

THE RESOURCE-BASED PRACTICE EXPENSE METHODOLOGY: AN ANALYSIS OF SELECTED TOPICS

**PREPARED FOR:
CENTERS FOR MEDICARE AND MEDICAID SERVICES
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**PREPARED BY:
THE LEWIN GROUP**

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EXECUTIVE SUMMARY

As part of the Centers for Medicare and Medicaid Services' (CMS) continuing effort to refine its Medicare Fee Schedule resource-based practice expense methodology, CMS contracted with The Lewin Group (Lewin) to provide technical assistance on a number of issues related to the methodology. This report presents the results of our analyses associated with the following tasks:

- ◆ reviewing and considering alternatives to the current methodology used to produce practice expense relative value units (RVUs) for codes with no physician work RVUs;
- ◆ implementing refinements to Lewin-proposed methods for validating self-reported information on the number of hours physicians spend providing patient care (a critical data element for the resource-based practice expense methodology); and
- ◆ evaluating the American Medical Association's practice-level survey, and its applicability to the practice expense methodology.

Zero Work Pool

The current approach used to develop practice expense (PE) RVUs for codes with no physician work values ("zero work" services) establishes a total Medicare practice expense pool for zero work services (zero work pool). Instituted by CMS in its November 2, 1998 final rule, the zero work pool was created to limit the significant reductions in the practice expense RVUs for zero work services that would have been experienced under the originally proposed top-down methodology. The procedures associated with these zero work codes include technical component services and other services that presumably involve no physician time.

The estimated impacts of adopting the originally proposed top-down methodology, which did not differentiate between zero work services and other services, on technical component providers and others generated a strong response from the public. Specialty groups representing technical component providers argued that the reductions in their practice expense relative values units, under the proposed approach, were inappropriate in that they were based on inaccurate data and a biased indirect cost allocation methodology. In response to public comments and in light of its own concerns, CMS created the zero work pool as an interim solution.

In seeking alternatives to the zero work pool, we attempted to identify factors that may account for the substantial reductions in the PE RVUs for zero work services under CMS's originally proposed top-down methodology. We considered the primary data inputs, the development of the practice expense pools, and the allocation methodology and identified three primary limitations of the top-down methodology.

- 1) Practice expense data collected by the American Medical Association's Socioeconomic Monitoring System (SMS) survey exclude expenses for non-physician owned medical practices, such as practices that only provide relatively high-cost technical component

services (e.g., diagnostic imaging centers). Our analysis suggests that estimates of total practice expenses for specialties that include such practices may be biased downward.

- 2) Indirect costs are allocated to individual procedure codes based in part on physician work RVUs, which, by definition, do not exist for zero work services. As a result, a smaller amount of indirect costs are allocated to zero work codes than may be appropriate.
- 3) The total Medicare hours used to create the practice expense “pools” do not include the time spent by clinical staff providing zero work services to Medicare beneficiaries. The practice expense pools for specialties that perform zero work services may, therefore, underestimate the level of practice expenses incurred while treating Medicare beneficiaries. The effect on a specialty’s practice expense pool will depend on the share of zero work service performed in practices not included in the SMS survey (i.e., non-physician owned medical practices). If practice expenses associated with zero work services are not captured in the SMS survey, then the use of physician patient care hours to construct the practice expense pools will result in a systematic underestimation of the pools for specialties that perform zero work services.

These limitations taken together imply that aggregate practice expense RVUs for zero work services are likely to be underestimated under the top-down approach and suggest the need for the zero work pool or an alternative solution. However, the issues surrounding the development of practice expense RVUs for zero work services are numerous and complex. A simple solution to dealing with zero work codes within CMS’s overall PE methodology does not exist. We believe that a long-term solution will require the collection of practice expense data from all zero work providers (particularly including non-physician owned practices). With that in mind, we present four options for CMS to consider for the future treatment of zero work services.

Option 1: Return zero work codes back to the top-down methodology, without any modification to the methodology

As noted above, we believe that there are at least three important limitations to using the top-down methodology for developing practice expense RVUs for zero work codes. In particular, the original top-down method used to develop practice expense pools does not account for the costs of providing services with no associated physician work RVUs to Medicare beneficiaries. Potentially offsetting this effect is the fact that the practice expense per hour values from the SMS survey reflect practice expenses incurred during the provision of all services, including zero work services, while the denominator, physician patient care hours, does not include the time spent by clinical staff performing zero work services. Nevertheless, we believe that, as a result of the limitations, Medicare payments to specialties that perform zero work services would be too low under the basic top-down methodology. Therefore, in our opinion, Option 1 is not a viable alternative to the current zero work pool approach.

Option 2: Maintain the current zero work pool approach and consider developing specialty-specific zero work pools

The current zero work pool approach has two appealing features. First, it overcomes, to varying degrees, the limitations of the top-down methodology. For example, practice expenses for zero

work codes are captured in the practice expense pool by the use of clinical staff time instead of the physician procedure time, which does not exist for zero work codes. Second, the provider community generally accepts the results from the zero work pool approach. For these reasons, maintaining the status quo may be an appropriate option at this time, until additional data can be collected.

If the zero work pool is kept, we recommend that CMS consider the use of specialty-specific zero work pools to limit the redistribution of practice expense dollars between specialties.

Option 3: Develop practice expense RVUs for technical component services as the difference between the global and professional component RVUs and return other zero work services to the top-down methodology

Under the current approach, relative value units for the professional component of services are derived using the top-down methodology, while relative value units for the technical component of services are derived using the zero work pool approach. Relative values for global services are set equal to the sum of the professional and technical component RVUs. A significant function of the zero work pool is to develop RVUs for technical component services. An alternative approach is to obtain RVUs for technical component services as the difference between the RVUs for global and professional component services, which are obtained from the top-down methodology. Under this alternative approach, it would not be necessary to include technical component services in construction of the practice expense pools or to allocate the pools to technical component service codes.

This approach is appealing because the SMS survey includes providers of global and professional component services. It may be appropriate then to use the top-down methodology and the SMS data to calculate practice expense RVUs for these types of codes and then derive the RVUs for the codes corresponding to technical component services from this information. Other zero work codes could be returned to the top-down methodology, eliminating the need to continue the zero work pool. However, CMS should consider using clinical staff time in developing the practice expense pools for these other zero work codes, if the practice expenses associated with these codes are not captured in the practice expenses from the SMS survey. In addition, the indirect allocation approach should be modified for zero work codes, as discussed in Option 4.

Option 4: Eliminate the zero work pool after accounting for all the practice expenses associated with providing zero work services to Medicare beneficiaries and after modifying the approach used to allocate indirect costs to zero work services.

The practice expenses associated with providing zero work services to Medicare beneficiaries may not be reflected in the practice expense pools constructed under the top-down approach. In that approach, practice expenses per hour values are multiplied by total Medicare physician hours based on the Harvard/Relative Value Update Committee (RUC) time data. Zero work services have no associated Harvard/RUC physician time and, therefore, do not contribute to the

total Medicare physician hours.¹ To correct this problem, CMS could develop procedure time measures associated with zero work services to more accurately develop the practice expense pools.

The allocation of indirect costs in CMS's top-down methodology is based on direct costs and physician work RVUs. Zero work services have no associated physician work RVUs and may be undervalued in this approach. To adjust for this limitation, we recommend that CMS create proxy work RVUs for zero work pool services for use in the allocation of indirect costs. For example, an average work RVU per Harvard/RUC minute can be calculated for each specialty and then applied to the clinical staff time associated with each zero work code.

Our intention in creating these recommendations was to develop methodological options for CMS that would result in PE RVUs for zero work services that are more accurately resource-based than those generated by the zero work pool. However, each of these options has potential drawbacks and would need to be considered carefully. In fact, if the aggregate PE RVUs generated by our methodological recommendations are lower than those created by the current zero work pool, we recommend that CMS consider maintaining budget neutrality to the current zero work pool approach. We do not believe that with the available data it can be determined if the PE RVUs from the zero work pool are under- or over-valued. For this reason, CMS's normal course of action of simulating the financial impact of the recommendations on specialties prior to their implementation would be particularly critical. CMS might consider ensuring levels at least equivalent to their current zero work pool values.

Validation of Patient Care Hours

In a previous report, we proposed four methods for validating self-reported information on the number of hours physicians spend providing patient care. These data are important because they are used in the calculation of the specialty-specific practice expense per hour values in CMS's PE methodology. In March 2000, the AMA indefinitely suspended the administration of the SMS and the Practice Survey due to the escalating cost of data collection and dwindling response rates. Given the cancellation of the SMS survey, the ability to use our proposed methodologies, which validate patient care hours at the specialty level, is in question.²

We believe that applying edits and trims to any future survey data at the respondent level is an important way to ensure the reliability of the self-reported data. Although this approach may reduce the sample size, it is counterproductive to retain data that may be inaccurate in order to maintain a larger sample size.

¹ As noted under Option 1, one offsetting factor is that practice expense per hour values from the SMS survey reflect practice expenses incurred during the provision of all services, to the extent that practices that perform zero work services are included in the survey.

² While completing this report, we became aware that the AMA has reconsidered its stance on survey activities. AMA survey activities may affect the applicability of our validation approaches, which may need to be reconsidered in light of these developments.

Practice Expense Survey of Medical Practices

The AMA developed a survey to collect information from medical practices rather than individual physicians (as is done in the SMS survey). The pilot administration of this Practice Survey took place in the fall of 1999. The Practice Survey was of immediate interest to CMS because of its potential to provide data more consistent with CMS's PE methodology than the SMS survey.

Due to important differences between the SMS and the Practice Survey discussed in this report, Lewin does not recommend the introduction of the Practice Survey instrument in a piecemeal fashion by individual supplemental survey efforts. This would encourage the collection of data inconsistent with the data CMS is currently using for the calculation of PEs. Lewin recommends that CMS continue to require that supplemental surveys be administered using the SMS format and methodology until the AMA (or CMS) has administered a full-scale practice survey using a modified survey instrument.

The primary limitation of the practice survey instrument for use in the practice expense methodology is the lack of information collected on patient care hours. Patient care hours are needed to develop practice expense per hour values for a practice. In addition, the number of weeks worked in a year by physicians in the practice is also an important piece of information for the methodology that should be collected by the practice survey. Moreover, we believe the practice survey provides an important opportunity to collect additional information that would strengthen the methodology, such as information on mid-level providers, pharmacy and lab charges, and uncompensated care.

Despite the advantages of collecting practice expenses through a survey of practices, self-reported time data will always be subject to imprecision. Lewin's long-term recommendation to CMS is the substitution of physician work RVUs for the SMS patient care hours in CMS's PE methodology. Rather than creating the PE pool by multiplying the average PE per hour and the total hours worked, CMS could multiply the average PE per physician work RVU and the total Medicare physician work RVUs to create the specialty-specific PE pools.

CHAPTER 1: ZERO WORK POOL

I. INTRODUCTION

As part of the Centers for Medicare and Medicaid Services' (CMS) continuing effort to refine its Medicare Fee Schedule practice expense methodology, CMS tasked The Lewin Group (Lewin) with reviewing and considering alternatives to the current methodology used to produce practice expense relative value units (RVUs) for codes with no physician work RVUs. The procedures associated with these codes ("zero work" services) include technical component services and other services that presumably involve no physician time. The current approach, instituted by CMS in its November 2, 1998 final rule, establishes a separate Medicare practice expense (PE) pool for zero work services (zero work pool). The zero work pool was created to limit the significant reductions in the practice expense RVUs for zero work services that would have been experienced under the originally proposed top-down methodology.

The estimated impacts of adopting the originally proposed top-down methodology, which did not differentiate between zero work services and other services, on technical component providers and others generated a strong response from the public. Specialty groups argued that the reductions in their practice expense relative values units, under the proposed approach, were inappropriate in that they were based on inaccurate SMS and CPEP data and a biased indirect cost allocation methodology. In response to public comments and in light of its own concerns, CMS created the zero work pool as an interim solution.³

In this analysis, we attempted to identify factors that may account for the substantial reductions in the PE RVUs for zero work services under CMS's top-down methodology. To provide context for our study and to gather input from the provider community, we met with specialty groups affected by the zero work pool approach and reviewed comments submitted to CMS. It seems widely accepted that any long-term solution must address any limitations in either the data or the methodology used to develop practice expense RVUs for zero work services. Thus we present evaluations of the SMS data, the CPEP data, and CMS's top-down methodology after first reviewing CMS's current zero work pool methodology. We conclude our analysis with a series of options and recommendations to CMS for possible alternatives to the zero work pool approach.

³ Originally, CMS included all services with a zero work RVU (including the technical components of services with professional and technical components) in the zero work pool. However, some of the codes included were negatively impacted by the zero work pool's methodology. CMS's intention was not to further reduce PE payments for services in the zero work pool and it has since removed services from the zero work pool if requested to do so by the specialty that performs the service.

II. ZERO WORK POOL APPROACH

Methodology

The current practice expense methodology consists of two similar approaches for developing practice expense RVUs for zero work codes and other codes. In each case, the basic top-down methodology is maintained: practice expense pools are created for each cost category by multiplying practice expense per hour values by a measure of time spent providing services to Medicare beneficiaries, and then the pools are allocated to individual codes using measures of relative resource use among procedures. Despite the similarities, there are five primary differences between the zero work pool approach and the top-down methodology used for all other codes.

