(0.492 * \text{hours per year in direct patient care for owners}) + ((0.466+0.042) * \text{hours per year in direct patient care for employees})$ . The percent distribution of non-Federal physicians by employment status was reported by the American Medical Association, *Physician Marketplace Statistics*, 1996, p. 171.

Step 3: Calculate the Ratios of SMS Hours to MGMA Hours by Specialty

1. Divide the weighted average of the SMS annual hours (calculated in Step 2) by the MGMA value of annual hours (calculated in Step 1) assigned to each specialty.

**Exhibit 4: Ratio of SMS to MGMA Annual Hours Worked<sup>26</sup>**

MGMA SPECIALTY DESIGNATION	AMA SPECIALTY DESIGNATION	RATIO
<b>Non-crosswalked Specialties</b>		
ALLERGY/IMMUNOLOGY	ALLERGY AND IMMUNOLOGY (AI)	0.91
ANESTHESIOLOGY	ANESTHESIOLOGY (AN)	N/A
DERMATOLOGY	DERMATOLOGY (D)	0.99
EMERGENCY MEDICINE	EMERGENCY MEDICINE (EM)	0.85
GASTROENTEROLOGY	GASTROENTEROLOGY (GE)	1.00
INTERNAL MEDICINE	GENERAL INTERNAL MEDICINE (IM)	1.06
SURGERY: GENERAL	GENERAL SURGERY (GS)	1.00
SURGERY: CARDIOVASCULAR	CARDIAC/THORACIC/VASCULAR SURGERY	N/A
FAMILY PRACTICE (w/o OB)	GENERAL/FAMILY PRACTICE (GP/FP)	1.07
SURGERY: NEUROLOGICAL	NEUROLOGICAL SURGERY (NS)	1.04
NEUROLOGY	NEUROLOGY (N)	0.95
OBSTETRICS/GYNECOLOGY	OBSTETRICS/GYNECOLOGY (OBG)	1.11
N/A	ONCOLOGY	N/A
OPHTHALMOLOGY	OPHTHALMOLOGY (OPH)	1.05
ORTHOPEDIC SURGERY	ORTHOPEDIC SURGERY (ORS)	1.06
OTORHINOLARYNGOLOGY	OTOLARYNGOLOGY (OTO)	1.03
PEDIATRICS/ADOL MED (GEN)	PEDIATRICS (PD)	1.01
SURGERY: PLASTIC AND RECONSTRUCTIVE	PLASTIC SURGERY (PS)	N/A
PSYCHIATRY	PSYCHIATRY (P)	N/A
PULMONARY MEDICINE	PULMONARY DISEASE (PUD)	N/A
RADIOLOGY	RADIOLOGY (R)	1.05
UROLOGY	UROLOGICAL SURGERY (U)	1.05
<b>Crosswalked Specialties</b>		
CARDIOLOGY: INVASIVE	CARDIOVASCULAR DISEASE (CD)	
CARDIOLOGY: INV-INVASIVE	CARDIOVASCULAR DISEASE (CD)	
CARDIOLOGY: NONINVASIVE	CARDIOVASCULAR DISEASE (CD)	
Total		0.96
PATHOLOGY: ANATOMIC	PATHOLOGY (PTH)	

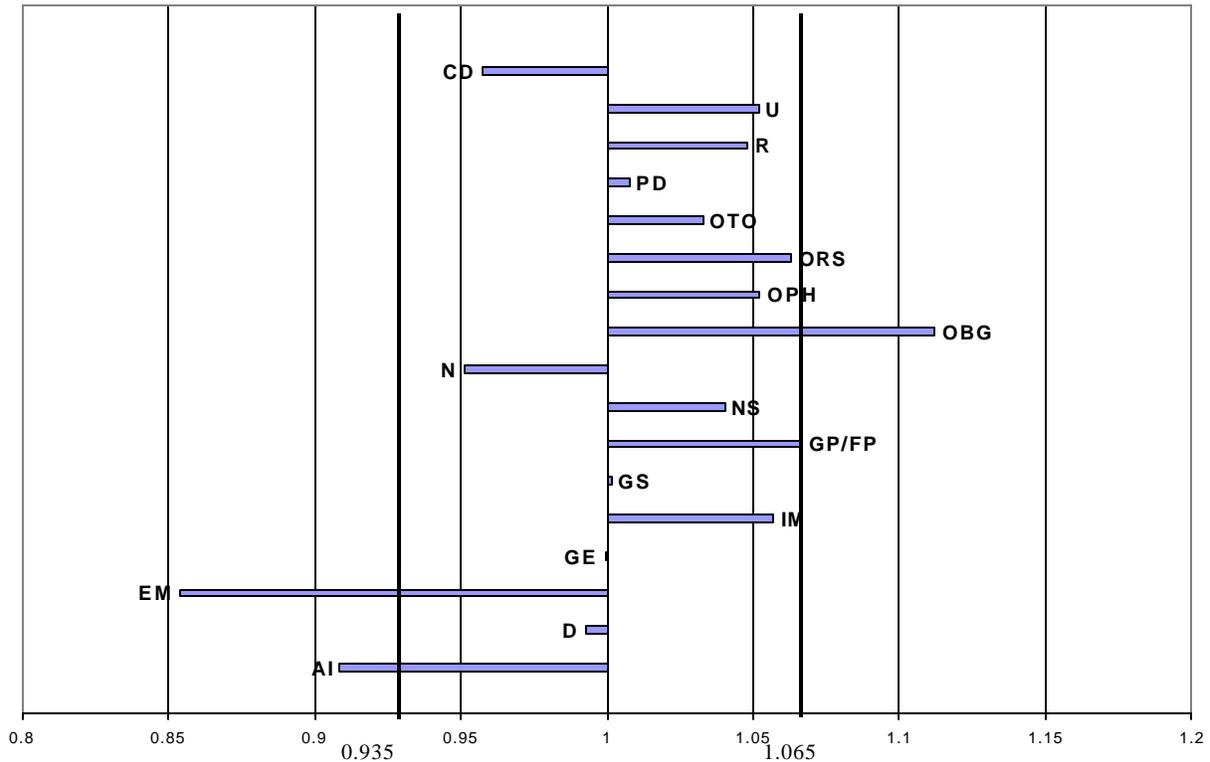
<sup>26</sup> For crosswalked specialties, the “Total” row in Exhibit 4 reflects the ratio of the SMS annual hours worked for the SMS specialty to the MGMA annual hours worked aggregated across the family of similar MGMA specialties.

MGMA SPECIALTY DESIGNATION	AMA SPECIALTY DESIGNATION	RATIO
PATHOLOGY: CLINICAL	PATHOLOGY (PTH)	
Total		N/A
PHYSIATRY (PHYSICAL MED)	PHYSICAL MEDICINE/RHEUMATOLOGY	
RHEUMATOLOGY	PHYSICAL MEDICINE/RHEUMATOLOGY	
Total		N/A
OVERALL AVERAGE		1.01
STANDARD DEVIATION		0.07

Note: SMS specialties crosswalked to the AMA's All Physician average were excluded from this analysis. Additionally, we were not able to calculate the values for the MGMA hours for Anesthesiology, Surgery: Cardiovascular, Pathology: Anatomical, Pathology: Clinical, Physiatry (Physical Med), Rheumatology, Surgery: Plastic and Reconstructive, Psychiatry, and Pulmonary Medicine due to a lack of MGMA data on the number of hours per week or number of weeks per year worked by physicians in these specialties.