- 1) The zero work pool approach creates a single pool for each cost category for all zero work services, instead of specialty-specific practice expense pools.⁴
- 2) The zero work pool approach uses the procedure-specific average clinical staff time from the CPEP data in the calculation of total Medicare hours. Zero work services are generally performed by clinical staff and, therefore, do not have Harvard/RUC physician time values associated with them.
- 3) The zero work pool approach uses the average practice expense per hour value across all physicians from the SMS survey, rather than a specialty-specific value.
- 4) The zero work pool approach uses the 1998 charge-based practice expense RVUs to allocate the direct costs to the procedure-level, instead of the procedure-specific CPEP data.
- 5) The zero work pool approach allocates indirect cost based on allocated direct cost for the top-down methodology for allocated indirect costs using allocated direct costs and RVUs.

Creating the Practice Expense Pools for Zero Work Services

The first part of the top-down methodology is the creation of the practice expense pools for each cost category. The cost categories include Clinical Labor, Medical Equipment, Medical Supplies, Administrative Labor, Office Supplies, Other Expenses. For the zero work pool, only one pool across all physician specialties is created for each cost category. The zero work pool is created in two steps.

Step 1: Calculate Medicare hours based on average clinical staff time from CPEPs across all zero work services

⁴ The zero work pool includes all codes with a zero work value (except those that have been removed on a specialty's request) regardless of the specialty that provides them. Since all of the codes are lumped into one pool, the allocation produces one value for each code. Consequently, there is no need to weight average the RVUs of codes shared by specialties as in done for codes not included in the zero work pool.

$$\text{Medicare Hours} = \sum_k [(\text{Avg. Clinical Staff Time for procedure } k) * (\text{Medicare Frequency of } k)]$$

Step 2: Multiply the average practice expense per hour across all physicians from the SMS survey by the Medicare Hours as determined in Step 1

$$\text{Zero Work Pool by Cost Category} = \text{“All Physician” PE/hr average by cost category} * \text{Medicare Hours (Step 1)}$$

Allocating Direct and Indirect Practice Expense Pools for Zero Work Services

Once a zero work pool is calculated for each cost category, CMS allocates these costs to the procedure code level. The direct cost pools (Clinical Labor, Medical Equipment, Medical Supplies) are allocated using the portion of the 1998 PE RVU associated with each direct cost component. To decompose the 1998 PE RVUs into components associated with each direct cost category, CMS uses the ratio of an individual direct cost category’s practice expense per hour to total practice expense per hour. This approach is shown in Step 3 and an example is provided below.

Step 3: Determine the portion of each 1998 PE RVU associated with each direct cost category

$$\text{1998 PE RVU for direct cost category } x \text{ and procedure } k = \text{1998 PE RVU}_k * \frac{\text{“All Physician” PE/hr for cost category } x}{\text{Total “All Physician” PE/hr}}$$

In the July 17, 2000 *Federal Register*, CMS reported All Physician practice expense per hour values of \$12.3, \$3.1, and \$7.3, for Clinical Labor, Medical Equipment, and Medical Supplies, respectively, and a total practice expense per hour of \$68.6. If a procedure’s 1998 PE RVU was 10, for example, CMS would determine that roughly 1.8 RVUs or 18 percent (\$12.3/\$68.6) of the 1998 value was associated with clinical labor costs, 0.45 or 4.5 percent (\$3.1/\$68.6) was associated with medical equipment, and 1 RVU or 11 percent (\$7.3/\$68.6) was associated with medical supply costs.

After CMS determines the portion of each 1998 PE RVU associated with each direct cost category (step 3), the resulting values are used to allocate the direct cost pools to the procedure code level as described below.

Step 4: Allocate **direct** costs to each procedure code using the 1998 PE RVUs associated with each cost category as determined in Step 3

PE pool allocation for direct cost category x to a single procedure code k	$=$	$\frac{1998 \text{ PE RVU}_{x,k} \text{ (Step 3)}}{3_k (1998 \text{ PE RVU}_{x,k} * \text{Frequency of } k)}$	$*$	Zero Work Pool for cost category x (Step 2)
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For example, consider the allocation of the clinical labor practice expense pool. Suppose that a code's clinical labor share of the 1998 PE RVUs is 1.8 RVUs, as in our example above, and that the total 1998 PE RVUs associated with the clinical labor costs of all zero work codes is 180 RVUs. One percent (1.8/180) of the clinical labor zero work pool would then be allocated to a single unit of the procedure.

As shown in step 5, the indirect cost pools (Administrative Labor, Office Supplies, Other Expenses) are then allocated using the sum of the allocated direct costs as determined in Step 4.

Step 5: Allocate **indirect** costs to each procedure code using allocated direct costs

PE pool allocation for indirect cost category x to a single procedure code k	$=$	$\frac{\text{Sum of allocated direct costs for } k \text{ (Step 4)}}{3_k (\text{Sum of allocated direct cost for } k * \text{Frequency of } k)}$	$*$	Zero Work Pool for Indirect Cost Category x (Step 2)
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Final Steps

Step 6: Calculate a practice expense RVU for each zero work code on a budget neutral basis

Step 7: If the zero work RVU is for the technical component of a service, the global PE RVU is set equal to the sum of the professional and technical components

The zero work pool methodology is successful in limiting the losses to the technical component and other zero work service providers as compared to the top-down methodology. In one sense, this outcome is not surprising because the 1998 PE RVUs are used to allocate direct costs, ensuring some comparability to the essentially charge-based system in place at that time. As we argue below, a solution like the zero work pool is needed to correct deficiencies in the top-down methodology for zero work services. In thinking about alternatives to the zero work pool approach, the potential data and methodological problems surrounding zero work services should be addressed directly. It is unlikely that any alternative methodology that does not directly address these problems will produce more reliable practice expense RVUs than the zero work pool.

Specialties in the Zero Work Pool

The zero work pool contains services from a number of specialties. The identification of these specialties and their financial stake in the zero work pool allowed us to focus our analysis on the specialties that were most affected by the creation of the zero work pool and that would be most affected by the implementation of an alternative. In order to identify the specialties that perform the zero work codes, we searched CMS's 1998 Medicare utilization file for each of the codes included in the zero work pool. The utilization file is broken down by specialty so that, for each code billed to Medicare, the frequency of billing is available by specialty.⁵

In order to determine the composition and relative financial importance of the zero work pool for each specialty, we calculated the amount of Medicare practice expense dollars for each code in the zero work pool by specialty and then summed across codes by specialty.⁶ The ten specialties with the most Medicare practice expense dollars from codes in the zero work pool are displayed in Table 1.

Table 1
Specialties with the Largest Amount of Medicare Practice Expense Dollars from Zero Work Pool Services

Specialty	Total PE Dollars in Zero Work Pool	Percent of Total Zero Work Pool Dollars
Radiation Oncology	\$173,238,795	17.26%
Hematology/Oncology	\$117,986,012	11.76%
Radiology	\$106,068,252	10.57%
Independent Physiological Lab	\$81,945,437	8.17%
Internal Medicine	\$61,205,185	6.10%
Cardiology	\$55,415,275	5.52%
Otology., Laryn., Rhino.	\$55,064,193	5.49%
Portable X-ray Supplier	\$53,757,976	5.36%
Medical Oncology	\$45,972,908	4.58%
Allergy/Immunology	\$40,691,770	4.05%

Source: Authors' analysis of CMS's 1998 Medicare utilization file.

In Table 2, we report the ten specialties for which Medicare practice expense dollars from zero work pool services account for the largest share of their total practice expense Medicare revenue. These specialties will be most affected by any change to the zero work pool methodology.

⁵ We located 6,193 entries (i.e., unique code-specialty-place of service combinations) in the utilization file for zero work services representing 77 specialties.

⁶ The PE dollars for codes billed with a modifier were adjusted following CMS's guidelines. These modifier adjustments are percentages used by CMS to adjust the PE payment for a service due to increased or decreased intensity, assistance at surgery, the performance of multiple procedures at the same time etc.

Table 2
Specialties with the Highest Percent of Total Medicare PE Dollars from Zero Work Pool Services⁷

Specialty	Zero Work Pool % of Total PE
Ambulance Service Supplier	97.92%
Audiologist	90.64%
Psychologist	85.35%
Portable X-ray Supplier	77.11%
Independent Diagnostic Testing Facility	69.64%
Independent Physiological Lab	57.43%
Radiation Oncology	49.06%
Medical Oncology	38.90%
Allergy/Immunology	38.26%
Hematology/Oncology	35.56%

Source: Authors' analysis of CMS's 1998 Medicare utilization file.

The lists of specialties in Table 1 and Table 2 are not entirely the same. This indicates that some specialties, such as cardiology and internal medicine, have a large amount of PE dollars in the zero work pool, but these zero work pool dollars do not constitute a large portion of their total PE dollars. On the other hand, specialties such as medical oncology and allergy/immunology have a greater stake in the zero work pool because their zero work PE dollars constitute a large portion of their total PE dollars. In addition to the specialties listed in Table 1 and Table 2, other specialties may have a large stake in the zero work pool. Codes billed frequently by a specialty with a smaller stake in the zero work pool may also be billed frequently by physicians in other specialties. A change in the value of these codes could have a significant impact on the smaller zero work pool specialties.

Comments from Specialty Groups

Not surprisingly, we found that the specialty groups with large financial stakes in the zero work pool prefer the RVUs generated by the zero work pool as compared to those generated under the top-down methodology. As noted in comments submitted to CMS by the Society of Vascular Technology (SVT), the Society of Diagnostic Medical Sonographers (SDMS), and the American Society of Neuroimaging (ASN)⁸, "CMS received few complaints regarding the zero work pool, suggesting most technical component groups supported this solution." One specialty group reported to us that the zero work pool PE RVUs are close to the PE RVUs that existed under the charge-based system but that practice expense payments for technical component services are lower than the cost of providing these services. To the extent that costs exceed payments, physicians may need to cost shift from their professional component service payments. According to specialty groups, however, the losses on technical component services under CMS's top-down methodology would have been too great to be offset by cost shifting.

⁷ Three specialties identified in the Medicare claims data with a large amount of their PE dollars in the zero work pool were omitted from this table due to their indefinite nature. These specialties include medical supply companies, unknown suppliers, and unknown providers.

⁸ Comment to CMS, September 15, 2000.

The specialties that Lewin spoke with are wary of moving beyond the zero work pool without additional data collection and careful analysis. As stated in the comments submitted to CMS, before a long-term solution can be implemented, “PE data must be collected from [technical component]-only providers to capture and quantify accurately the resources used to deliver services without a professional component and a separate PE methodology must be used to allocate payments equitably.” The specialties warn that a return of technical component (TC) services to CMS’s top-down methodology will result in such significant payment reductions that TC providers may no longer be able to afford to provide services to Medicare beneficiaries.

III. POTENTIAL LIMITATIONS OF CMS’S TOP-DOWN METHODOLOGY FOR ZERO WORK CODES

When the “top-down” approach was originally proposed, CMS applied the same methodology to develop PE RVUs for codes with and without zero work values. The resulting impacts on zero work codes and the specialties that primarily perform these services prompted CMS to create the zero work pool approach. The zero work pool approach mitigated the reductions in payments that would have occurred under the originally proposed top-down methodology, which is the approach currently used for codes with physician work values. The projected reductions in payments for zero work services might simply have indicated that the relative value units for these services, under the charge-based system, were overvalued. Alternatively, the reductions might have been brought about because of limitations in the methodology that prevent an accurate recognition of the costs associated with zero work services. These limitations may result from the data used by CMS or the methodology itself. In this section, we critically examine the SMS and CPEP data and CMS’s originally proposed PE methodology to identify any limitations in these components with respect to developing practice expense RVUs for zero work services.

SMS PE Direct Cost Data

The SMS survey collects PE data from a national sample of physicians. Although the survey was not designed to calculate expenses at a practice-level, CMS uses the data in its top-down methodology to create the PE pools. In CMS’s methodology, a specialty-specific PE pool is created for each direct cost category (Clinical Payroll, Medical Materials and Supplies, Medical Equipment) and each indirect cost category (Administrative Payroll Expense, Office Expenses and All Other). The SMS data are used to create a PE per hour value for each specialty and cost category. These PE per hour values are then multiplied by the total time spent providing services to Medicare beneficiaries to create specialty-specific PE pools by cost category.

The first major step in CMS’s methodology is the development of the practice expense pools. Ideally, each pool should equal the portion of a specialty’s actual total practice expenses that was incurred while providing services to Medicare beneficiaries. If problems exist in the data, a specialty’s pool may be overvalued or undervalued. In examining the SMS sampling methodology and data, Lewin found a potential bias in the SMS survey against practices that

only provide technical component services (e.g., a diagnostic-imaging center) as well as other limitations.⁹

In this discussion, we are concerned with the breakdown of practices within a specialty by the types of services provided by the practice. Practices may perform only technical component services (TC-only practices), only professional component services (PC-only practices), or both the professional and technical components of services. In our discussion, we will refer to practices that perform both technical and professional components of services as “Global” practices.

We believe that it is reasonable to assume that TC-only, PC-only, and Global practices have different characteristics and different costs associated with the services they provide. Specifically, PC-only providers have none of the equipment expenses of TC-only and Global practices. Therefore, in order for CMS’s PE calculations to accurately reflect the costs associated with running a practice, each practice type in a specialty should be represented by the same portion of the SMS sample that it represents in the actual specialty practice population. In theory, this can be obtained through a careful practice sampling approach and/or the development of appropriate sample weights. However, the SMS survey is a physician survey and, thus, the weighting scheme used by the AMA only accounts for characteristics of the physician and not of his/her practice. Although this important limitation of the SMS survey data for use in CMS’s methodology has been widely recognized, its implications are most significant for specialties with TC-only providers.