**Exhibit 4** presents the ratios of SMS to MGMA annual hours worked for those specialties that have sufficient SMS and MGMA time data to calculate annual hours worked. The mean SMS to MGMA ratio of annual hours worked is 1.01, with a standard deviation of 0.07. **Exhibit 5**, below, graphically depicts the amount that these specialties deviate from 1.0. Each specialty is denoted by its specific AMA abbreviation, as noted in bold in **Exhibit 4**.

### Exhibit 5: Ratio of SMS to MGMA Annual Hours Worked Relative to 1.0



**Exhibit 5** demonstrates that the majority of these ratios (68%) are greater than 1.0. This is rather surprising considering that the SMS data reflect time devoted to patient care, whereas the MGMA data reflect total hours worked. Our results also show that greater than 75% of the ratios (13 of the 17 specialties analyzed) are within 6.5% of 1.0, in the 0.935 to 1.065 range (denoted by the dashed lines in **Exhibit 5**). The close correspondence between the SMS hours and the MGMA hours is consistent with the view that physicians accurately report total hours worked in each survey but have difficulty distinguishing patient care hours from other hours spent working.

Because the SMS and MGMA surveys define hours slightly differently, it would be helpful to compare the ratios using data from different years. Significant changes in the ratios from one year to the next could signal the existence of biased data. One advantage of Method 4 over the similar technique used by Method 2 is that the SMS physician time data in this case does not need to be “stepped-down” because the MGMA hour data, like the SMS hour data, includes care provided to both Medicare and non-Medicare patients.

## A. Possible Shortcomings of Method 4

There are four primary aspects of the MGMA survey that limit its usefulness in validating SMS physician time data. These include:

1. Lack of historical MGMA data
2. Different definitions of “physician work” between the SMS and MGMA surveys
3. Different specialty definitions between the surveys
4. A sample bias in the MGMA survey

Any external benchmark used to validate SMS data should have a sufficient history of collecting reliable data. A limitation of the MGMA database in this regard is that it has only collected data on hours of physician work for 2 years, 1997 and 1998. Another concern with the MGMA data is that the questions relate to “professional hours worked per week” defined as “both clinical and non-clinical” time. This includes such activities as research, teaching, and idle time on call, which are presumably excluded from the patient care hour in the SMS survey. MGMA, in their 1999 survey (which was administered in 1998), asked physician practices if they were capable of separating out professional hours into, among other categories, the “hours each physician devotes to providing direct patient care.”<sup>27</sup> Slightly more than 38% of responding medical practices replied that they felt they would be able to track direct patient care hours. Discussions with MGMA staff on this topic led to our understanding that their survey will not implement detailed questions on hours worked any time soon. However, even in its current format Lewin feels that the data for “professional hours worked per week” might be useful in validating SMS data because the ratios of SMS to MGMA annual hours worked could be compared to similar ratios calculated for newly collected physician time data. It is interesting to note that despite the difference in the definition of physician work between the two surveys, their measurements are consistent (as evidenced by a standard deviation of .07). This consistency may indicate that the SMS and MGMA are measuring a similar pool of hours, whereas the Harvard/RUC time pools reflect a different set, or subset, of physician hours. However, this consistency may also be due to poorly measured Harvard/RUC data or other problems.

A third limitation of using the MGMA database of physician time to validate SMS hours is that the MGMA survey does not use the same specialty designations used by the AMA in its Physician Masterfile or its SMS survey. Consequently, any validation effort using the MGMA’s *Physician Compensation and Production Survey* would require a “crosswalk” linking similar specialties between those reported in MGMA and the SMS surveys. Finally, we feel that the primary limitation of

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<sup>27</sup> MGMA, p. 142. Medical practices were also asked if they could track the number of hours each physician devotes to: “supporting direct patient care,” “teaching, research and other professional activities, not including patient care.” Only 16.22% of responding medical practices felt they could track hours in support of direct patient care while 18.69% felt they could track other professional hours (teaching, research, etc.).

the MGMA physician time database in validating the SMS data is that the MGMA draws their data from a non-random sample of MGMA member-physician groups. HCFA would have to closely evaluate the makeup of the MGMA membership, and response rates to insure that the MGMA membership approximates a random sampling of all physician groups on the basis of geographic dispersion, group size, age and gender of physicians and that a non-response bias does not exist in the MGMA survey against any particular physician characteristic.

### **XXIII. CONCLUSION**

Information on patient care hours is an important component of HCFA's "top-down" methodology. Average patient care hours by specialty are used to construct practice expense per hour values. HCFA then calculates practice expense pools for each specialty by multiplying the practice expense per hour values by the total number of physician hours, which are derived from the Harvard/RUC data and procedure frequencies from Medicare claims data. Any inaccuracies in the hours data will be carried over into the practice expense pools. HCFA's methodology will then allocate an inappropriate amount of practice expenses to the procedures done by physicians in a specialty whose average patient care hours in the SMS data are incorrect.

In this chapter we presented four different techniques to validate patient care hours. We believe that two types of validation are needed. First, existing SMS data need to be validated to check their accuracy and consistency. Second, newly collected data, from practice expense surveys or from supplemental data collection efforts conducted by specialty groups, need to be checked to ensure that they are unbiased. Our recommended validation approaches should, therefore, have the capability to identify both inaccurate existing data and biased new data.

Aside from costly time-in-motion studies, we believe that no *single* validation approach exists that can be used to validate both existing and new data on patient care hours with a high level of confidence. However, we believe that the validation approaches discussed in this chapter, if used together, can be an effective tool that will help to ensure the accuracy and reliability of existing and future data used to calculate PE RVUs.

Suppose that the time data for a specialty do fail our validation approaches. What steps should HCFA follow? The most straightforward solution would be to continue using the original values for practice expenses per hour. Alternative solutions could include performing various adjustments to the new data. It is our view that the formal establishment of validation methods as well as the establishment of set protocols to follow when inaccurate data are identified will discourage the underreporting of patient care hours. In this chapter, we have considered alternative validation methods, a critical component to ensure the reliability of future data. The establishment of set protocols to follow when inaccurate data are discovered, we believe, is also critical.

Although this chapter set out only to identify validation methods for the SMS physician time data, our evaluations of these methods raises serious concerns regarding the accuracy of HCFA's payment method. Whereas the SMS time data and the MGMA annual hours were generally consistent, the SMS time data and the Harvard/RUC time pools do not align. The underlying cause of these results is unclear

at this time. It is possible that the SMS time data is erroneously measuring physician time not spent performing procedures or that the Harvard/RUC data was poorly measured. It is also possible that the results are due to physicians whose specialty designations are inconsistent with their AMA specialty designations. Further investigation during the refinement period is necessary to identify the causes for the inconsistencies and to minimize these differences.

## **XXIV.CHAPTER VI: INDIRECT COST ALLOCATION**

### **XXV.INTRODUCTION**

In this chapter we address HCFA's methodology for allocating indirect practice expense costs to procedures. By definition, indirect practice expenses, unlike direct practice expenses, cannot be directly associated with specific procedures. Therefore, HCFA's methodology for allocating indirect practice expenses differs from their method for allocating direct costs. Indirect practice expenses can be allocated to individual procedure codes using a variety of methods. Unfortunately, no single, universally accepted approach to allocating these costs exists. For its final practice expense methodology, HCFA used a combination of work RVUs and direct cost information to allocate the indirect practice expense pools to individual codes. The indirect cost allocation methodology is an important component of HCFA's overall top-down PE methodology because, for most specialties, indirect costs represent a majority of total practice expenses. This analysis identifies the advantages and shortcomings of HCFA's indirect practice expense allocation methodology and notes how it compares to a variety of alternatives.

The remainder of this chapter is organized as follows: Section II describes HCFA's indirect cost allocation methodology. Section III examines the theory of indirect costs in physicians' practices and the major factors in HCFA's indirect cost allocation methodology. Section IV details Lewin's findings on possible alternatives to the current indirect cost allocation methodology.

### **XXVI.INDIRECT COST ALLOCATION METHODOLOGY**

HCFA used data derived from the 1995 through 1997 AMA SMS surveys to create the direct and indirect physician specialty-specific practice expense pools. These pools were created by multiplying total Medicare patient care hours for a specialty by the practice expense per hour values obtained from the SMS data, CPEP data were then used to allocate direct expense pools across procedures. Indirect practice expense pools were allocated to individual codes using work RVUs and direct cost information. The approach used to allocate direct costs is relevant to our discussion here, because the allocated direct costs factor into the indirect allocation mechanism. For direct practice expenses (i.e., clinical labor, medical supplies, and medical equipment), the proportion of the SMS direct practice expense pool allocated to a given procedure is equal to the ratio of the individual procedure's CPEP value to the total CPEP costs incurred by a specialty. Total CPEP costs, or the CPEP "pool," are calculated by summing across procedure codes the product of the CPEP value for an individual code and its Medicare frequency.

Indirect costs were allocated across procedure codes using a combination of the code-level allocated direct practice expenses and physician work RVUs. A step-by-step description of the allocation of the indirect cost pools across procedures follows:

1. Calculate a specialty-specific SMS indirect PE pool by multiplying its indirect PE per hour value by the total number of Medicare hours practitioners spent in patient care.
2. Scale the work RVUs associated with each procedure by multiplying its work RVUs by the 1995 conversion factor. (HCFA used the 1995 conversion factor to correspond with the SMS data from the 1995-1997 SMS surveys. Data from the 1995-1997 SMS survey relate to 1994-1996 calendar years.)
3. Sum the allocated direct PE costs and scaled work RVUs at the specialty procedure level.
4. Create specialty specific total direct/work values or “pools” by multiplying the sum calculated in Step 3 by the frequency with which each specialty performed each procedure in each setting and summing across procedures and settings by specialty.
5. Divide the procedure-specific sum of direct PEs and scaled work RVUs (from step 3) by the aggregate specialty specific direct/work pool (from Step 4).
6. Multiply the fraction from Step 5 by the appropriate specialty’s indirect SMS cost pool.

The value from Step 6 represents the dollar share of the indirect SMS pool allocated to a single unit of a given procedure. If a procedure is shared by more than one specialty, a weighted average is taken of the allocated indirect practice expenses associated with a procedure to determine one value per code and setting across all specialties.<sup>28</sup>

For a more thorough discussion of the practice expense methodology refer to Chapter 1.

## **XXVII.ANALYZING THE HCFA INDIRECT PE ALLOCATION METHODOLOGY**

This section explores the theory of indirect PE costing in an attempt to analyze the way in which these costs are defined by the SMS survey and allocated by HCFA’s PE methodology, and to evaluate the importance of the indirect cost component to HCFA’s overall allocation methodology. In this section, we also briefly discuss alternate ways to define and allocate indirect PE costs that have either been proposed by physician groups, or employed by researchers in studies of physician practice expense. In Section IV of this chapter we present the results of Lewin’s simulations of several of the alternative allocation methodologies for indirect PE costs.

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<sup>28</sup> As discussed in Chapter 1, an equivalent approach to calculating this value would be to divide the indirect SMS PE pool (calculated in Step 1) by the total direct PE and work cost pool (calculated in Step 5) and then multiplying this value by the sum of the allocated direct PEs and scaled work RVUs (from step 3).

## **A. Theory of Indirect Practice Expense**

Indirect PE costs are those costs incurred to provide patient care that are not directly associated with a particular procedure. HCFA uses SMS survey results to separately define indirect and direct practice expense costs. The SMS organizes physician PE costs into six cost categories: 1) physician payroll, 2) non-physician payroll, 3) equipment costs, 4) medical supplies, 5) office expenses, and 6) other expenses. HCFA defines indirect PE costs as office expenses and other expenses, and the portion of non-physician payroll costs attributable to administrative or clerical activities. HCFA further defines these three types of indirect costs as: 1) office expenses, which include expenses for rent, mortgage interest, depreciation on medical buildings, utilities, and telephone; 2) other expenses, which include expenses for legal services, accounting services, office management services, professional association memberships, journals and continuing education, professional car upkeep and depreciation, and any other professional expenses not including or mentioned for the other cost categories; and, 3) administrative payroll expenses, which are payroll expenses (including fringe benefits) for non-physician personnel involved in administrative, secretarial, or clerical activities. The SMS questions from the 1999 SMS survey instrument used to collect these indirect PE cost data include:

- To the nearest thousand, what were [the physician's] office expenses for 1998, including rent, mortgage interest, depreciation on medical buildings used in the practice, utilities and telephone?
- To the nearest thousand, how much of [the physician's] non-physician payroll [recorded earlier] was solely for the non-physician personnel involved in administrative, secretarial, or clerical activities?
- To the nearest thousand dollars, what were [the physician's] 1998 tax-deductible expenses for any other expenses, such as legal, accounting, or office management services, professional association memberships, journals and continuing education, professional car upkeep and depreciation, and any other professional expenses which I have not mentioned?

The AMA reported SMS data to HCFA as a mean practice expense per hour spent in patient care activities, with hours and expenses adjusted for practice size. The SMS survey results on practice expense indicated that a majority of PE costs reported by physicians were indirect PE costs. Exhibit 2 presents the ratio of the sum of the three indirect PE cost categories (office expense per hour, clerical payroll per hour, and other expense per hour) to total PE per hour.

## Exhibit 1: Indirect Expense as a Percent of Total Expense for All SMS Specialties

AMA Specialty Designation	Indirect Expense as Percent of Total Expense
All Physicians	66.8%
General/Family Practice	61.1%
General Internal Medicine	67.3%
Cardiovascular Disease	66.9%
Gastroenterology	78.3%
Allergy & Immunology	56.1%
Pulmonary Disease	73.4%
Oncology	33.5%
General Surgery	78.2%
Otolaryngology	71.8%
Orthopedic Surgery	70.9%
Ophthalmology	65.6%
Urological Surgery	56.0%
Plastic Surgery	69.7%
Neurological Surgery	85.5%
Card/Vasc/Thoracic Surgery	71.3%
Pediatrics	62.3%
Obstetrics and Gynecology	65.6%
Radiology	61.3%
Psychiatry	89.5%
Anesthesiology	57.3%
Pathology	70.2%
Dermatology	65.2%
Emergency Medicine	69.2%
Neurology	76.7%
Physical Med/Rheumatology	72.4%
Other Specialty	75.5%
<b>Overall Mean</b>	<b>65.4%</b>
<b>Overall Median</b>	<b>66.8%</b>

Exhibit 1 demonstrates that because such a substantial portion of total physician PE costs are indirect costs for all specialties, the allocation method used to apportion these expenses to specific codes is very important, particularly within a given specialty. A more precise analysis of the indirect cost allocation methodology is critical because an inappropriate allocation of indirect costs to determine PE RVUs could have a large impact on overall physician reimbursement for PE. This is most critical for subspecialists within a specialty that perform a limited number of procedures.