Because the SMS survey is a physician survey, it excludes many, if not all, TC-only practices, which typically do not employ and are not owned by physicians. Therefore, the SMS sampling methodology does not allow a truly representative sample to be drawn for specialties that include TC-only practices. The SMS only collects practice expense information from physicians who are part or full owners of a medical practice, but does not collect information from practices that are owned by non-physician entities. For example, according to the National Coalition for Diagnostic Imaging Services (NCQDIS), a large percentage of diagnostic imaging centers are owned by corporations. These corporations, which bear the TC costs of imaging services, are not included in the SMS survey sample frame. Unless there are physician-owners of TC-only practices, the SMS will not capture any PE information from TC-only practices. Even in that instance, the responding physician would be screened out of the survey unless he/she worked 20 hours or more a week. In addition, NCQDIS noted that the radiologists who provide the PC services in diagnostic imaging centers, but who do not own the facilities or the equipment, are not eligible for the SMS survey. Therefore, it is reasonable to expect that the SMS survey collects PE information only from physician-owners of PC-only and Global practices.

The exclusion of TC-only practices from the SMS sample may lead to the calculation of inaccurate PE per hour values (for use in the PE methodology) for direct costs, if the direct costs associated with TC services are not adequately represented by the Global providers in the SMS sample. We illustrate this point using the following example. Consider a specialty with a practice population consisting of 10% TC-only practices, 70% physician-owned Global

⁹ These problems are not a reflection of the quality of the SMS survey, but are reflective of the limitations of using the SMS survey data in CMS’s methodology.

practices, and 20% physician-owned PC-only practices. The SMS sample eligible for the practice expense section of the survey will consist only of the physician-owners at the Global and the PC-only practices. Therefore, the population of practices from which a physician is eligible to participate in the SMS survey is 77.78% Global practices and 22.22% PC-only practices.¹⁰ Assuming that a single physician owns each practice, a truly random sample of physicians would be expected to consist of 77.78% from Global practices and 22.22% from PC-only practices. In our example, the SMS physician practice sample cannot be representative of all practices because TC-only practices are not included. Consequently, direct practice expenses, such as equipment costs, for specialties that include TC-only providers will be underestimated, since the direct costs associated with technical component services tend to exceed those associated with profession component services.

There are at least two factors that could increase the extent to which practice expenses for specialties with TC-only providers are underestimated in the SMS survey. First, the greater the difference in practice expenses between PC-only and TC-only practices, the greater the potential bias. Second, the potential bias is likely to be greater the larger the percent of TC-only practices and the smaller the percent of Global practices in the population. The latter point is based on the notion that Global practices have similar direct costs to TC-only practices, therefore, their inclusion in the survey can limit some of the bias due to the exclusion of TC-only practices.

Our example and analysis are based on the assumptions that each practice has only one owner and that the responding physicians are owners from a representative set of PC-only and Global practices. If we relax these assumptions, few definitive implications can be drawn from the fact that practitioners from TC-only practices are not included in the survey. If, in our example, each of the Global practices had five physician-owners and each PC-only practice had only one physician-owner, a sample from the SMS survey would favor Global practice. It would then be possible that the resulting practice expense per hour would be biased upward, even without TC-only practices in the sample. Similarly, significant differences in response rates among physicians from Global and PC-only practices could cause estimated practice expenses per hour to differ from their true values in unexpected ways. In addition, although we can assume that the vast majority of TC-only practices are not in the SMS sample because they are not physician-owned, we cannot be sure what percent of Global and PC-only practices are owned by non-physician entities and excluded from the SMS sample. All of these factors may exacerbate, mitigate, or reverse the bias against the direct costs associated with TC services and underscore the need for using a practice-level survey in collecting PE data for use in CMS's methodology.

Our example also assumes that a practice is only a TC-only, PC-only, or Global provider. To the extent "mixed" practices exist, in that they perform only the TC part of a services in some cases and global or PC-only services in other cases, the practice expenses from the SMS survey will, at least in part, reflect the costs associated with technical component services. As we discuss later, this point becomes important in considering limitations in the top-down methodology for developing the practice expense pools.

¹⁰ There are no TC providers in the SMS sample so a representative sample of PC-only and Global providers will consist of $(70/90) = 77.77\%$ Global providers and $(20/90) = 22.22\%$ PC providers.

In comments submitted by physician specialty groups, concerns were also raised about the response rates between hospital-based physicians and those in other treatment settings. The American Society for Therapeutic Radiology and Oncology (ASTRO) commented to CMS that “the SMS survey over-sampled hospital based radiation oncologists, who either did not report practice expenses for staff, equipment and supplies because these costs were paid by the hospital, or inaccurately reported the data because of limited knowledge of the hospital’s costs.” According to ASTRO, the skewed sample led to a 24 percent reduction in reimbursement for TC services under CMS’s originally proposed PE methodology. The belief that the SMS sample is skewed toward hospital-based and PC-only providers was echoed in comments from the American College of Radiology (ACR) and the Society of Vascular Technology (SVT). However, it is difficult to know for sure to what extent the SMS oversampled hospital-based physicians.

Equipment Costs from the SMS

The practice expense per hour values for all of the direct cost categories will likely be affected by the exclusion of TC-only practices from the SMS or by an oversampling of hospital-based providers. However, specialty groups have focused their attention on the medical equipment cost category. According to the groups, the medical equipment costs reported on the SMS are invalid due to unrepresentative samples and unclear directions on the survey. The SMS collects a physician’s “expenses for depreciation, leases and rent of medical equipment used in diagnosis or treatment of patients.” Respondents are appropriately instructed not to include the total purchase price or replacement value of medical equipment.

We examined the SMS equipment cost data for several specialties in an effort to determine if sampling issues and/or response bias led to inaccurately low PE per hour values. Table 3, below, contains the percent distribution of equipment costs as reported by practice owners on the 1995 to 1997 SMS surveys for several specialties with large financial stakes in the zero work pool.

Table 3
Distribution of Equipment Expenses as Reported on the SMS 1995-1997 for Selected Specialties

Specialty	\$0	> \$0 and < \$5K	< \$6-14K	< \$15-24K	\$25+ K
Radiation Oncology	65.0%	0.5%	9.2%	6.6%	18.7%
Card/Thor/Vasc Surgery	59.1%	15.7%	8.9%	5.2%	11.1%
Radiology	58.6%	13.9%	8.7%	5.9%	12.9%
Internal Medicine	42.6%	24.8%	21.9%	5.8%	4.9%
Allergy/Immunology	38.7%	36.2%	16.1%	6.6%	2.5%
Otology., Laryn., Rhino.	26.2%	10.7%	33.2%	13.8%	16.2%
Oncology	25.9%	20.3%	18.4%	6.4%	29.0%
Cardiology	23.4%	16.9%	21.6%	15.5%	22.6%

Source: AMA’s report on the SMS, July 1998.

A significant percent of practice owners in each of specialty reported equipment expenses of zero dollars. Although specialty groups have argued that the SMS data is wrong because of the zero dollar costs, this argument must be considered carefully. Physicians who practice in a hospital and PC-only practices with little or no equipment may have accurately reported equipment costs of zero dollars. In addition, physicians who have fully depreciated all of their equipment costs may have accurately reported zero dollars in equipment expenses.

It is important to note that some zero dollar equipment costs may also be a result of the phrasing of the equipment cost question on the SMS survey instrument. The SMS does not explicitly instruct respondents to include maintenance and service costs in the equipment cost category. It is possible that respondents have failed to report these costs on the SMS or that they have reported these costs in the “other expenses” category. Physician-owners whose equipment is paid in full and/or who have fully depreciated the cost of all their equipment should still have equipment costs reported on the SMS that include maintenance and service costs. The possibility exists that some of the zero dollar equipment cost responses on the SMS are a result of physician-owners not reporting maintenance and service costs.

After examining the SMS sampling methodology and the equipment costs reported on the SMS, we are concerned about the SMS data’s ability to accurately capture the direct costs associated with the provision of TC services. As detailed in this section of the report, there are potential sources of bias introduced by the SMS sampling methodology and on the SMS survey instrument. The significant share of physicians with zero equipment costs is consistent with the view that the SMS equipment cost data are biased downward for specialties that provide technical component services. However, because we cannot determine the percent of respondents who were hospital-based and the percent that were not depreciating their equipment expenses, we cannot draw any conclusions from the SMS data. It would be difficult, or perhaps impossible, to determine the validity of the SMS data without collecting additional practice expense information. Nevertheless, we remain concerned that the SMS data do not accurately reflect the direct practice expenses of specialties that perform technical component services and consider this further below.

The CPEP Data

The reductions in the practice expense payments for zero work pool providers in CMS’s top-down methodology could also be a result of inaccurate CPEP data. The procedure-specific CPEP data are used in the methodology to allocate the direct cost pools to individual procedure codes. If the CPEP values for zero work codes are inaccurately low relative to other procedures, a smaller portion of the specialty-specific PE pools would be allocated to these codes. One consequence of this is that a larger portion of the pool would be allocated to non-technical component and, possibly, less costly procedure codes (e.g., evaluation and management). If these codes are performed by a number of specialties, specialties that perform zero work services could lose money for total payments as a result of the weight averaging of allocated values across specialties.¹¹ The ultimate effect of inaccurately low CPEP data for zero work procedures, therefore, could be lower PE RVU values and lower total PE payments for specialties that

¹¹ The weight averaging step results in a redistribution of practice expense values from above average cost specialties to below average cost specialties.

perform zero work services. Consequently, low CPEP values for zero work services could explain the estimated negative impacts of the originally proposed top-down methodology on specialties that provide zero work services.

Although CMS has suggested that inaccuracies in the CPEP data may be causing the reductions in zero work codes' PE values, specialty groups' comments seem to focus less on the CPEP data as an important factor. Several specialties have noted that, although the CPEP values for some individual codes could be incorrect, overall the CPEP data could be reasonable.

As with the SMS data, we focused the analysis of the CPEP data on equipment cost because it is the direct cost category with which TC-oriented specialties are most concerned. The CPEP equipment cost data were developed to estimate the equipment resources used to provide a service to a "typical" patient, not necessarily a Medicare patient. In order to develop procedure-specific equipment costs, the equipment used in performing each procedure was first identified. Two types of equipment were identified. Service-specific equipment was defined as equipment with costs that could be attributed to a specific subset of services. Overhead equipment was defined as equipment used in virtually all services provided by a specialty or equipment that is rarely used but is routinely purchased and maintained.

To determine service-specific equipment costs, the CPEPs first identified the equipment used in performing each procedure. Equipment purchase price data were then estimated using list prices. Any equipment with a cost of less than \$500 was eliminated from the CPEP data because the cost per use of this equipment was considered to be negligible. The model used to price equipment per procedure first establishes an equipment cost per minute. Total annual minutes for each piece of equipment were calculated assuming a utilization rate of 50 percent for procedure-specific equipment and 100 percent for overhead equipment, and that each physician's office is open 50 hours per week and 50 weeks per year.¹² Equipment costs per minute were calculated by dividing the annualized purchase price of equipment, which takes into account the opportunity cost of capital, by the total annual minutes. Costs per procedure were developed by multiplying costs per minute by an estimate of the length time that the equipment is used to perform a procedure.

The CPEP's methodology for calculating equipment costs is different from that used by the SMS. Whereas the SMS only considers equipment costs for physicians during the years the equipment is eligible for depreciation, the CPEP accounts for the cost of owning a machine over its useful life. For this reason, calculating a specialty's annual equipment cost based on CPEP equipment cost data will differ from the specialty's equipment costs as reflected by the SMS. However, we believe a comparison of the percent of the total direct costs made up by equipment costs in the CPEP and SMS data at the specialty level may provide an indication of problems with the CPEP data, if any exist.

Using the CPEP procedure-specific equipment costs and the Medicare utilization data, we determined the percent of total direct costs made up by equipment costs by specialty according to the CPEP data for all codes. First, the codes billed by each specialty and their frequencies were

¹² *Report on Clinical Practice Expert Panel (CPEP) Direct Cost Estimation*. Prepared by Abt Associates Inc. April 30, 1997.

obtained from the Medicare utilization file. Then the codes were matched to their CPEP direct cost values (clinical staff, medical supplies and medical equipment) by the site of service. For each direct cost category and specialty, a total cost was then calculated as follows:

$$\text{Total Cost for direct cost category x, specialty p} = \sum_k \text{CPEP value for code k in direct cost category x} * \text{Frequency of code k by specialty p}$$

By summing across the codes within a specialty and a direct cost category, individual total costs were calculated for clinical staff, medical supplies, and medical equipment. The total direct cost for a specialty is equal to the sum of the clinical staff, medical supplies, and medical equipment costs. For each specialty we then divided the total equipment costs by the total direct costs. The percent values for the ten specialties with the highest percent of direct costs allocated to equipment are displayed in Table 4 in descending order. The comparable values from the SMS¹³ as well as the ratio of the CPEP percentages to the SMS percentages are also in Table 4.

Table 4
Equipment Costs/Total Direct Costs from CPEP and SMS Data

Specialty	Equipment Costs/Total Direct Costs		CPEP/SMS
	CPEP	SMS	
Radiology	82.92%	33.49%	2.48
Radiation Oncology	81.60%	33.44%	2.44
Pathology	52.60%	10.88%	4.83
Cardiovascular Disease	38.48%	22.63%	1.70
Neurology	32.23%	27.56%	1.17
All Physicians	28.85%	13.66%	2.11
Vascular Surgery	27.93%	16.13%	1.73
Obstetrics/Gynecology	19.64%	11.81%	1.66
Orthopedic Surgery	17.81%	11.78%	1.51
Urological Surgery	15.69%	13.26%	1.18

Source: Authors' analysis of data from the 2000 CPEP file, the 1998 Medicare utilization file, and the July 17, 2000 *Federal Register*.