### B. Major Components of the Indirect Cost Allocation Methodology

There are two major steps within HCFA's indirect cost allocation methodology: 1) the calculation of the SMS pool of indirect costs by specialty and 2) the allocation of these costs to individual procedure codes. Any change to the second step, only changes the resulting indirect cost allocation to an individual procedure *within* a single specialty. In other words, changing the allocation approach would primarily shift the relative weight of the resulting PE RVUs among individual codes within a specialty rather than

among the specialties themselves. The major exception to this is for procedure codes that are shared by different specialties. In this case, altering the allocation mechanism would first change the indirect costs associated with a given procedure for a given specialty. Then, however, the weight-averaging approach applied by HCFA to all shared codes based on Medicare allowed charge frequencies would shift indirect costs *across* specialties sharing a particular code. It is useful to note that the weight-averaging step is a result of having to determine a single payment for a procedure code across all specialties as required by statute and is not related to any particular allocation approach employed by HCFA.

Our primary focus in the analyses that follow is to compare outcomes of different allocation approaches without the added affect or complexity of the weight-averaging step.

In our analysis of HCFA's indirect cost allocation methodology, we considered the feasibility of different allocation approaches. Although we do not discuss proposed alternatives to the current indirect cost allocation methodology until Section IV of this Chapter, we discuss here the particular components of the methodology that we analyzed and the feasibility of changing each of these components. HCFA's methodology includes various input data sources and methodological steps that, in our analysis, oftentimes represent the best available option, yet still have room for improvement. Those components of the methodology that we feel cannot be feasibly improved with the currently existing data and resources are defined as long-term components, whereas short-term components refer to those data inputs and methodological steps that might potentially be improved upon, and which we consider in our analysis.

#### ***Short-term Components of the Indirect PE Allocation Methodology***

The primary short-term component of the methodology that we examine is the way in which data are used to allocate the indirect PE pools to the procedure level for each specialty. Currently HCFA uses an allocation formula that equally weights the work RVUs and direct costs associated with a procedure code. HCFA has opted to use work RVU and direct cost information because they were thought to be the best available measures of the indirect PE intensity at the procedure level. However, Harvard/RUC time data have been supported by researchers as an alternative way in which to measure the indirect PE intensity, because they argue that time is a better measure of indirect PE costs than either work or direct cost information. Nonetheless, the Harvard/RUC time data have not yet been as rigorously validated as have the work RVU data and, thus, may not yet be the best measure of indirect PE intensity. Additionally, other measures, such as work RVUs alone, or a mixture of work RVUs and time data, might be a more appropriate way to measure indirect PE resource intensity. In Section IV, we will examine these and other proposed alternatives to the current indirect cost allocation methodology, and evaluate the impact of these alternatives at the specialty and subspecialty level.

#### ***Long-term Components of the Indirect PE Allocation Methodology***

The major long-term components of the indirect cost allocation methodology are the SMS survey as the source of direct and indirect PE data, the Harvard/RUC time data, and the Medicare allowed charges frequency data. There is no known method to allocate indirect costs to the procedure level through efforts similar to time and motion studies used to measure the direct costs associated with procedures.

Therefore, with the exception of possibly amending the PE questions in the SMS survey to be more specific in terms of what defines PE costs as direct or indirect, we view the SMS as the best available source of reliable physician level PE data. The SMS, Harvard/RUC time data, and the Medicare frequency data are data sources that Lewin views as “given” in the near-term, and to which we propose no alterations.

Another long-term component of HCFA’s allocation methodology that could be changed through future practice expense surveys is the way that the SMS categorizes practice expenses and how HCFA groups these categories to define indirect costs. The SMS questions on indirect PE costs divide costs and, particularly, indirect PE costs in a broad manner to facilitate the survey responses of physicians. However, if future practice expense surveys were to more precisely and specifically define indirect costs, then a portion of the physician practice expenses previously defined as indirect costs might be redefined as direct costs and allocated accordingly. A 1998 practice expense study by Lewin for the American College of Surgeons (ACS), defined indirect PE costs in a precise and specific manner to better allocate physician practice expenses to a procedure whenever possible. In this study, the physician expenses were categorized into three types, each of which had a direct and indirect PE cost component:

- Non-physician clinical staff expenses
- Administrative and clerical staff expenses
- Non-labor expenses

The Lewin PE study designed for ACS included extensive definitions to aid physician respondents in assigning certain PE costs to either “direct” or “indirect.” For example, in the non-labor expenses category, *computer support related to patient care activities*, such as computerized medical records or an in-house computerized billing system, was specifically classified as a direct PE cost in the ACS study. SMS physician respondents, however, probably assign this PE to the indirect cost category “other expenses” because there are no other questions on the SMS survey to account for costs of this type associated with patient care activities. Additionally, another PE study performed by Lewin for the North American Society for Pacing and Electrophysiology (NASPE), used the definitions developed for the ACS study to define PE costs in a more specific manner as well. The NASPE PE study found that the mean physician’s practice categorized approximately 62.5% of total PE costs as indirect, about 5.5% points less than the SMS value for physicians in a similar specialty of Cardiovascular Disease.

We recognize that more detailed PE questions would be required to better assign physician practice expenses, and that this would ultimately have a deterring effect on physician response rates. However, if specialty societies have more confidence in HCFA’s direct cost allocation methodology than the indirect methodology, then the more physician practice expenses that could be defined as direct, the higher the confidence level in the final PE RVUs.

### **C. Selected Comments on the Indirect Cost Allocation Methodology**

Lewin has collected comments on HCFA's indirect cost allocation methodology from physician and non-physician specialty societies as well as from experts in the field of physician practice expense.

The comments submitted to Lewin by specialty groups on HCFA's indirect cost allocation methodology were largely unsolicited. After Lewin's September 15<sup>th</sup>, 1999 meeting with specialty groups regarding the validity of the SMS data, several physician and non-physician specialty societies submitted comments to Lewin regarding the current allocation of indirect practice expenses within HCFA's "top-down" PE methodology. Although there was no discussion of the indirect cost allocation methodology at the meeting, these physician and non-physician specialty societies sent Lewin copies of comments submitted to HCFA as well as comments specific to Lewin's work.

The specialty society comments on HCFA's indirect cost allocation methodology primarily focused on the use of work RVUs and direct cost information to allocate indirect PE costs to the procedure code level. One comment suggested the use of direct costs only, or physician time only to allocate indirect PEs, and to entirely remove physician work RVUs from the methodology.

Lewin project staff conducted expert interviews by telephone with six interviewees chosen based on their extensive experience with the issue of physician practice expense, and their representation of different specialty groups. The interviews were conducted with the understanding that responses would be anonymous. Although this collection of expert opinions is not a representative sample, when viewed along with the physician comments cited above, it does offer insight into possible alternatives to HCFA's indirect cost allocation methodology that might improve the medical community's confidence in the final calculated PE RVUs. Before the interview with representatives from The Lewin Group, interviewees were sent via facsimile an interview protocol consisting of five short questions meant to guide the discussion on possible alternatives to HCFA's indirect cost allocation methodology. Interviewees were also asked their opinion on what the differential effects at the HCFA specialty level might be from using measures other than work RVUs and direct cost information to allocate indirect costs across procedures. The interview protocol questions that were asked of experts with whom Lewin conducted interviews included:

1. Within the top-down allocation methodology, what is the most fair and equitable way to allocate indirect practice expense costs (e.g. office expenses, administrative payroll, and other expenses)?
2. HCFA's current top-down methodology allocates indirect costs based on a combination of direct cost information and work RVUs. Which specialties, or groups of specialties, if any, does this methodology favor or hinder relative to alternative allocation methodologies?
3. Do you believe that Harvard/RUC time data are an acceptable measurement of indirect practice expense resource intensity? Are there any specific characteristics of the Harvard/RUC time database, or the way in which it was constructed, that limit its usefulness in allocating indirect practice expenses?

4. If HCFA's top-down methodology were changed to use Harvard/RUC time data to allocate indirect costs, which specialties, or groups of specialties, if any, would this change favor or hinder relative to alternative allocation methodologies?
5. Is the AMA's SMS annual survey an appropriate survey format to collect indirect practice expense data at the physician/practice-level? If so, why? If not, what alterations to the survey might improve the reliability of collected indirect practice expense data?

Most interview respondents indicated that, in their opinion, the SMS survey was the best (if not the only) and most reliable means of collecting physician indirect PE cost data from a national and representative sample. Nonetheless, selected interview respondents did feel that the SMS did define "too much" physician PE as indirect, and that a more refined survey format might allow physicians responding to the SMS to better define PE associated with a given procedure as direct rather than indirect.

Additionally, there was disagreement among interview respondents as to how the indirect PE costs collected in the SMS should be allocated across procedures for a given specialty. Many felt that HCFA's decision to use an equal combination of work RVUs and direct cost information was somewhat arbitrary, and that other data sources alone, or in combination, might be a better measure of the indirect PE intensity at the procedure level. The different allocation methodologies for indirect physician costs identified through Lewin's expert interviews include:

- Harvard/RCU time data only, once validated by the RUC, should be used to allocate indirect PE costs to the procedure level;
- Work RVUs only should be used to allocate indirect PE costs to the procedure level;
- Work RVUs only should be used to allocate *both* direct and indirect PE costs to the procedure level;
- A combination of direct cost information and Harvard/RUC time data, once validated by the RUC, should be used to allocate indirect PE costs to the procedure level.

Relative to the current HCFA indirect cost allocation methodology, the above alternatives proposed by experts would have differential effects at the HCFA specialty and subspecialty level. Some would tend to increase payments for PE to some specialties and subspecialties, while decreasing payments to others relative to the HCFA methodology. In general, the expected effects on payments might be somewhat predictable for broad categories of procedure codes (e.g. surgical codes versus nonsurgical codes); however, it is difficult to predict the effects of these proposed alternatives to a greater degree of specificity without conducting extensive micro-simulations.

For instance, the consensus among the interviewees was that any change in the methodology towards using the direct cost information more in the allocation of indirect physician PE would increase payments for PE for nonsurgical codes. On the other hand, emphasizing work RVUs more in the indirect cost allocation methodology would likely increase payments for surgical codes.

## XXVIII.IV. ALTERNATIVES TO HCFA'S INDIRECT ALLOCATION METHODOLOGY

HCFA chose to allocate indirect PE pools across specialties using the work RVUs and direct cost information arguing that they were the best available measure of the indirect PE intensity at the procedure level. However, as noted above, physician and non-physician specialty groups have countered that other data sources might prove to be better measures of indirect PE intensity at the procedure level.

In an effort to better understand the various ways in which indirect costs could be allocated across procedures, Lewin developed a simulation model using publicly available data. We analyzed the effects of using measures other than work RVUs and direct cost information to allocate indirect costs across procedures (see the Appendix to this Chapter for a description of our methodology).

Lewin simulated PE payments under six different allocation methodologies for indirect PE costs. By examining how the simulated payments for indirect PE costs would shift among codes, we were able to predict what the expected effect might be to payments within specialty and sub-specialty level. Our analysis simulated alternative PE payments for indirect costs relative to the HCFA indirect PE allocation methodology.

Lewin analyzed the change in the distribution of indirect PE dollars both within and across specialties. **Exhibit 2** presents the six alternative methodologies with a brief description of each. Also displayed in **Exhibit 2** are abbreviations for the methodologies that will be used throughout this section of the report.

### Exhibit 2: Alternative Allocation Methodologies

Abbreviation	Methodology
<b>Direct</b>	Only direct cost information
<b>Work</b>	Only physician work RVUs
<b>Time</b>	Only Harvard/RUC time data
<b>D/T</b>	A substitution of physician time for work in HCFA's current methodology
<b>W/T</b>	A combination of work and time instead of direct cost information
<b>D/T/W</b>	A combination of work, time and direct cost information

By changing the variables in HCFA's methodology, but retaining the allocation formula, we were able to determine how the use of different variables changes the distribution of indirect PE dollars across codes within specialties and across specialties. In modeling HCFA's allocation of indirect PEs to the procedure code level, we complied with most, but not all, of the constraints put on HCFA. HCFA is required by statute to reimburse only one unique amount for a given procedure across all specialties. That is, for each procedure reimbursed for by HCFA there is one reimbursement amount, irrespective of the specialty performing the procedure. To conform to this requirement, HCFA weight averaged the allocated costs at the procedure code level across specialties. Most of the results presented in this report do not incorporate the weight-averaging step. These analyses allow one to examine how indirect PE payments for codes would change within specialties under alternative methods. The analyses that

factor in HCFA's weight averaging illustrate the shift in indirect PE dollars across specialties under the alternative allocation methods.

## A. Findings

### Percent Change at the Procedure Code Level

To gain an initial understanding of the shift of indirect PE dollars under the alternative allocation methodologies, Lewin analyzed the average percent difference in indirect PE dollars allocated to the procedure code level between the HCFA method and each alternative approach. The analysis focused on the shift in indirect PE dollars among procedure codes *within* a single specialty; therefore, we did not take HCFA's weight-averaging step into account.

**Exhibit 3** presents the average absolute percent difference in dollars allocated to the procedure code level averaged across all specialties for both in- and out-of-office procedures. For example, relative to the dollars allocated to a procedure code under HCFA's method, an in-office procedure code under the Direct method differs on average by 178.1% within a given specialty. The percentages in the chart can represent either an average percent increase or decrease because they are the average of absolute value percent differences.

The percent change in indirect PE dollars at the procedure code level within specialties is significant across all of the methodologies, in-office and out-of-office. Switching from HCFA's approach to any of the alternative allocation methodologies would substantially shift a specialty's indirect PE dollars across procedures. A change from HCFA's current methodology to the Direct methodology would change the indirect PEs within specialty at the code level more than the other five methodologies, for both in- and out-of-office procedures. Across the methodologies, D/T and D/T/W are the least disruptive to HCFA's allocation of indirect PEs.

**Exhibit 3** also indicates that across the methodologies, with the exception of D/T, in-office procedures are affected more than out-of-office procedures. Although this difference under Time and D/T/W is relatively small, it is interesting to note as we further examine the effect of a change in allocation approach.