For radiology and radiation oncology, the CPEP equipment costs constitute a larger portion of the total direct costs than any other specialties. The CPEP equipment cost to total direct cost ratio is greater than the SMS ratio for every specialty shown in Table 4. Whether this indicates a problem with either the SMS or the CPEP data is unclear. Differences in the way equipment costs are accounted for in the SMS and CPEP data are contributing to the discrepancy. In particular, the SMS excludes the cost of equipment after it has fully depreciated and the CPEP accounts for equipment cost over the entire "life" of the equipment. However, based on the overall direction of comments from specialty groups, we suspect that the results reported in Table 4 indicate that equipment costs in the SMS survey are underestimated relative to other direct costs. In addition, the fact that CPEP equipment costs make up a significant share of direct costs for specialties that provide technical component services, partially suggests that the

¹³ Where appropriate, we used CMS's crosswalk to match specialties in the SMS survey and the CPEP data files.

CPEP data are not a significant source of the reductions in practice expense RVUs for zero work codes under the top-down methodology.

To get a better sense of whether or not the differences in equipment costs can be explained by accounting differences, we conducted a simple test. We assumed that half of the equipment costs in the CPEP data apply to equipment that is no longer included in the SMS, because it has fully depreciated, and then recalculated the ratios. Reducing the CPEP equipment cost data by half produces the revised comparison of the SMS and CPEP equipment costs displayed in Table 5 for the four specialties with the highest CPEP equipment costs relative to their CPEP total direct costs. Even with the reduction of the CPEP costs, the CPEP equipment costs constitute a significantly larger portion of total direct costs than the equipment costs from the SMS for three of the four specialties. In fact, for radiology, the CPEP equipment costs would have to be reduced by 90 percent in order to constitute the same percent of total direct costs as the SMS data. Although variations in the approaches used to estimate equipment costs may account for the disparities, the striking difference between the percent of the total direct costs made up by equipment suggests that the SMS equipment cost data may be inaccurately low. This could be explained by the exclusion of non-physician owned practices from the SMS survey.

Table 5
Portion of Total Direct Costs Made up by Equipment Costs Assuming 50% Reduction in CPEP Equipment Costs¹⁴

Specialty	Equipment Costs/Total Direct Costs		CPEP/SMS
	CPEP with 50% Reduction in Equipment Costs	SMS	
Radiology	71.57%	33.49%	2.14
Radiation Oncology	68.92%	33.44%	2.06
Pathology	35.69%	10.88%	3.28
Cardiovascular Disease	23.82%	22.63%	1.05

Source: Authors' analysis of data from the 2000 CPEP file, the 1998 Medicare utilization file, and the July 17, 2000 *Federal Register*.

CMS's Top-down Methodology

Total Medicare Hours Data

Total Medicare hours are used by CMS to calculate the specialty-specific practice expense pools. The total Medicare hours are multiplied by the PE per hour values derived from the SMS to create the PE pools for each cost category by specialty. The total Medicare hours are a product of Medicare utilization data and Harvard/RUC time. That is, the frequency of each service billed by a specialty is multiplied by an estimate of the amount of a physician's time required to complete the service. CMS then creates the total Medicare hours for the specialty by summing

¹⁴ It is important to note that when the equipment costs from the CPEP data are reduced by half, the percent of direct costs made up by equipment is not reduced by half. This is because the equipment costs also factor into the direct costs. Therefore, when the equipment costs are reduced, both the numerator and denominator of the ratio are reduced.

across all of the services performed by that specialty. TC and other zero work services have no associated physician time values because physicians do not perform them. Therefore, a specialty's total Medicare hours do not account for the time spent by providers performing zero work services. In CMS's methodology, even if the PE per hour value were accurate, the PE pool would be biased downward because the total Medicare hours does not include the time associated with TC services.

To illustrate how the potential biases in the SMS survey's sampling methodology and CMS's total Medicare hours flow through CMS's methodology, we present an example below. Although the results would be similar for any of the direct cost categories, our example involves only the equipment costs. For a given specialty we assume that there is a population of 100 providers: 10 TC-only providers, 70 Global service providers, and 20 PC-only providers. We also assume that equipment expenses for each provider are \$10 per procedure and that each provider performed one procedure on a Medicare beneficiary in the past year. The professional component of the procedure is assumed to take one hour of physician time.

Table 6
An Example of the Effect of CMS's Top-down Methodology on a Specialty's Equipment PE Pool

	TC-only	Global	PC-only
Population	30	50	20
Representative Sample of Population (~20% sample)	6	10	4
<i>SMS Data</i>			
SMS Sample	N/A	14	6
Total Equipment Dollars Based on SMS Sample	--	\$140	\$0
Physician Time (Hours)	--	14	6
Equipment Dollars per Physician Hour (Total Equipment Dollars/Physician Time)	N/A	\$10	\$0
<i>CMS Data</i>			
Medicare Utilization	30	50	20
Harvard/RUC Hours	--	1	1
Total Hours (Utilization * Harvard/RUC)	--	50	20

In this example, the PE dollars actually spent by the specialty on equipment to provide services to Medicare beneficiaries can be calculated by multiplying the number of providers by the equipment dollars per provider for each provider category and summing across all three categories.

Actual equipment dollars spent by the entire specialty = (TC-only population * Equipment Dollars per TC-only Provider) + (Global population * Equipment Dollars per Global provider) + (PC-only population * Equipment Dollars per PC-only provider) =

$$(30 * \$10) + (50 * \$10) + (20 * \$0) = \$800$$

Ideally, CMS's calculation of the equipment pool using SMS data and the total Medicare hours should equal \$800.

In CMS's methodology the PE pool for equipment is simply the product of the average equipment PE per physician hour and the total Medicare hours. In this methodology the PE per hour values are calculated to the practice level (Global and PC-only) and then averaged across the practices using population weights to ensure that the specialty PE per hour value is reflective of the SMS-based population.¹⁵

$$\text{Weight-averaged specialty PE per hour} = \frac{50(10) + 20(0)}{70} = \$7.14 \text{ per Hour}$$

$$\text{Total Specialty Medicare Hours} = 0 + 50 + 20 = 70 \text{ Hours}$$

$$\text{Total specialty equipment cost} = \$7.14 \text{ per Hour} * 70 \text{ Hours} = \$500$$

In this example, the total equipment PE pool using a hypothetical SMS sample is only \$500. The CMS calculated PE pool for equipment is \$300 (37.5 percent) less than the actual pool of money spent by the practice on equipment costs. The potential bias in CMS's calculation of direct cost PE pools in the top-down PE methodology substantiates the need for the zero work pool or an alternative method that accounts for the costs associated with TC-only services. The zero work pool's use of the average clinical staff time for each service in the calculation of total Medicare hours allows CMS to account for the time involved in performing TC services. The zero work pool also uses the "all-physician" PE per hour value.

Our example is similar to the one used in the discussion of the SMS data. It assumes that a practice is only a TC-only, PC-only, or Global provider. If we relax this assumption, our findings can change dramatically. On the one hand, if practices bill both global and TC-only codes and no TC-only practices exist, the practice expense pools would be, in theory, accurate because the practice expenses reflect the costs associated with all TC services. For example, suppose a practice billed two services, one as a global and one as a TC-only. Maintaining our assumptions above, total equipment expenses for this practice would be 20 dollars (\$10+\$10) and the practice expense per hour would be 20 dollars per hour (\$20/1hour). Clearly, if we multiplied the practice expense per hour by the physician hours for this practice, we would get back the actual total practice expenses for the practice. However, if this practice were divided into two practices, one that performed the global service and one that performed the TC-only service, the practice expense pool would equal 10 dollars, not the actual 20 dollars. To see this, remember that the TC-only practice would be excluded from the survey. So, for the global provider, practice expense per hour would be 10 dollars. Billing records would indicate that one hour of physician time was spent providing the service. Therefore the pool would be equal to 10 dollars (\$10*1hour).

¹⁵ The weights in our example are based on the percent of Global and PC-only providers in the specialty population. The weights used by the AMA are based on a variety of respondents' characteristics, because the breakdown of the population by provider type is not always known. It is unlikely that the weights used by the AMA creates direct cost pools as representative of the population as in our example. For this reason, skewed SMS samples may have a larger impact on specialties' direct cost pools than suggested in our example.

The upshot of this analysis is that the need to incorporate the time associated with providing zero work services into the top-down methodology depends on if the practice expenses associated with zero work services are captured in the SMS survey. Specifically, it depends on whether providers of zero work services tend to specialize in the provision of these services and are owned by non-physician entities. This is more likely to be the case for specialties that provide technical component services in practices that only offer TC services, than for those specialties that provide other types zero work services. This is a critical point and will ultimately influence the options CMS chooses to pursue. CMS should, to the extent possible, use its databases to test this assertion.

Indirect Cost Allocation

CMS's top-down PE methodology includes a bias against TC and other zero work services in the allocation of indirect costs to the procedure-code level. In CMS's methodology, after the indirect cost pool is calculated, the indirect costs are allocated to procedures based on the direct costs and physician work RVUs associated with the procedure. TC and other zero work services have no physician work RVU values by definition. As a result, less of the indirect cost pools are allocated to zero work codes. This outcome is directly related to CMS's allocation approach for indirect costs and appears not to be based on an underlying belief that TC-services have less indirect costs associated with them than other services. According to TC providers, their space and utility costs are, in fact, higher than those of professional component service providers. CMS will have to address the issues of the allocation of indirect costs to zero work services in the top-down methodology before moving zero work services back into the originally proposed PE methodology.

Is the Zero Work Pool Resource-Based?

Our analyses suggest that potential limitations in the SMS data and in CMS's top-down methodology create the need for special consideration of zero work services. Problems with the Medicare hours for zero work services, the accuracy of the SMS data, and the allocation of indirect costs necessitate a solution similar to the zero work pool approach, in which adjustments to the data and methodology allow for a more accurate representation of the practice expenses associated with zero work services. We examined the data substitutes used in the zero work pool methodology to determine whether they are resource-based and used this information when considering resource-based alternatives to the zero work pool. In this section we present our analysis of the resource-based nature of data substitutes used in the zero work pool.

The average clinical staff time from the CPEP data is substituted into the zero work pool methodology for the Harvard/RUC time values used in the traditional methodology. The average clinical staff time is procedure-specific and is a measure of the time spent by clinical staff in performing a service. Harvard/RUC data reflect the time spent by a physician performing a service. For TC and other zero work services, there is no associated Harvard/RUC time data because these services are provided by technologists or other clinical staff. For TC and other zero work services, therefore, the average clinical staff time is an appropriate measure of the time resource necessary to perform a service.

The “all physicians” PE per hour value is used in the zero work pool methodology as a substitute for the specialty-specific PE per hour value derived from SMS data used in the traditional methodology. Although the “all physicians” average does not reflect the PE resources used by a specific specialty, many zero work pool specialties have commented that their specialty-specific PE per hour values derived from SMS data do not accurately reflect their practice expenses per hour. Specialties in the zero work pool argue that their specific PE per hour values are too low because the SMS failed to collect accurate PE data. Although the “all physicians” average does not reflect the resource use of a particular specialty, it is a measure of the resources used by physicians representing a variety of specialties.

Whether the 1998 PE RVUs used to allocate the direct costs in the zero work pool methodology, rather than the CPEP data used in the top-down methodology, reflect the resources used in providing a service is, in part, questionable. The 1998 PE RVUs were calculated by CMS based on specialties’ charges for services and not on the use of resources in providing services. The 1998 PE RVUs for radiology codes, however, were based on a radiology relative value scale developed under the leadership of the American College of Radiology (ACR). The radiology relative value scale was developed based on three types of data: magnitude estimation (a measure of the complexity involved in performing procedures), surveys of charges for procedure codes, and detailed surveys of costs for freestanding diagnostic and oncologic radiology practices. The radiology relative value scale has been recognized by ACR and by CMS as resource-based.¹⁶ The 1998 PE RVUs for radiology, including radiation oncology codes, can therefore be considered resource-based. Although radiology and radiation oncology codes constitute a significant portion of the zero work pool, CMS should consider that the allocation of the remaining codes in the zero work pool by the 1998 PE RVUs may not result in resource-based values.

Can Some, or All, of the Zero Work Pool Approach be Maintained Long-Term?

In seeking alternatives to the zero work pool, the appropriateness of using some, or all, of the zero work pool methodology should be considered. The continued use of both the 1998 PE RVUs and the average clinical staff time may be appropriate to some degree in alternative approaches.

As noted above, the allocation of direct costs using the 1998 PE RVUs is resource-based for radiology and radiation oncology codes. The use of these PE RVUs for the allocation of direct costs could therefore be maintained by CMS in a long-term alternative approach, but a different resource-based measure would need to be used to allocate the direct costs of non-radiology codes. If CMS continues to lump the specialties in the zero work pool into one PE pool, the use of two different allocation mechanisms for the direct costs of zero work services would not be ideal. In this case, it may be in CMS’s best interest to identify an allocator for direct costs that is resource-based for all of the specialties in the zero work pool. If CMS chooses to create specialty-specific zero work pools, it may be appropriate to retain the 1998 PE RVUs as the allocator of direct costs for the specialties of radiology and radiation oncology.

¹⁶ Moorefield J.M., MacEwan D.W., and Sunshine J.H. The radiology relative value scale: Its development and implications. *Radiology* 1993; 187:317-326.