### Exhibit 3: Procedure Code Level Average Percent Changes in Dollars In and Out of Office

	Direct	Work	Time	D/T	W/T	D/T/W
<b>In-Office</b>	178.1%	46.6%	48.7%	21.3%	45.0%	20.7%
<b>Out-of-Office</b>	78.5%	29.8%	48.0%	31.7%	32.8%	20.1%

## **Total Indirect Practice Expense Dollar Shift to In-Office or Out-of-Office Procedures**

**Exhibit 4** presents the total dollar shift to out-of-office procedures summed across all specialties. The shift to in-office procedures is not presented because HCFA's weight averaging approach for shared codes was not taken into account and therefore, for each methodology, the shift to out-of-office procedures is equal, but opposite to the shift to in-office procedures. The shift in indirect PE dollars to one location across specialties is created by an equal reduction in indirect PE dollars at the other location. **Exhibit 4** also indicates the percent of the total indirect dollars available to the specialties shifted under each methodology. For example, a change to the Direct methodology would result in a shift of 33.7% of the total indirect dollars available to specialties from out-of-office procedures to in-office procedures.

As suggested by these analyses of indirect allocation methods, relying solely on direct cost information leads to the greatest deviation from HCFA's indirect PE methodology. In addition, consistent with our earlier findings (Exhibit 3), D/T and D/T/W deviate from HCFA's allocation the least.

Relative to HCFA, the Direct methodology shifts more than \$5.6 billion in indirect PE dollars from out-of-office to in-office services across all specialties, representing a redirection of 33.7% of the total dollars available to specialties for indirect PEs. This shift is appreciably greater than the four other allocation methodologies, and Direct is one of only two methodologies that shift money toward in-office services. Under Direct, each specialty experiences a shift in its indirect pool toward in-office services. This change from HCFA's methodology is understandable. Direct PEs are those costs that can be directly attributed to providing a service including the cost of medical supplies and equipment, nurses' salaries, administrative work, and the office staff's salary. The sources of these costs are highly concentrated in the office. Therefore, when Direct PEs are used alone to allocate PEs, the dollars shift toward in-office procedures. This allocation method essentially ignores the critical fact that indirect expenses are incurred whether the physician is in the office or not.

The Work Methodology generates the largest shift toward out-of-office services relative to HCFA's allocation. The \$2 billion shift of indirect PEs under Work is reflective of a shift in every specialty, without exception. This shift is because work is a measure of the time and intensity to perform a procedure and procedures performed in a hospital (out-of-office) are likely to be more time-consuming and intense than procedures performed in-office.

Three of the remaining four methodologies, Time, W/T, and D/T/W, allocate more money to out-of-office services relative to HCFA. Time as an allocation mechanism favors specialties that perform time consuming, non-intensive procedures. The specialties with the largest shift under Time are likely to be specialties that perform procedures that are more time-consuming than intensive. As mentioned, we believe procedures performed in a hospital may be more time intensive than those performed in-office. Three of the 65 specialties under Time counter the trend and shift money to in-office procedures. In keeping with our explanation above, these three specialties are likely to be characterized by in-office, time-consuming, non-intensive procedures.

The dollar shifts, relative to HCFA, under the W/T and D/T/W methodologies toward out-of-office procedures can be understood by examining the components used in each methodology. Under W/T both components, work and time, individually shift indirect money toward out-of-office procedures. Combining work and time would then, logically, shift money to out-of-office procedures. The same evaluation can be used to understand the shift of dollars to out-of-office procedures under the D/T/W methodology. Under D/T/W, direct PEs have less influence on the shift in dollars than under HCFA's approach. Therefore, the influence of Direct toward in-office procedures is overpowered, just barely, by the shift of dollars under Work and Time toward out-of-office procedures.

In the D/T methodology, the influence of the Time component reduces, but does not negate, the pull of Direct, in aggregate, toward in-office procedures. However, for 7 of the 65 specialties, indirect dollars are not shifted to in-office procedures. We would hypothesize that these outlying specialties are characterized by out-of-office procedures that are more time-consuming than intensive.

The results presented in Exhibits 3 and 4 demonstrate that, while changing the allocation methodology would significantly change the amount of dollars allocated to each code performed by a specialty, the aggregate shift in dollars from in-office to out-of-office procedures would be relatively small.

#### Exhibit 4: Total Amount Shifted to Out-of-Office Procedures Relative to HCFA

	Direct	Work	Time	D/T	W/T	D/T/W
<b>Total Dollar Shift (in billions of dollars)</b>	\$ -5.63	\$ 2.01	\$ 1.27	\$ -0.51	\$ 1.66	\$ 0.56
<b>Percent of Total Indirect Dollars</b>	33.7%	12.0%	7.6%	3.1%	10.0%	3.4%

Note: Negative values indicate a shift in PE dollars to in-office procedures, relative to HCFA.

Note: The total dollar shift to out-of-office procedures is equal, but opposite to the shift to in-office procedures, relative to HCFA.

#### Herfindahl Index and Concentration of Payments

Lewin calculated Herfindahl indexes under the different payment systems to see whether payments become more or less concentrated across codes as the allocation method changes. As the value of the Herfindahl index approaches one, payments become more concentrated. This analysis did not take into account HCFA's weight averaging for shared codes. The results of the analysis indicate that there is little variation in the concentration of payments for a specialty under the different allocation mechanisms, with the exception of the Direct methodology. **Exhibit 5** displays the average Herfindahl index, across specialties, under each methodology.

As illustrated in **Exhibit 5** payments under the Direct methodology are more concentrated across specialties than under the other methodologies. The Herfindahl index for HCFA's methodology is reasonably close to the index values for the other five methodologies, suggesting that HCFA's

methodology distributes payments for indirect practice expenses in a manner that does not affect the concentration of payments relative to the other methodologies.

### Exhibit 5: Herfindahl Indexes

	HCFA	Direct	Work	Time	D/T	W/T	D/T/W
<b>Herfindahl Index</b>	.0822	.1020	.0878	.0819	.0786	.0831	.0802

### Total Allocated Indirect Practice Expenses Across Specialties

**Exhibit 6** presents the results of our analysis of the total allocated indirect PEs across specialties. The analysis examines the effect of the weight-averaging step by comparing total allocated indirect practice expenses (after the weight averaging step) under different allocation methods to the total allocated indirect practice expenses under HCFA's approach (HCFA indirect PE pool). For each alternative methodology, **Exhibit 6** indicates the percent of specialties with total allocated indirect PEs less than 90%, between 90% and 110%, or greater than 110% of their HCFA indirect PE pool. For example, under Direct, 35% of all HCFA specialties would have an allocated indirect PE pool that is less than 90% of the size of the HCFA indirect PE pool.

Looking at **Exhibit 6**, it can be seen that under all of the alternatives, with the exception of Direct, the majority of specialties are within  $\pm 10\%$  of their HCFA indirect pool. Under Direct, a majority (72%) of specialties lose or gain more than 10% of the indirect PEs allocated to them under HCFA's approach.

The results of our indirect PE distribution analysis also indicate that substituting physician time for work as in the D/T methodology has a relatively small effect on the allocated indirect PE pools. As can be seen in **Exhibit 6**, the D/T methodology is, on the whole, consistent with HCFA's methodology. A majority, 85%, of the specialties under D/T are within 10% of the dollars allocated to them for indirect PEs using HCFA's methodology. The small effect of time stems from work being a measure of both the time and intensity involved in performing a procedure. After substituting time for work in HCFA's methodology we would expect only those specialties with very high or very low intensity levels to experience a substantial change relative to HCFA. The six specialties that experience a large increase in their allocated indirect PEs under D/T could be classified as more time consuming than intense (not shown in Exhibit 6). Conversely, those specialties that lose a large portion of their HCFA indirect PEs under the D/T methodology tend to be characterized by procedures that are, in general, very intensive, but not time-consuming.

The methodology that varies from HCFA the least is D/T/W. D/T/W is HCFA's methodology with the addition of time as an allocation factor. Similar to D/T, the few specialties that experience a substantial change under D/T/W tend to be specialties with very high or very low intensity levels.

**Exhibit 6: Percent of HCFA's Allocation of Indirect PEs**

	Direct	Work	Time	D/T	W/T	D/W/T
Percent of HCFA's Allocation	Percent of Specialties					
<90%	35%	12%	11%	6%	11%	3%
90%-110%	28%	71%	74%	85%	75%	94%
>110%	37%	17%	15%	9%	14%	3%

N= 65 specialties

**Exhibit 7** illustrates both the unweighted and weighted average size of a specialty's indirect PE pool relative to its HCFA indirect PE pool under each alternative methodology. The weights correspond to the specialty's 1998 allowed Medicare charges. An average of 100% would indicate that, on average, specialties do not lose or gain indirect PE dollars, relative to HCFA's indirect PE pools. An average below 100% represents a loss of indirect PE pool dollars across specialties and an average above 100% represents a gain in indirect PE dollars across specialties. **Exhibit 7** shows that the largest average change in indirect PE pool size occurs under the Time methodology. Although the averages do not seem to indicate exorbitant changes in specialty indirect PE pool sizes, the large standard deviations reveal significant variation in results across specialties. The large standard deviations paired with the seemingly small changes in pool size suggest that under each alternative methodology outcomes vary significant across specialties but that, on average, gains by some specialties are offset by losses to other specialties.

**Exhibit 7: Average Size of Indirect Pools Across Specialties, Relative to HCFA**

	Direct	Work	Time	D/T	W/T	D/T/W
Unweighted Average	101.3%	99.1%	105.3%	104.5%	103.7%	103.3%
Standard Deviation	39.4%	14.2%	37.1%	30.0%	31.8%	25.6%
Weighted Average	101.3%	99.5%	102.1%	102.2%	101.7%	101.7%

**Exhibit 8** graphically depicts, for each alternative methodology, the average percent gain, relative to HCFA, for those specialties with increasing pool size and the average percent loss, relative to HCFA, for those specialties for those specialties with decreasing pool size. The averages reported are weighted by 1998 Medicare allowed charges.

The results below are consist with the findings our previous analyses. The average percent increase and decrease across specialties is substantially greater under Direct than under any of the other allocation

methodologies. In addition, D/T and D/T/W have the two smallest average percent decreases and average percent increases.

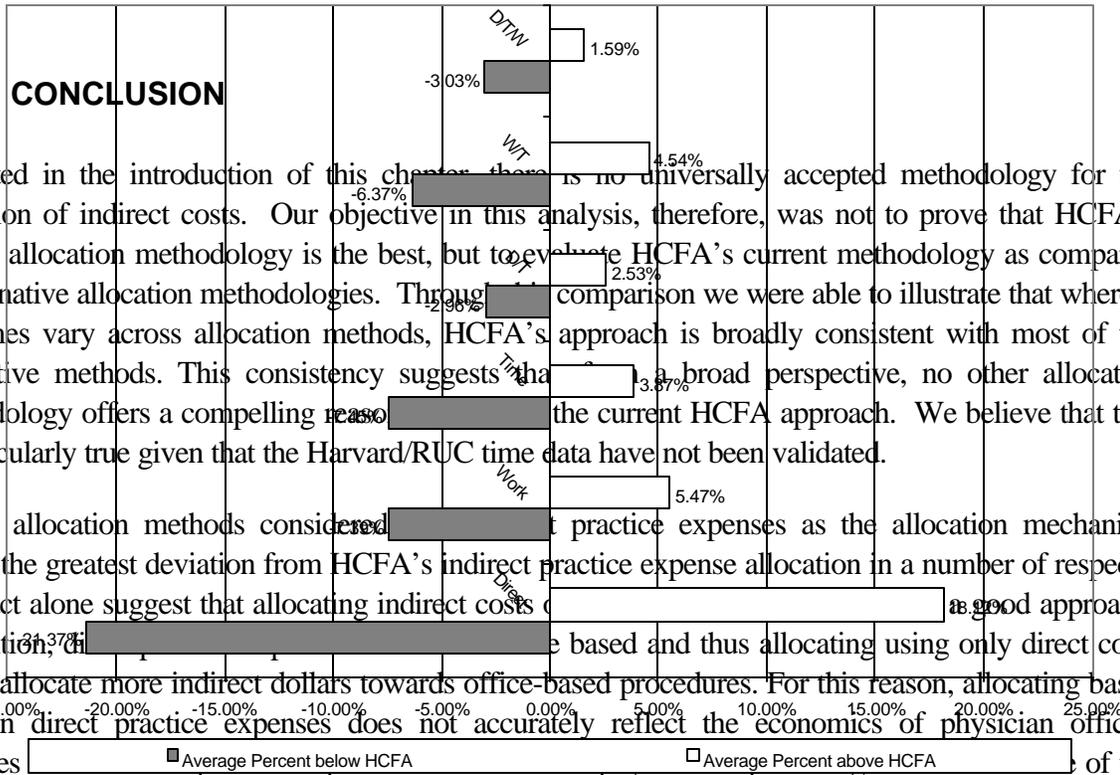
\*Excludes Anesthesiology and CRNA. Our results indicated large changes in indirect PE pools for these specialties depending on the allocation approach. Excluding these specialties provides a more accurate picture of the effect of altering the allocation methodology on the vast majority of specialties.

**Exhibit 8: Average Percent Gain and Loss in Indirect PE Pools\***

**VI. CONCLUSION**

As noted in the introduction of this chapter, there is no universally accepted methodology for the allocation of indirect costs. Our objective in this analysis, therefore, was not to prove that HCFA's current allocation methodology is the best, but to evaluate HCFA's current methodology as compared to alternative allocation methodologies. Through this comparison we were able to illustrate that whereas outcomes vary across allocation methods, HCFA's approach is broadly consistent with most of the alternative methods. This consistency suggests that, from a broad perspective, no other allocation methodology offers a compelling reason to change the current HCFA approach. We believe that this is particularly true given that the Harvard/RUC time data have not been validated.

Of the allocation methods considered, allocating indirect practice expenses as the allocation mechanism causes the greatest deviation from HCFA's indirect practice expense allocation in a number of respects. This fact alone suggests that allocating indirect costs on a direct practice expense basis is a good approach. In addition, allocating indirect costs on a direct practice expense basis is more equitable and thus allocating using only direct costs would allocate more indirect dollars towards office-based procedures. For this reason, allocating based only on direct practice expenses does not accurately reflect the economics of physician offices. Practices of the office.



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## XXIX.APPENDIX TO CHAPTER VI

### **Simulation Methodology for Indirect Cost Allocation Alternatives**

We replicated to the extent possible HCFA's PE cost allocation methodology as described in the June 5, 1998 Federal Register and updated in the November 2, 1999 Federal Register using data made available on the HCFA Website. After simulating the allocation using HCFA's methodology, we allocated indirect costs using the six alternative allocation approaches described in the Chapter. We describe our methodology below.