The use of the average clinical staff time for procedures in the calculation of total Medicare hours may also be appropriate for use in long-term alternatives to the zero work pool. As noted above, the average clinical staff time is an appropriate substitute for the Harvard/RUC physician time used in the traditional methodology because many TC services are not performed by physicians and, therefore, do not have associated Harvard/RUC physician time values. However, if CMS does continue to use the average clinical staff time to calculate total Medicare hours the “all physicians” PE per hour should be replaced by a PE per technologist/clinical staff hour value. Creating a PE pool by multiplying the total Medicare hours for clinical staff by the PE per hour value for all physicians is not ideal as it pairs clinical staff data with physician data. The use of a PE per clinical staff hour is supported by zero work pool specialties. In comments to CMS, the Society of Vascular Technology provided CMS with a sample PE per technologist hour methodology that used the CPEP time estimates for each of the TC codes in question to obtain an average procedure length.

IV. RECOMMENDATIONS

In this section of the report, we present CMS with options for determining practice expense RVUs for zero work codes. These recommended options are intended to correct, or at least mitigate, the misrepresentation of the costs associated with zero work services in CMS’s top-down methodology while maintaining a resource-based approach. CMS would need to simulate the recommendations prior to their implementation in order to examine the resulting practice expense RVUs and ensure that they appear to be reasonable.

The limitations in CMS’s top-down methodology imply that practice expense RVUs for zero work services are likely to be underestimated under the top-down approach. Our analyses suggest the need for the zero work pool or an alternative solution. However, the issues surrounding the development of practice expense RVUs for zero work services are numerous and complex. A simple solution to dealing with zero work codes within CMS’s methodology does not exist. We believe that a long-term solution will require the collection of practice expense data from zero work providers. With this in mind, we present four options for CMS to consider for the future treatment of zero work services.

Option 1: Return zero work codes back to the top-down methodology, without any modification to the methodology

We believe that there are three important limitations to using the top-down methodology for developing practice expense RVUs for zero work codes. First, practice expense data collected by the SMS survey exclude expenses for non-physician owned medical practices, such as practices that only provide relatively high-cost technical component services (e.g., diagnostic imaging centers). This suggests that estimates of practice expenses for specialties that perform zero work services, particularly technical component services, may be biased downward. Second, indirect costs are allocated to individual procedure codes based, in part, on physician work RVUs, which, by definition, do not exist for zero work services. As a result, a smaller amount of indirect costs may be allocated to zero work codes than is appropriate.

Finally, the total Medicare hours used to create the practice expense “pools” do not include the time spent by clinical staff providing zero work services to Medicare beneficiaries. Therefore the practice expense pools for specialties that perform zero work services may underestimate the level of practice expenses incurred while treating Medicare beneficiaries. Potentially offsetting the effect of this last point is the fact that the practice expense per hour values from the SMS survey reflect practice expenses incurred during the provision of all services, including zero work services, while the denominator, physician patient care hours, does not include the time spent by clinical staff performing zero work services. The upshot is that the need to incorporate the time associated with providing zero work services into the top-down methodology depends on whether providers of zero work services tend to specialize in the provision of these services and are owned by non-physician entities. This is more likely to be the case for specialties that provide technical component services in practices that only offer TC services, than for those specialties that provide other types of zero work services.

We believe that, as a result of the limitations, Medicare payments to specialties that perform zero work services would be too low under the basic top-down methodology. We therefore believe that Option 1 is not a viable alternative to the current zero work pool approach.

Option 2: Maintain the current zero work pool approach and consider developing specialty-specific zero work pools

The current zero work pool approach has two appealing features. First, it overcomes, to varying degrees, the limitations of the top-down methodology. For example, practice expenses for zero work codes are captured in the practice expense pool by the use of clinical staff time instead of the physician procedure time, which does not exist for zero work codes. Second, the provider community generally accepts the results from the zero work pool approach. Furthermore, as described in this report, the zero work pool can be considered resource-based in some respects. For these reasons, maintaining the status quo may be an appropriate option at this time, until additional data can be collected.

If the zero work pool is kept, we recommend that CMS consider the use of specialty-specific zero work pools to limit the redistribution of practice expense dollars between specialties. Currently, one zero work pool is created that includes all of the zero work pool services billed across all specialties. All of the RVUs are generated from this one zero work pool and there is no weight averaging for shared codes across specialties. Although elimination of the weight averaging of shared codes may initially seem to reduce the leakage of PE dollars between specialties, lumping all of the specialties into one zero work pool has a similar, if not more significant, leakage effect. In CMS’s zero work pool methodology, specialties with a smaller financial stake in the zero work pool will subsidize the specialties that play a larger role in the zero work pool.

Specialties in the zero work pool stand to lose PE dollars through leakage when one PE pool is used for all of the specialties. To avoid some, but not all, of this leakage, CMS could use specialty-specific zero work pools. In addition, if the use the zero work pool continues, we recommend that CMS consider the use of PE per clinical staff hour values rather than the “all physicians” PE per hour values. The services included in the zero work pool are not performed

by physicians and the creation of a PE pool by multiplying the total Medicare hours for clinical staff by the “all physicians” PE per hour value pairs clinical staff data with physician data. If CMS can determine a PE per clinical staff hour value for use in the zero work pool, the accuracy of the PE RVUs for zero work services may be strengthened.

Option 3: Develop practice expense RVUs for technical component services as the difference between the global and professional component RVUs and return other zero work services to the top-down methodology

Under the current approach, relative value units for the professional component of services are derived using the top-down methodology, while relative value units for the technical component of services are derived using the zero work pool approach. Relative values for global services are set equal to the sum of the professional and technical component RVUs. A significant function of the zero work pool is to develop RVUs for technical component services. Alternatively, RVUs for technical component services can be obtained as the difference between the RVUs for global and professional component services, which are obtained from the top-down methodology. Codes corresponding to the technical component of a service would be excluded from the methodology; that is, the practice expense pools would be developed without technical component services and the pools would not be allocated to technical component services.

This approach is appealing because the SMS survey includes providers of global and professional component services. It may be appropriate then to use the top-down methodology and the SMS data to calculate practice expense RVUs for these types of codes and then derive the RVUs for the codes corresponding to technical component services from this information. Other zero work codes could be returned to the top-down methodology, eliminating the need to continue the zero work pool. However, for these zero work codes, CMS should consider using clinical staff time in developing the practice expense pools, if the practice expenses associated with these codes are not captured in the practice expenses from the SMS survey. In addition, the indirect allocation approach should be modified for zero work codes, as discussed in Option 4.

Option 4: Eliminate the zero work pool after accounting for all the practice expenses associated with providing zero work services to Medicare beneficiaries and after modifying the approach used to allocate indirect costs to zero work services.

The practice expenses associated with providing zero work services to Medicare beneficiaries may not be reflected in the practice expense pools constructed under the top-down approach. In that approach, practice expenses per hour values are multiplied by total Medicare physician hours based on the Harvard/RUC time data. Zero work services have no associated Harvard/RUC physician time, therefore do not contribute to the total Medicare physician hours.¹⁷ To correct this problem, CMS could use clinical staff time or, for technical component services, the physician time associated with the professional component of a service.

¹⁷ As noted under Option 1, one offsetting factor is that practice expense per hour values from the SMS survey reflect practice expenses incurred during the provision of all services, including zero work services, to the extent that practices that perform zero work services are included in the survey.

Fix Indirect Allocations

In returning the zero work services to the traditional methodology, CMS should consider the allocation of indirect costs to these codes. Traditionally, indirect costs are allocated based on a combination of direct costs and work. Zero work services, by definition, have no work values. Therefore, the indirect costs for zero work services are allocated on direct costs alone which leads to lower indirect cost allocations to zero work services. We recommend that CMS develop a variable for zero work services that can be used as a proxy for the work value in the allocation of indirect costs. One option available to CMS is to create a proxy work RVU using the formula:

$$\text{Proxy Work RVU for TC-only procedure } x = \frac{(\sum_x \text{Work RVU } x / \sum_x \text{Harvard/RUC minute } x)}{\text{Total number of procedures}} * \text{Average Clinical Staff Time from CPEP for procedure } x$$

The average work RVU per Harvard/RUC minute could be calculated for a specialty by summing the work RVUs for all of the services performed by the specialty and then dividing by the sum of the Harvard/RUC minutes assigned to all of the procedures performed by the specialty. Zero work services will not be included in the average work RVU per Harvard/RUC minute because they have neither work RVUs nor Harvard/RUC times. An additional adjustment may be necessary to account for the fact that work does not only measure time, but also the intensity of the service. CMS may wish to determine an adjustment factor for the proxy work RVU that accounts for the intensity of the service.

SMS Data

The SMS survey sample population may not accurately reflect the national population of practice types for specialties that perform technical component services. If the SMS sample is not representative of the actual practice population, the PE values collected on the survey and used by CMS to create the specialty-specific PE pools may be inaccurate. However, whether the SMS data are inappropriate for CMS's purposes is unclear because there is no comparison data available that detail the national population of practice types by specialty or the PEs associated with each practice type. Future collection of additional data could provide sufficient information to determine if the PE data collected by the SMS are accurate for CMS's purposes.

Until additional SMS data can be collected, we recommend that CMS might consider scaling the SMS equipment cost data so that they are more consistent with the CPEP equipment cost data. However, the SMS equipment costs should not be scaled to equal the CPEP equipment costs because the CPEPs include cost data for equipment that is fully depreciated in value. Rather, a scaling factor or methodology could be developed to account for both the difference in the SMS and CPEP equipment costs and the difference in the data definitions. Two options for scaling available to CMS are to increase the direct costs for zero work specialties until the resulting PE payments are budget-neutral or to scale the SMS equipment cost data so that they are more consistent with the CPEP equipment cost data.

In the long-term, we suggest that CMS collect equipment cost and other PE information from zero work pool specialties. Without this data CMS cannot be sure that the SMS data accurately reflect the cost of delivering zero work services.

Conclusion

Our intention in creating these recommendations was to develop methodological options for CMS that would result in PE RVUs for zero work services that are more resource-based than those generated by the zero work pool. However, each of these options has potential drawbacks and would need to be considered carefully. In fact, if the aggregate PE RVUs generated by our methodological recommendations are lower than those created by the current zero work pool, we recommend that CMS consider maintaining budget neutrality to the current zero work pool approach. We do not believe that the available data allow a determination of whether the PE RVUs from the zero work pool are under- or over-valued. Ultimately, additional data will likely need to be collected on practice expenses and clinical staff time to determine if existing practice expense levels for zero work services are appropriate. For this reason we strongly urge CMS to simulate the recommendations prior to their implementation in order to examine the resulting aggregate PE RVUs by specialty and consider ensuring levels at least equivalent to their zero work pool values.

CHAPTER 2: VALIDATING PATIENT CARE HOURS

I. INTRODUCTION

In Lewin's report to CMS entitled "*An Evaluation of the Health Care Financing Administration's Resource-Based Practice Expense Methodology*," we proposed four methods for validating self-reported information on the number of hours physicians spend providing patient care. These data are important because they are used in the calculation of the specialty specific practice expense (PE) per hour values in CMS's PE methodology. Errors in the reported patient care hours could, therefore, lead to inaccurate PE pools and PE relative value units (RVUs). As part of Lewin's ongoing work with CMS, we were tasked with implementing refinements to these methodologies.

Following CMS's assignment of Lewin's tasks, the AMA announced changes to its survey that altered the direction of Lewin's validation activities. In March 2000, the AMA indefinitely suspended the administration of the SMS and the Practice Survey due to the escalating cost of data collection and dwindling response rates. Without future administration of the SMS survey, CMS no longer has a source of practice expense data. Unless the AMA reinstates the SMS, any new data will come from specialty-specific supplemental surveys administered by specialty groups. Given the cancellation of the SMS and the uncertain source of future practice expense data, the implementation of Lewin's proposed methodologies is no longer possible because these methodologies were developed for use with SMS data. Therefore, rather than discussing the implementation of refinements in this report, we discuss the feasibility of Lewin's proposed methodologies in the context of the AMA's decision and propose a new approach to validating patient care hours.

Why Validation is Necessary

Patient care hours for physician owners and employees are fundamental components in CMS's current methodology for the calculation of specialty-specific practice expense pools. The accuracy of these data directly affects the quality of the practice expense relative value units (RVUs) derived from CMS's "top down" methodology. CMS's methodology has two distinct steps that incorporate physician time data. First, SMS time data on patient care hours are used with practice expense data to calculate an average practice expense per hour by specialty. Second, CMS uses the Harvard/RUC time data to calculate total physician hours providing patient care services to Medicare beneficiaries. Multiplying the average practice expense per hour values for each specialty by the specialty's total physician patient care hours creates the practice expense pools, which are then allocated across procedures. In this report, we are primarily concerned with the validation of the SMS time data, or the data used by CMS in the future as a substitute for the SMS patient care hours.

Errors in the physician patient care hours can have a profound effect on CMS's practice expense pools. For example, systematic underreporting of physician patient care hours will result in an overestimation of the average practice expense per hour and, therefore, an overestimation of the practice expense pool. Until the AMA's cancellation of the SMS, CMS had used the survey as the source of physician reported patient care hours. Although the administration of SMS has been cancelled, it is possible that CMS will continue to obtain patient care hours through

physician- or practice-level surveys administered by specialty, or other groups. Self-reported time data are subjective measures prone to inaccuracies due to the imprecision of physician recall and misreporting. The validation mechanism adopted by CMS should ensure the reliability and validity of the collected data by identifying and, hopefully, limiting the introduction of biases into the self-reported data.

II. LEWIN'S VALIDATION APPROACHES REVISITED

In our final report to CMS,¹⁸ four methodologies for validating physician work hours were identified. These validation approaches were developed by Lewin in an effort to accomplish two goals: identifying inaccurate existing data and identifying biased new data. In this section of the report, we review these proposed validation methodologies and discuss their viability in light of the AMA's cancellation of the SMS survey.