#### **STEP 1: Construct direct and indirect practice expense pools using SMS data, Harvard/RUC time data, and Medicare frequency data.**

We used the SMS practice expense per hour values as reported by HCFA in the June 5, 1998 Federal Register to construct the practice expense pools. A small number of adjustments were made to these values based upon modifications and updates adopted by HCFA and reflected in the November 2, 1999 final rule. Procedure codes that HCFA included in the separate zero work pool, were not used in this analysis. This was done to simplify the analysis and is unlikely to have had a large effect on results across all specialties, like those reported in this chapter.

- **Calculate provider Medicare hours by HCFA specialty.**

We multiplied 2000 Harvard/RUC physician time data in hours by the frequency with which each procedure was performed on Medicare patients by each HCFA specialty using 1998 specialty utilization data.

We then aggregate across procedures by HCFA specialty to get total Medicare patient care hours for each HCFA specialty. Codes with modifiers were scaled appropriately, based on information provided by HCFA staff.

- **Calculate PE Pool by cost category by HCFA specialty.**

Using HCFA's crosswalk, we multiplied the specialty-specific SMS PE per hour for each of the six cost categories by the appropriate specialty's total Medicare hours.<sup>29</sup>

#### **STEP 2: Allocate each direct cost category PE pool to the procedure code level for each specialty.**

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<sup>29</sup> This crosswalk is based on the crosswalk HCFA published in the June 5, 1998 and finalized (with some modifications) in the November 2, 1999 Federal Register that links each AMA specialty to one or more HCFA specialties.

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The 2000 CPEP cost data for clinical labor, medical supplies, and medical equipment in the facility and nonfacility settings were used to allocate, respectively, the SMS cost category pools for clinical payroll expenses, medical materials, and medical equipment.

Each procedure performed by each specialty was allocated a share of the specialty's PE direct cost pool based on the ratio of the code-specific CPEP value to the specialty's "CPEP pool."

For each specialty and setting, a CPEP pool was created by first multiplying the CPEP direct cost associated with each procedure by the frequency with which each procedure was performed on Medicare patients. This is the total CPEP direct cost associated with each procedure by cost category, setting, and HCFA specialty. We then sum these total CPEP direct costs across procedures and settings by HCFA specialty to get a specialty-specific CPEP pool for each of the direct cost category.

We summed the direct cost categories to create a single allocated direct cost for each procedure and specialty.

Codes with modifiers were scaled appropriately, based on information provided by HCFA staff.

**STEP 3: Calculate Work RVUs + Direct Cost by Procedure and Specialty and use to Allocate Indirect Costs.**

We obtained the work RVUs from the 2000 Medicare physician fee schedule and multiplied them by the 1995 conversion factor used by HCFA. We then summed these values to the allocated direct costs obtained in Step 2 to get the work/direct cost dollars for each procedure.

Each procedure performed by each specialty was allocated a share of the specialty's PE indirect cost pool based on the ratio of the code-specific work/direct costs dollars to the specialty's total work/direct cost dollars. This is the methodology currently used by HCFA.

To create each specialty's total work/direct cost dollars, we used the same approach described in Step 2 to create the CPEP pool.

**STEP 4: Consider Alternative Indirect Cost Allocation Approaches**

Several alternative allocation methods were considered. The basic methodology for allocating indirect costs using these approaches follows Steps 2 and 3. That is, each procedure and specialty is allocated a share of the indirect cost pool based on a ratio of a procedure-specific value to the total sum of the procedure-specific values across procedure codes. For example, if time was used, each procedure code was allocated a share of the specialty's indirect PE pool based on the ratio of the procedure-specific time and the total time spent by a specialty performing procedures on Medicare patients. Similarly, if work was used, each procedure code was allocated a share of the specialty's indirect PE pool based on the ratio of the procedure-specific work RVUs and the total work RVUs for a specialty.

We scaled the time values so that the sum of the work RVUs and time values would be equivalent.

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## **XXX.CHAPTER VII: CONCLUSION**

As directed by Lewin's contract with HCFA, this report focused on identifying refinements to HCFA's top-down PE methodology. Since commissioning this report, HCFA has modified Lewin's contract to include an additional year of work. Lewin's work under this new contract includes, among other tasks, the provision of assistance in the evaluation and/or implementation of many of the refinements identified by Lewin. This final chapter of Lewin's report on HCFA's Practice Expense Methodology briefly reviews Lewin's primary recommendations and identifies those refinements Lewin will be evaluating and/or implementing for HCFA over the next year.

The SMS, although adequate for the AMA's purposes, was not designed to collect practice expense information. Therefore, Lewin's primary recommendations for improving the applicability of the SMS data to HCFA's PE methodology focus on changing aspects of the survey methodology. By emphasizing the use of a PE summary worksheet that directly relates to a practice's tax information and collecting information on the PEs associated with mid-level providers, pharmacy and laboratory, HCFA should be able to collect more accurate PE data. The accuracy of HCFA's data could also be improved with the use of a 3-year rolling average. This average would account for natural fluctuations in PEs while mitigating the affect of year-to-year changes due to sampling error. In the July 17, 2000 *Federal Register*, HCFA accepted, with modification, Lewin's recommendation regarding the 3-year rolling average. HCFA will use a 4-year rolling average including the 1998 SMS data. Over the next year, Lewin will be working with HCFA to evaluate the use of Medicare data to identify and factor out separately billed items from the PE pools.

The use of supplemental survey data is an ongoing, important issue for both HCFA and specialty groups. As noted in Chapter 4, HCFA has recently published an interim final rule that details the survey requirements for specialty groups that wish to administer supplemental surveys. HCFA is currently reviewing comments submitted by specialty groups on these survey requirements and will respond to these comments in the future. As part of the contract modification, Lewin has recently completed working with specialty groups on the development and administration of a supplemental survey acceptable to HCFA. Lewin's next step is to edit and validate the supplemental survey data and to make suggestions to HCFA concerning whether to accept supplemental surveys. Although HCFA has taken steps to accept supplemental survey data from specialty groups, it has yet to explore Lewin's recommendation for implementing a publicly funded, coordinated survey effort. Adopting this recommendation would allow HCFA to eliminate the "winners-losers" problem addressed previously.

Under the modified contract with HCFA, Lewin will be examining ways in which future practice level survey data could be integrated with the existing SMS data to improve the validity of the PE allocations. This evaluation will include the AMA's practice-level survey, which has been suspended indefinitely, as well as other surveys that are consistent with HCFA's requirements for an acceptable survey.

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There is no easy way to validate HCFA's PE methodology, and validating the patient care hours is particularly difficult. In Chapter 5 we presented four validation methods that could be used by HCFA in conjunction with each other to identify both inaccurate existing and biased new patient care hours data. By implementing a validation method, HCFA may also encourage physicians to respond more accurately to future PE surveys to ensure the inclusion of their accurate practice expense information to calculate PEs. Over the next year, Lewin will be working with HCFA to implement and refine our suggested methods for validating practitioners work hours.

Lewin's evaluation of HCFA's methodology for indirect cost allocation to the procedure code level also illustrated the inherent difficulties in evaluating HCFA's PE methodology. There is no "best" way in which to allocate indirect costs therefore, Lewin's analysis could establish only that, relative to the alternatives, HCFA's allocation of indirect costs is reasonable and fairly consistent. However, it is important for HCFA to recognize that although HCFA's methodology may be reasonable, to allocate the indirect costs appropriately, HCFA needs to have accurate data and data consistency between the CPEP and SMS. HCFA has recognized this need and will work to improve the consistency between these two data sources so that, ultimately, the validity of the allocation of indirect costs to the procedure code level will be strengthened.