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.

Without future administration of the SMS survey, Method 1 is no longer useful for validation. Method 1 was designed specifically for use with the SMS survey instrument. For this reason we no longer recommend Method 1 as an option for validation.

Method 2: Calculate a ratio of total 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. If all of a physician's patient care time can be associated with a medical procedure, it should be possible to match the total SMS patient care hours for physicians in a specialty (SMS time pools) to the total time spent providing procedures (Harvard/RUC time pools), as calculated from the Harvard/RUC time data and Medicare procedure frequencies. In order to compare the total hours from the two sources, the SMS time pools must be adjusted to reflect only time spent treating Medicare beneficiaries because the Harvard/RUC time pools are based on the frequency with which the procedures were performed on Medicare beneficiaries.

Method 2 can still be used as a validation methodology, with the substitution of physician work hours collected through a supplemental or collaborative survey effort for the SMS data. However, as expressed in our earlier report, Lewin has reservations about the use of this methodology alone to validate survey data. Theoretically, the total patient care hours collected by a survey should match the total time spent providing procedures as calculated from the Harvard/RUC time data and Medicare procedure frequencies, if all of a physician's time providing care to patients can be associated with a medical procedure. However, there are multiple limitations to this methodology that could cause the time pools to be mismatched.

The methodology 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 will cause the time pools to differ. In addition, any patient care activities reflected in the hours collected by the survey but not directly associated with specific medical procedures, will not be captured in the

¹⁸ Dobson A., Koeing L., Sturm E., Cavanaugh J. (2000). *An Evaluation of the Health Care Financing Administration's Resource-Based Practice Expense Methodology*.

Harvard/RUC time pools. Unless the survey used by CMS to collect patient care hours accounts for care provided as a result of the Emergency Medical Treatment and Labor Act (EMTALA), it is likely that respondents will include uncompensated care hours in their responses. Because EMTALA-induced care is not relevant for the Medicare population, this will overestimate the SMS time pool relative to the Harvard/RUC time pools for specialties that dedicate a significant share of their patient care hours to EMTALA-induced care.

Finally, in order for Method 2 to be used most effectively, data are needed detailing the number of physicians billing Medicare for each specialty. While we believe such information is available to CMS, we have not requested the data at this time.

Method 3: Compare newly reported SMS data to historical SMS data to identify movements away from observed trends.

If the survey instrument used in future survey efforts retains the SMS survey's protocol for collecting physician work hours and continues to collect practice expense information at the physician-level, this validation method can still be used. CMS has established a set of guidelines for supplemental survey administration that, if followed, ensure the acceptance of the data by CMS. If future surveys follow the guidelines established by CMS, the data collected should be consistent with the historical SMS data.

If the future survey efforts of specialty groups utilize a survey instrument that is not consistent with the SMS, the historical SMS data may not be useful. The data collected by survey instruments differing in their wording of questions, administration protocol, or instrument design may not be comparable. It is difficult to determine whether variances in the data collected by two different survey instruments are a result of a real change or a result of the change in survey methodology. Demonstrating that the data from the SMS and any new survey are comparable, or that the variance in the data can be accounted for through adjustment, may allow the use of historical SMS data for validation to continue. One possibility would be to distribute the SMS survey and the new survey concurrently to two separate, representative samples. The data collected by the surveys could be compared and if they were not found to be comparable, the appropriate adjustment factors could be determined. In this manner, future data collected by the new survey could be adjusted and then compared to historical SMS data for validation. However, the money, effort, and complexity involved in the concurrent administration of surveys make this approach's worth questionable.

The methodology of comparing newly reported data to historical data in order to identify movement away from observed trends could still serve as a validation method for CMS. If, through supplemental or collaborative survey efforts, CMS is able to amass a sufficient amount of data from a consistent source over the next few years, it can use these data for validation through comparison. As recommended previously, CMS could compare the average patient care hours for a specialty to its average value using data from the previous years. If the difference was greater than the typical variation in hours from year to year, a closer examination of a specialty group's hours could be warranted. CMS could also use regression analysis to project data for each specialty forward. Average patient care hours from future 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.

As noted in our earlier report, we do not believe this method by itself is a very powerful approach to validating data, because it is unable to distinguish between changes that are the result of inaccurate reporting and changes that are due to alterations in the practice patterns of physicians. Moreover, historical levels of physician work may have little relationship to current physician work levels for some specialties.

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.

Method 4 remains a viable validation methodology. As noted in our earlier report, a comparison of the MGMA's annual hours worked and the annual hours worked collected by the SMS or a similar survey will not likely result in a precise match due to three factors:

- The different definitions of “physician work” between the AMA and MGMA surveys,
- The different specialty definitions between the surveys, and
- The different sample used in the MGMA survey, which is administered to a non-random sample of MGMA member-physician groups.

Each of these factors may play a role in preventing the two time pools from being equivalent. Because the ratio of the time pools is likely to differ from one due to differences in the surveys' protocols, Lewin recommends that CMS track the ratio of pools over time and investigate specialties that have wide variations in the ratio value over time. It is important to note that there is a lack of historical MGMA data. This will hinder any effort to compare the survey data retrospectively.

III. RECOMMENDATION FOR IMPROVING THE ACCURACY OF THE DATA ON PHYSICIAN HOURS

In addition to the four methodologies described above, we recommended an approach for CMS to improve the accuracy of the physicians' hours data. Although CMS previously chose not to adopt our recommendation, it is reconsidered here as a potential approach for use with future survey efforts. We recommend that CMS adopt this approach to eliminate inconsistent, invalid data at the respondent level.

Recommendation: Revise edits and trims to SMS survey data, both practice expenses and hours, to exclude data that fall outside set acceptable ranges (e.g., three standard deviations from the geometric mean).

CMS chose not to explore Lewin's recommendation based on the AMA's concerns that the methodology would compromise the sample size and eliminate valid outliers. Despite the AMA's concerns, we hold the view that edits and trims to the data will provide a more reliable

measure of physician patient care hours. Although this methodology may reduce the sample size, it is counterproductive to retain data that may be inaccurate in order to maintain a larger sample size.

Lewin's renewed support for this approach stems from the method's focus on respondent-level data. Examining the physician work hours at the respondent level is the most accurate way of eliminating data that are misreported. Examining data at the specialty level allows CMS to identify specialties that may have problematic data, but unless CMS examines the respondent data within the specialty, this method does not allow CMS to eliminate misreported data. By assuring that the data are reliable before aggregating to the specialty level, CMS can have increased confidence in the validity of the resulting practice expense per hour values.

IV. NEW APPROACH TO VALIDATION

Lewin's review of the proposed validation methodologies and analysis of the AMA's Practice Survey brought to light a new approach for the validation of patient care hours. This respondent-level approach uses the physician work RVUs produced annually by a survey respondent to validate the annual patient care hours reported by the respondent. This approach could only be used by CMS with data from a survey that collects both patient care hours and either physician work RVUs or the frequency with which a physician performed each procedure. With frequency information total work RVUs could easily be calculated.

CMS's impetus for the validation of patient care hours is largely based on the subjective nature of self-reported data. Hours reported on a survey are open to inaccuracies and biases due to miscalculation, recall problems, or misreporting. Using physician work RVUs as a validation measure will allow CMS to compare the subjective patient care hours to a more objective measure of physician time. Physician work RVUs are a measure of physician effort associated with performing procedures on or providing services to patients. Physician work RVUs reflect only the effort exerted by physicians in patient care activities, and do not reflect the effort involved in administrative duties or other non-patient care activities.

The accuracy of CMS's practice expense RVUs is directly affected by the quality of the data reported. As noted above, validating data at the respondent level is the most thorough way to identify inaccurate or biased data. Respondents with suspect data can be immediately identified and their data eliminated or edited. By eliminating invalid data before creating the time pools, CMS can increase confidence in its practice expense per hour values and practice expense RVUs.

If CMS wishes to pursue the RVU-based validation of physician work hours, additional recommendations for supplemental survey design should be provided to specialty groups. Ideally, future surveys would collect frequency information at the procedure level so that the number of RVUs produced for each procedure could be converted to a time value using specific Harvard/RUC data. For each respondent, the procedure-level time values can be summed across procedures to create a more accurate time pool based on work RVUs.

V. CONCLUSION

The AMA's cancellation of the SMS has had a significant effect on aspects of CMS's practice expense methodology, including the validation of physician work hours. Without the continuing collection of SMS data, it is unlikely that CMS will be able to use its historical data for validation of physician work hours in the future. As described in this report, the lack of future SMS data creates problems for the use of Lewin's proposed validation methodologies. However, it is possible that CMS will be able to use the cancellation of the SMS to encourage the collection of data that can provide a more objective measure of physician work hours for validation. By recommending the collection of physician work RVUs or procedure frequency on supplemental surveys and adopting Lewin's RVU-based validation methodology, CMS should be able to increase confidence in its practice expense per hour values. Not only does Lewin's methodology employ a more objective benchmark, but it also eliminates inaccurate and biased data at the respondent level, thereby increasing the accuracy of the specialty-specific time pools. However, careful consideration must be given to the additional burden placed on respondents and surveyors. Respondents may be unable or unwilling to provide procedure frequency data, and the collection of this additional data could add to the cost of the surveys.

CHAPTER 3: PRACTICE EXPENSE SURVEY OF MEDICAL PRACTICES

I. INTRODUCTION

The American Medical Association's (AMA) physician-level Socioeconomic Monitoring System (SMS) has served as a critical source of data for CMS's "top down" practice expense (PE) methodology since its adoption in 1999. The formerly administered SMS survey collected information on physician expenses, hours spent providing medical services, and practice characteristics from a random sample of physicians within practices. Although the SMS was not designed for the purpose of collecting PE information, CMS has been able to utilize data collected by the survey in its "top-down" calculation of its PE relative value units (RVUs).

Recently, the AMA developed a survey to collect information from medical practices rather than individual physicians as is done with the SMS survey. The pilot administration of this Practice Survey took place in the fall of 1999. The Practice Survey was of immediate interest to CMS because of its potential to provide data more consistent with CMS's PE methodology than the SMS. That is, PE data from the Practice Survey are not subject to the inaccuracies that may be created by aggregating to the practice-level from physician-level information.

With the possible advantages of a practice survey in mind, CMS asked The Lewin Group (Lewin) to evaluate the AMA's practice-level survey. Specifically, CMS asked Lewin to:

- Identify important differences between the current physician-level SMS survey and the new practice-level survey,
- Explore ways in which data from a practice-level survey could be integrated into the existing SMS data to improve estimates of PEs, and
- Consider how information collected through future SMS and practice-level surveys may be integrated and used to validate PE and hours data.

CMS assigned these tasks based on the assumption that the AMA would continue to administer both the SMS and the Practice Survey. However, in March 2000, the AMA informed CMS that, due to the escalating cost of data collection and low response rates, it had indefinitely suspended any future survey activity.

The suspension of future SMS and Practice Survey activity altered Lewin's evaluation. If the AMA had administered both the SMS and the Practice Survey in the same year, as CMS and Lewin believed it would, CMS could have used the data collected by the Practice Survey to check the reasonableness of the SMS responses and to check the validity of the assumptions used to inflate the SMS data to the practice-level. Unfortunately, due to decisions made by the AMA, this opportunity for validation no longer exists. Using data from future surveys modeled after the Practice Survey to validate historical SMS data is also not a viable option. Comparing data from different time periods and samples would not produce reliable results. For these reasons, Lewin did not explore the validation issue in this report.

After learning that the AMA had suspended the surveys, Lewin turned its evaluation to determining the appropriateness of the Practice Survey for the two situations CMS may

encounter as a result of the AMA's decision. Lewin examined the suitability of the Practice Survey as a template for future supplemental survey efforts by specialty associations. In addition, we explored whether, and how, the Practice Survey could be used by CMS if the AMA decides to renew administration of the survey or if specialty groups decide to administer a collaborative, all specialty study, with or without assistance from CMS. The collection of comparable data is particularly important for CMS to update its historical PE data with new information from a practice-level survey. The advantages and disadvantages of using the Practice Survey in these situations were explored by Lewin.

Although CMS has traditionally used AMA SMS Survey data in the calculation of PE values, the AMA is not obligated to collect or provide this data to CMS. If the AMA does not administer surveys in the future, CMS may be in the position to design and implement a PE survey. This report provides CMS with recommendations for modifications to the AMA's piloted Practice Survey that would make the data collected more appropriate for CMS's PE methodology.

II. OVERVIEW OF AMA'S PILOT PRACTICE SURVEY AND CMS'S METHODOLOGY

The Practice Survey instrument is designed for distribution to a random sample of physician-owned medical practices that provide patient care. The survey is administered by mail, with assistance available by phone. The AMA suggests that the Practice Survey "be completed by office personnel with the most knowledge of practice costs and revenues." The survey is relatively short in length (14 pages) and is structured in a clear, concise manner. Definitions and directions are provided throughout the survey.

The Practice Survey collects practice-level data on a variety of topics including:

- I. Practice Characteristics
- II. Practice Revenues and Managed Care Arrangements
- III. Practice Expense
- IV. Personnel
- V. Billing
- VI. Output Measures
- VII. Questionnaire Information

The data required by CMS's PE methodology are collected in the sections titled Practice Characteristics (I), Practice Expenses (III), and Personnel (IV).

CMS's Practice Expense Methodology and Data Requirements

CMS's "top-down" approach to calculating PE RVUs starts by estimating a PE pool for a set of physician services aggregated at the specialty level and then allocating that specialty-level pool to each individual procedure or service at the code level. The first stage in the PE methodology is the construction of those PE pools by physician specialty partitioned into cost categories. The direct cost categories include clinical payroll expenses, expenses for medical materials and supplies, and medical equipment expenses. The indirect cost category includes clerical payroll expenses, office expenses, and all other expenses. In creating these pools, the same methodology

is applied to each cost category: average PE per hour by cost category is multiplied by total patient care hours.

In this report, the methodological step that we are primarily concerned with is the calculation of the average PE per hour values. This is the only step that utilizes data from the SMS survey.

Calculating Average Practice Expense per Hour

Currently, CMS uses the AMA's SMS survey data on PEs and physician patient care hours to calculate an average PE per hour for each specialty. However, because the SMS survey is at the physician-level, each physician owner's dollar share of PEs and his/her patient care hours are adjusted for the total number of physicians in the practice in order to calculate a PE per hour at the practice-level. The following three steps are used to calculate PEs 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 = (weekly patient care hours for the responding physician owner * weeks worked per year * number of physician owners in the practice) + (specialty-specific average weekly patient care hours per employed physician * weeks worked per year * number of physicians employed by the practice); and
3. Practice expense per hour = Total practice expenses/Total physician hours.

PEs per hour are then weight-averaged across all responding physician owners within each specialty. The SMS weights are developed at the physician-level to ensure that specialty averages will reflect the composition of the specialty nationally.

Using data from the Practice Survey, the calculation of the average PE per hour is simplified. The Practice Survey collects PE information on a practice-level, so there is no need to inflate the respondent's PEs to the overall practice level. Therefore, the calculation of total PEs for each practice (Step 1) is eliminated. The calculation of total physician hours (Step 2) remains fundamentally the same using the Practice Survey, although the average weekly patient care hours for physician owners in the responding practice will be used rather than the physician-level patient care hours. The calculation of PE per hour (Step 3) remains the same using the Practice Survey.

III. DIFFERENCES BETWEEN THE SMS AND THE PRACTICE SURVEY

CMS currently uses the physician-level SMS survey as its source of PE and physician hours information because the SMS is the only comprehensive source available. By comparing the Practice Survey to the SMS, CMS could gauge whether the Practice Survey would provide more reliable data for its PE methodology. It is important to note that if the AMA, CMS, or specialty groups use the Practice Survey in the future to collect PE information, differences between the Practice Survey and the SMS would need to be considered when the newly collected data are integrated with historical SMS data. In this section of the report we present a general comparison of the surveys' methodologies and the data collected. A more detailed description of the differences in the specific data collected is presented later in this report.

The key methodological differences between the SMS and the Practice Survey are presented in Table 1.

**Table 1
General Methodological Differences Between the SMS and Practice Surveys**

	<i>SMS</i>	<i>Practice Survey</i>
<i>Mode of Administration</i>	<i>Phone</i>	<i>Mail</i>
<i>Respondents</i>	<i>Nonfederal patient care physicians who have completed their residency programs, are practicing in the United States and spend more than 20 hours per week in patient care hours</i>	<i>Physician-owned medical practices that provide patient care</i>
<i>Information Categories</i>	<ul style="list-style-type: none"> - Respondent's share of practice expenses - Practice characteristics - Hours worked - Volume of services - Fees for selected procedures - Income and socioeconomic variables 	<ul style="list-style-type: none"> - Practice characteristics - Practice revenues - Managed care arrangements - Practice expenses - Personnel - Billing and output information

The general methodological differences between the two surveys could create problems with the integration of data regardless of the comparability of the data collected. The differences in the modes of administration and the sampling pools of the surveys are likely to affect the statistical equivalence of the responses collected. The effect of the mode of administration on response rates is well documented in the literature. Telephone surveys typically have a higher response rate than mail surveys. Therefore, it is likely that some respondents, who would have responded to the SMS, will not respond to the Practice Survey. In addition, mail surveys are prone to item non-response. If a respondent does not want to answer a question on a mail survey, it can be left blank. Without telephone follow-up the item will remain blank and may preclude the use of the survey's data. It is possible that the telephone assistance offered with the Practice Survey would mitigate some of the differences resulting from using mail as the mode of administration.

In addition to the mode of administration, the different pools used for choosing a sample may lead to a disparity in the surveys' samples. The SMS survey screens out all physicians who work

less than twenty hours per week in patient care activities. However, if these physicians provide services to Medicare beneficiaries they should be accounted for in CMS's PEs. The Practice Survey does not eliminate respondents based on the number of hours spent in patient care activities and would collect data for part-time physicians at the practice-level. Therefore, physicians eliminated from the SMS pool would not be eliminated from the Practice Survey pool. For CMS's purposes, the Practice Survey sample seems more appropriate.

Before advocating the Practice Survey sample, however, the sample frames for both the SMS and the Practice Survey must be considered. For the SMS, the AMA used the Masterfile as its sampling frame. The Masterfile is well known and recognized as the most comprehensive list of physicians practicing in the United States. Lewin is aware that the AMA also keeps a record of both solo- or two-physician practices and group medical practices in the United States. If these lists of medical practices are to be used as the sample frame for a CMS and/or specialty group sponsored survey effort, they should be evaluated with the same scrutiny applied to the Masterfile.

In addition to the methodological differences discussed above, there are also discrepancies between the data collected by the two surveys. A comparison of the data necessary for CMS's calculation of the average PE per hour as they are collected by the SMS and the Practice Survey is displayed in Table 2, below. A more detailed explanation of the key differences in the data follows.

Table 2
A Side-by-Side Comparison of the PE Data Collected by the SMS and the Practice Surveys

Category	AMA SMS	AMA Practice Survey	Key Differences
Practice Expenses	<ul style="list-style-type: none"> Payroll expenses (physician and non-physician) Liability and malpractice Office expenses Medical materials and supplies Medical equipment Other expenses 	<ul style="list-style-type: none"> Wages and Salaries Benefits, Pensions and Profit Sharing Contract Services Non-Labor Costs 	<ul style="list-style-type: none"> SMS collects the respondent's share of practice expenses, while the Practice Survey collects practice expense information about the entire practice The structure of the practice expense questions differ between the two surveys, but the categories are basically compatible
Physician Owners in Practice	<ul style="list-style-type: none"> Full or part owners 	<ul style="list-style-type: none"> Partners Shareholders 	<ul style="list-style-type: none"> Both surveys collect the number of physician owners in the practice accurately
Physician Employees in Practice	<ul style="list-style-type: none"> Number of physicians in practice Full or part owners 	<ul style="list-style-type: none"> Number of FTE physicians (owners and employees) by specialty 	<ul style="list-style-type: none"> Using the information collected by the SMS, the number of physician employees can be calculated Practice Survey does not directly identify the number of physician employees
Physician Owner/Employee Hours Spent in Patient Care Activities	<ul style="list-style-type: none"> Hours of direct patient care provided during a typical week Hours spent performing specific patient care activities during most recent week 	<ul style="list-style-type: none"> Definition of FTE in hours per week for practice 	<ul style="list-style-type: none"> Practice Survey does not collect hours worked, does not account for overtime etc. Practice Survey does not distinguish between patient care activities and other activities
Weeks worked per Year	<ul style="list-style-type: none"> Weeks worked by physician 	<ul style="list-style-type: none"> Weeks practice is open 	<ul style="list-style-type: none"> Practice Survey does not account for weeks missed due to illness, vacation, professional conferences etc.

IV. PRACTICE EXPENSE DATA

CMS's methodology for calculating PEs requires data for both the direct cost categories (clinical payroll expense, medical materials and supplies expense, medical equipment expense) and the indirect cost categories (clerical payroll expense, office expense, and all other expenses). In this section of the report, we examine the differences between the data collected in the cost categories by the SMS and the Practice Survey. Where appropriate we present recommendations for adjusting the Practice Survey data or modifying the survey instrument to make the data more consistent with CMS's methodology.

There are five key differences in the PE data collected by the Practice Survey and the SMS. First and foremost is the collection of practice-level data by the Practice Survey. As noted earlier, the SMS collects PE information from physicians regarding their share of their practices' expenses. Because the data collected by the SMS is representative of only the responding physician, CMS adjusts each respondent's reported PEs by the number of physician-owners in the practice to estimate the practice's total expenses. The Practice Survey collects information regarding the

expenses of an entire practice, rather than the expenses of a physician within a practice so there is no need for CMS to estimate total PEs. CMS's use of practice-level survey data would eliminate the risk of inaccurate estimation associated with the inflation of physician-level survey data.

The four remaining key differences in the PE data are specific to the clinical payroll expense, medical equipment expense, clerical payroll expense, and all other expenses cost categories.

Clinical payroll expense

Respondents to the SMS are asked to provide their share of non-physician payroll expenses, including fringe benefits, and then to break out those non-physician payroll expenses used solely for personnel involved in administrative, secretarial, or clerical activities. The difference between these values is the clinical payroll expense.

Respondents to the Practice Survey provide the total wages and salaries for non-physician employees separate from their fringe benefits (benefits, pensions, and profit sharing). Like the SMS, the Practice Survey breaks out the wages and salaries for clinical staff and business and office personnel, but the Practice Survey does not separate the fringe benefits of clinical staff from business and office personnel. Fringe benefits are considered a part of payroll expense by CMS and are to be included in the PE calculation. However, summing the wages and salaries of the clinical staff and the fringe benefits of all non-physician staff would provide an inaccurate clinical payroll expense because it would include the fringe benefits of business and office personnel. Excluding the fringe benefits from the clinical payroll expense is not an approach recommended by Lewin. Fringe benefits are part of a practice's expenses and should be included in the calculation of PE values.

A viable option available to CMS is the adjustment of the fringe benefits data to create a more accurate clinical payroll expense. CMS could calculate the ratio of business and office personnel wages and salaries to clinical staff wages and salaries, and then reduce the clinical staff's fringe benefits value by the ratio. This calculation would produce an estimate of the clinical staff's benefits that could be summed with the clinical staff's wages and salaries to produce the clinical payroll expense. This method of adjustment rests on the assumption that an individual's benefits are allocated proportionate to salary.

A minor modification to the survey would provide a better opportunity for CMS to collect accurate clinical payroll expense data. By asking respondents to separate the fringe benefits for clinical staff from those for business and office personnel, as they do for wages and salaries, the clinical payroll expense can be calculated by summing the wages and salaries and fringe benefits of clinical staff. If, due to bookkeeping techniques or other issues, respondents are unable to separate the fringe benefits, CMS could use the adjustment technique described above, which utilizes the ratio of fringe benefits for clinical and office staff, to provide estimates of clinical staff benefits.

Medical equipment expense

Respondents to the SMS are asked to provide expenses for the depreciation, lease, and rental of medical equipment used in the diagnosis or treatment of patients. Respondents are instructed not to include the total purchase price or replacement value of medical equipment, office equipment, and furniture in the medical equipment category.

Unlike the SMS, the Practice Survey collects information on medical and business equipment costs in one question. The survey asks for the total equipment costs defined as lease payments, maintenance costs, service contracts, lease hold improvements, furnishing, and annual depreciation and interest based on IRS rules. The survey then asks the respondent to separate the medical equipment costs and business equipment costs.

As with all proposed rules, CMS has collected public comments on its PE methodology. CMS has received numerous comments from groups claiming that the expenses collected in the medical equipment cost category are not representative of the costs experienced by their specialties. Several physician associations have indicated that the SMS does not collect accurate information because the definition of the medical equipment expense category is unclear. Maintenance and service contract costs have been mentioned as costs that may be excluded by physicians when responding to the SMS. The Practice Survey's medical equipment expense definition may collect more accurate data than the SMS because maintenance and service contract costs are included in the Practice Survey's list of examples. CMS's use of the Practice Survey medical equipment expense values could allay the concerns of specialties regarding the validity of collected medical equipment expense values because their definition is more comprehensive.

Clerical payroll expense

As described earlier, respondents to the SMS are asked to provide non-physician payroll expenses including fringe benefits used solely for personnel involved in administrative, secretarial, or clerical activities. The Practice Survey asks the respondent for the wages and salaries of business and office personnel and, in another question, asks for the value of non-physician fringe benefits. The non-physician fringe benefits include those of both business and office personnel and clinical staff. As with the clinical payroll expense, summing the wages of business and office personnel and the non-physician fringe benefits will not produce an accurate clerical payroll expense because it will include the benefits of clinical staff.

As suggested in the clinical payroll expense description, CMS could adjust the data in two ways. CMS could choose to not include the benefits in the calculation of payroll expense at all; however, this adjustment would create a clerical payroll expense inconsistent with CMS's definition, which includes benefits in payroll. Lewin does not recommend that CMS eliminate fringe benefits from the calculation of payroll expenses as they are a valid part of PE. CMS could also opt to apportion the total benefits for non-physician staff between business and office personnel and clinical staff according to the wages paid to each group. Reducing the total non-physician benefits by the ratio of clinical staff wages to business and office personnel wages would produce an estimate of the business and office personnel benefits. This method rests on the assumption that benefits are proportional to salary.

If CMS chooses to modify the Practice Survey in order to collect data better suited for its methodology, a question should be added asking respondents to separate the benefits of business and office personnel from clinical staff as they do with wages and salaries. The breakdown provided will eliminate the need for data adjustment by CMS to calculate clerical payroll expense.

All Other Expenses

After providing information in the cost categories, SMS respondents are asked to provide tax-deductible expenses for any other expenses not previously mentioned. The SMS provides a list of examples of “other expenses” including legal, accounting, or office management services, professional association memberships, journals and continuing education, and professional car upkeep and depreciation.

Respondents to the Practice Survey are also asked to provide PEs for “other practice costs.” The list of examples provided on the Practice Survey includes practice acquisition costs, book subscriptions, entertainment, marketing costs, continuing education, travel for continuing education, professional dues/licenses, interest on loans, tax expense, charitable contributions, and professional liability insurance such as umbrella insurance.

Although not specified on the survey instrument, both business supply and business equipment costs are included in the SMS survey’s “other expenses” category. On the Practice Survey, business supply and business equipment costs are collected separately from other expenses. To remain consistent, the business supply and business equipment costs collected on the Practice Survey should be added to the “other practice costs” to create the total “all other expenses” used in the calculation of PEs.

V. PHYSICIAN HOURS DATA

The total hours worked annually by physicians are key to CMS’s calculation of the PE per hour. CMS calculates the total hours worked in a practice by summing the hours worked annually by physician employees in the practice to the hours worked annually by physician owners in the practice. As detailed earlier in this report, the data needed to calculate total hours are the number of physician employees in the practice, the number of physician owners in the practice, the hours worked per week by employee physicians and owners, and the weeks worked per year. In this section of the report we discuss how these data are collected by the SMS and the Practice Survey. Suggestions for adjusting the Practice Survey data for use in CMS’s methodology are presented where appropriate.

Physician Employees in Practice

The SMS does not collect the number of physician employees directly, but does collect both the number of physician owners and the total number of physicians in the practice. The number of physician employees is calculated by subtracting the number of physician owners from the total number of physicians.

Using the Practice Survey, the number of physician employees is not readily available. The Practice Survey collects the number of physician partners or shareholders in the practice, but does not collect the total number of physicians in the practice. Rather, the Practice Survey asks the respondent to provide the number of full-time equivalent (FTE) physicians, owners, and employees, in the practice by specialty.

CMS can use the FTE data from the Practice Survey to obtain the approximate number of physician employees in the practice by assuming that each physician owner is one FTE and each physician employee is one FTE. Under these assumptions, the number of physician owners can be subtracted from the total FTEs to obtain the number of physician employees in the practice. Although this method will provide CMS with an estimate of the number of physician employees, it does not account for part-time physician owners or physician employees. If any of the physicians in a practice are part-time, the estimated number of physician employees will be inaccurate.

If the Practice Survey instrument is modified for the collection of PE information, a question regarding the number of physician employees in the practice should be added. This question would eliminate any error caused by using the FTEs as a proxy for the number of physician employees.

Physician Owner/Employee Hours Spent in Patient Care Activities Per Week

Time spent in patient care activities is the only time for which Medicare reimburses. Medicare does not cover hours spent on administrative tasks or on-call. CMS uses a screening question from the SMS regarding time spent in patient care activities in a typical week to obtain this value. Because the SMS is administered to both physician owners and employees, information on hours spent in patient care activities is collected from both groups.

Unlike the SMS, the Practice Survey does not collect information on hours spent in patient care activities. The only information on hours collected by the Practice Survey is the definition, in hours per week, of an FTE physician position in the practice. The hours provided presumably include hours spent in both patient care activities and non-patient care activities. Therefore, using the definition of an FTE as a proxy for hours spent in patient care activities without adjustment is not recommended.

A much more reliable way for CMS to collect the hours spent in patient care activities would be to modify the Practice Survey. The physician owner/employee hours spent in patient care activities per week should be collected in a question or a series of questions that provides the definition of Medicare patient care activities. It cannot be assumed that the practice manager, accountant or physician completing the survey knows what activities are and are not included in Medicare's definition of patient care. The series of questions in the SMS that collects physician hours spent in specific activities (Section C, questions X1-Xt2) could serve as an example. Although CMS does not use these questions as the source for patient care hours, they provide a resource for collecting accurate patient care hours by asking for the time spent in specific activities and separating patient care hours from non-patient care hours. When modifying the survey, the possible trade-off between detailed and accurate data collection and the response rate

must be considered. Respondents who cannot, or are not willing to, provide detailed hours information for specific activities may opt not to return the survey, or leave the questions blank. Before the Practice Survey is modified to contain questions similar to those on the SMS, CMS should explore the ease with which practice managers could provide detailed patient care hours information. By adopting an appropriate level of specificity, the response rate can be maintained. Finally, because the Practice Survey collects information from a practice rather than an individual physician, any question about physicians' activities will have to ask for an average across the physicians in the practice. CMS should consider the inherent inaccuracy in collecting the average patient care hours across physicians in a practice when deciding whether to adopt a practice-level survey.

Weeks Worked per Year

The SMS asks the respondent to specify the number of weeks practiced during the year as well as the number of weeks missed due to illness, vacation, professional conferences or any other reason. These questions produce an exact number of weeks worked annually by the respondent, and this annual value is confirmed with a third survey question.

The Practice Survey does not question the respondent regarding weeks worked. Rather, the survey asks how many weeks per calendar year the practice is open. It is not recommended that CMS use the weeks per year the practice is open as a proxy for weeks worked per year. The weeks per year the practice is open does not account for weeks missed by a physician due to illness, vacation, professional conferences, or any other reason.

As with the hours spent in patient care activities, the weeks per year the practice is open could be adjusted using historical data and trends from the SMS. However, as noted above, this method assumes that the average number of weeks worked per year has not moved away from the historical trend and that all physicians in a specialty miss approximately the same number of weeks of practice per year. That is, this method of adjustment does not account for those physicians who work a significant number of weeks more or less than the average physician within a specialty.

Again, the most accurate method for obtaining the number of weeks worked per year by physicians in a practice is to modify the survey to directly gather the information. By asking directly how many weeks, on average, physicians in a practice worked in the last year CMS will not have to make adjustments or create estimates. In addition, CMS may want to ask how many weeks per year, on average, were worked by physician owners and how many weeks per year, on average, were worked by physician employees. As noted above, CMS should consider carefully the necessary use of the average across physicians when deciding whether to adopt a practice-level survey. It is likely that using the average across the physicians in a practice will introduce some inaccuracies into the final PE values.

VI. ADDITIONAL DATA NEEDED TO IMPROVE CMS'S METHODOLOGY

Although the Practice Survey has many advantages as compared to the SMS, it does not account for many of the limitations of the SMS for purposes of CMS's PE methodology. These issues identified in Lewin's earlier report include the failure of the SMS to account for mid-level providers who can bill directly, pharmacy and lab charges otherwise billed and uncompensated care. In this section of the report we review our suggestions for modifications to a PE survey used by CMS to account for these additional elements of PE.

Mid-Level Providers, Pharmacy and Lab Charges

Although the Practice Survey does collect the wages and salaries of mid-level providers for a practice, it does not collect the information on offsetting revenue necessary for CMS to eliminate the possibility that it is paying twice for services mid-level practitioners have billed separately to Medicare. Nor does the Practice Survey collect any data on pharmacy and lab charges that have been separately billed to Medicare. Thus, the Practice Survey can not be used to exclude those expenses associated with mid-level and limited-license providers, pharmacy, and laboratory that were separately billed to Medicare. The Practice Survey asks respondents about their tax-deductible PE and, since salaries of employees of the practice and pharmacy and laboratory charges are legitimate tax-deductible expenses, we believe that respondents include these costs in their PEs.

Modifying the Practice Survey to include questions relating to mid-level providers, pharmacy and lab charges would increase the validity of CMS's PE values. As suggested in Lewin's earlier report, the Practice survey could 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, contains the types of information that the survey should collect. The questions identified the physician's dollar share of PE attributable to mid-level providers' salaries and the physician's share of offsetting revenue received for services provided by mid-level providers. A simple change in wording would make these questions appropriate for use on a practice survey. With this information, it would be possible to back out of the PE pools the offsetting revenue generated by mid-level providers. This, of course, would not be strictly comparable to earlier PE data, but it would be more accurate.

Uncompensated Care

Neither the SMS nor the Practice Survey accounts for uncompensated care provided under the Emergency Medical Treatment and Labor Act (EMTALA). Providing EMTALA-induced uncompensated care requires practices to commit resources, for which there is no direct reimbursement mechanism. Therefore, this care should be a legitimate PE and accounted for in CMS's PE methodology. However, there is little information available to adjust the PE pools. As we recommended in an earlier report¹⁹, total Medicare patient care hours and EMTALA-induced patient care hours could be collected by future surveys and used to adjust PE pools to account for EMTALA-induced care. The question regarding EMTALA-induced patient care hours would need to provide a specific definition to prevent physicians from reporting charity care hours that are not covered by EMTALA.

¹⁹ Dobson A., Koeing L., Sturm E., Cavanaugh J. (2000). *An Evaluation of the Health Care Financing Administration's Resource-Based Practice Expense Methodology*.

VII. POTENTIAL LONG-TERM SOLUTION TO THE COLLECTION OF VALID PHYSICIAN HOURS

Within this report, Lewin has provided CMS with recommendations for the collection of physician patient care hours using the Practice Survey or a modified version of the survey. Despite the efforts of CMS or specialty groups to collect valid physician patient care hours in the future, self-reported time data will always be subject to imprecision and, possibly, manipulation.

Lewin's long-term recommendation to CMS is the substitution of physician work RVUs for the SMS patient care hours in CMS's PE methodology. Rather than creating the PE pool by multiplying the average PE per hour and the total hours worked, CMS could multiply the average PE per physician work RVU and the total Medicare physician work RVUs produced to create the specialty specific PE pools.

CMS's methodology for the creation of the specialty specific PE pools would change little beyond the substitution of physician work RVUs for patient care hours. The methodological steps for creating the specialty specific PE pools are detailed below.

- (1) Derive the expenses at the physician practice level for the cost categories using survey data.
- (2) Derive the number of physician work RVUs produced by physicians in the practice.
- (3) Divide the expenses at the practice level by the number of physician work RVUs produced by the physicians in the practice.
- (4) By specialty, determine the number of physician work RVUs produced treating Medicare patients as reflected in the Medicare claims data.
- (5) By specialty, multiply the PEs per RVU for each cost category (as calculated in Step 3) by the number of total physician work RVUs reflected in the Medicare physician fee schedule claims data (as calculated in Step 4).

The pools created using the five steps above could then be allocated to the procedure code level following CMS's current methodology.

Integrating physician work RVU values into CMS's methodology will require the collection of valid and accurate physician work RVU production values from physicians. The Practice Survey collects the total annual physician work RVUs produced by a practice from respondents who keep track of physician work RVUs. We believe that most medical practices maintain automated records of the procedures performed within their practice, by procedure code. With this information, the total annual physician work RVU production for a practice could be obtained by multiplying the frequency with which a procedure was performed by the practice by the physician work RVU assigned to that procedure's code and summing across all of the procedures performed by the practice. Practices could either be asked to supply a list of procedures performed and the frequencies with which they were performed or to calculate their own total work RVU production. In asking practices to calculate their own values, there is a risk that a practice may use a relative value scale produced by a private vendor rather than the Medicare relative value scale. The use of an alternative relative value scale could produce total work RVU values that are inconsistent with CMS's RVUs. On the other hand, the calculation of the total

work RVUs produced by each respondent will increase both the cost and complexity of the survey for administrators. CMS must weigh the benefits and disadvantages of the options for collecting work RVUs if this methodology is adopted.

As discussed earlier in this report, patient care services with physician work RVU values of zero pose a challenge for the use of physician work RVUs as a substitute or replacement for patient care hours. All patient care activities and services should be accounted for in CMS's PE methodology. The issue of services with physician work RVUs of zero, in a PE methodology based on work RVUs, is explored in chapter 1.

VIII. CONCLUSION

As noted throughout the report, the major advantage of the Practice Survey over the SMS is the collection of data on a practice-level. By eliminating the need to inflate the PE data collected, CMS also eliminates a potential source of inaccuracy from its methodology. However, the use of the Practice Survey instrument as it exists currently to collect data for CMS's PE methodology is not recommended. The data collected by the Practice Survey is not consistent with CMS's methodology and must be adjusted in several important ways in order to be used by CMS for its PE methodology. With the adjustments and additional questions suggested in this report, the Practice Survey could collect reliable, comprehensive data for CMS's calculation of PEs. In designing the modified survey, CMS should focus not only on accounting for the data currently collected by the SMS but also on collecting the data on mid-level providers, pharmacy and lab charges, and uncompensated care that are not accounted for by either survey. CMS might also consider Lewin's recommendation for the use of physician work RVUs as a substitute for patient care hours.

Although Lewin recommends the use of a modified Practice Survey instrument in the future for the collection of PE information, we do not believe the Practice Survey, as currently constructed, would serve as an appropriate substitute for the SMS for supplemental surveys at this time. Due to the data differences between the SMS and the Practice Survey discussed in this report, Lewin does not recommend the introduction of the Practice Survey instrument in a piecemeal fashion by individual supplemental survey efforts. This would encourage the collection of data inconsistent with the data CMS is currently using for the calculation of PEs. Lewin recommends that CMS continue to require that supplemental surveys be administered using the SMS format and methodology until the AMA (or CMS) has administered a full scale Practice Survey (as modified to meet CMS's needs).

A final consideration in the adoption of a PE survey based on the AMA's Practice Survey is how CMS will use the data in the rolling average calculation of PEs. Currently, CMS uses a four-year rolling average of PE values calculated with SMS data as the PE value for a specialty in a given year. With the possible adoption of a practice-level survey, CMS will have to decide how the practice-level data can be averaged with the physician-level data to produce valid PE values. In doing this, CMS can consider a variety of weighting methods by which the practice-level data are weighted with the SMS data. Different weighting schemes can be considered to either

accelerate the use of practice-level PE data or enter it more slowly, depending upon CMS's judgement as to how comparable the two data sources are.