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Cash Flow and Accounts Receivable Management for Dialysis

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The importance of an efficient billing/collections process lies in the fact that the overdue payment represents a source of capital that can be tapped and even used by a dialysis facility to generate further income. While it is outstanding, however, the payment represents nothing more than a unit's own money being used by others. Here, the impact that an efficient billing/collections system can have on a new dialysis facility, through its effect on the accounts receivable that must be included in start-up capital, is analyzed.

INTRODUCTION

Billing delays and inaccuracies cause expensive lags in receipt of payments for medical services. This is true in all fields of medicine (as well as in any industry), but the significance of these delays is not always apparent.

Often these lags in payment, either from late or inaccurate billing or from inattention to collections, have become part of the fabric of patient accounts. The rate of payment eventually equals the rate of billing less anticipated write-offs; often, the result is that no problem is perceived. Furthermore, the idea of cash flow and the associated concept of "cost of money" seem rather esoteric when discussed by financial experts and not part of the practical realities of patient accounts.

This common misconception is unfortunate. In many cases hundreds of thousands of dollars are changing hands, and normally it is the medical provider, the dialysis unit, that has to wait for payment while its costs continue. Consequently, large amounts of money are spent with the expectation that comparable amounts will eventually be collected from Medicare, Medicaid and other insurance carriers.

Because money is spent in anticipation of future payment, the costs incurred between the rendering of a service and the collecting for it must be financed by the dialysis unit. This can be much more costly than necessary, depending on the speed, efficiency and accuracy of the billing procedures.

The cash outlay necessary to finance receivables is most perceptible in the new freestanding unit, where the resources to make up this expense-collections difference must be added to initial capitalization. The lag between billing and collections, however, exists in all facilities. In fact, the greatest problem often exists in hospitals where operating and accounting functions are administratively separate. In a hospital, however, financial resources are generally far greater than in a freestanding unit, so larger accounts receivable and cash flow lags may not cause the same degree of financial upset and concern.

The intent of this paper is to analyze the quantitative effect of billing/collections on the financing of a dialysis unit. For illustrative purposes, a newly established freestanding dialysis unit will be considered because the financial importance of collection delays is most obvious in this setting. The analysis is truly general—the collection problems to be discussed are present also in older units but are generally masked by overlapping billing periods.

Clues to the existence of problems with billing and collections will take several forms that can all be expressed as questions:

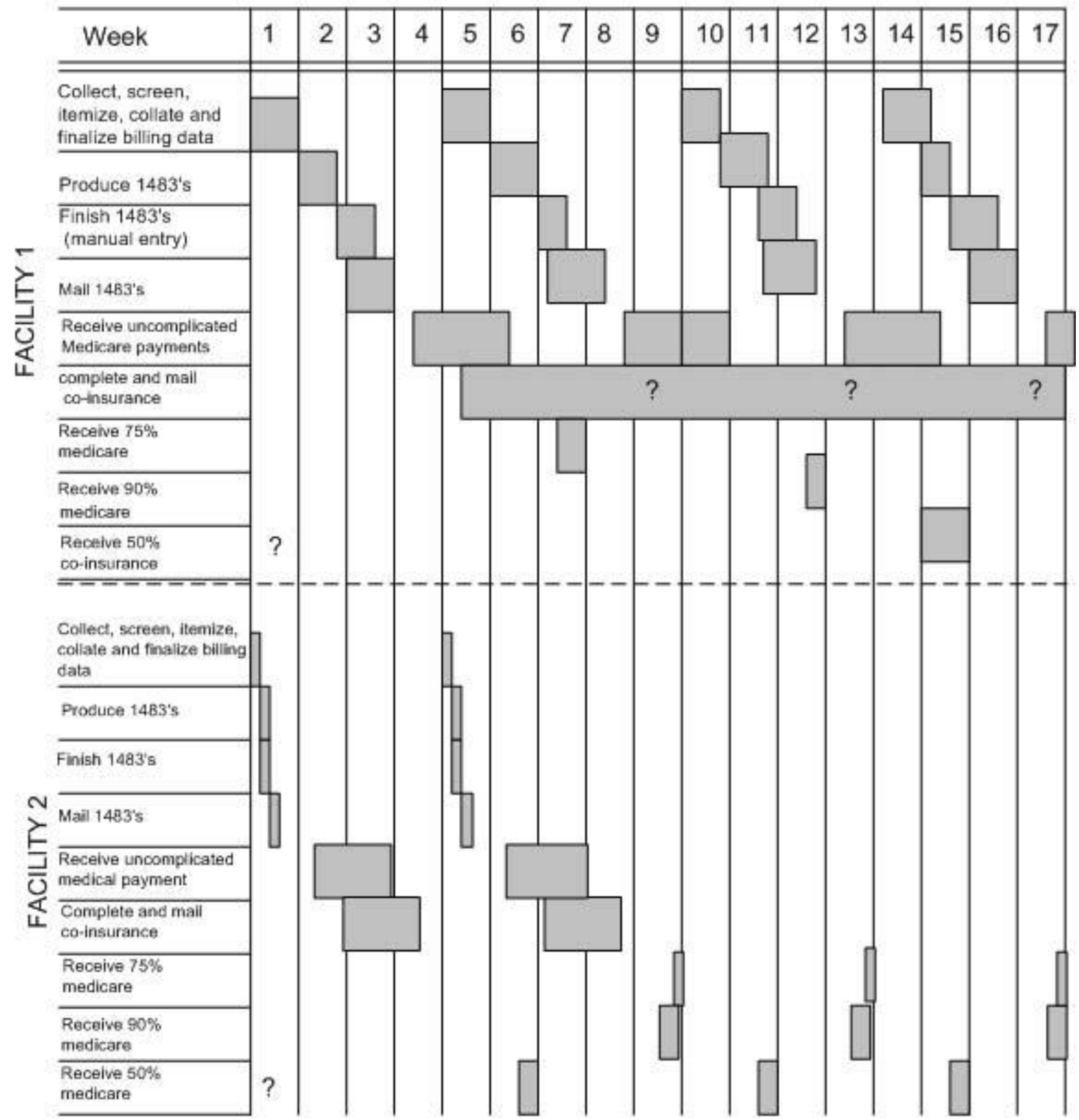
- How many bills are pending resubmission?
- How many bills are not yet resolved nine months after the charge date?
- Are 15% or more of receivables between 60 and 90 days old?
- Are more than 20% of receivables greater than 120 days old?

The review of billing and receivables information needed to respond to these questions will help to answer the underlying question: “Do we have a billing! collections problem?” If the information is difficult or impossible to obtain, this in itself would indicate that a problem exists.

THE BILLING CYCLE IN TWO SAMPLE DIALYSIS FACILITIES

The time sequence of billing in two dialysis facilities (or units) is shown in Figure 1. Events begin with the collection, itemization, screening, collation and finalization of billing data at the end of the month. Additional steps include the production of the HCFA 1483 Medicare bill, the manual addition of information and the mailing of this form to the Medicare intermediary. Medicare payments are generally received between one and two weeks after submission of the billing information for uncomplicated claims.

Following the receipt of Medicare payments, co-insurance claims are completed and mailed to a potentially large number of secondary insurers. Other milestones shown in the figure are the points at which 75% and 90% of Medicare payments are received, as well as that at which 50% of co-insurance payments are secured.



% OF MONTHLY BILLING RECEIVED BY MONTH AFTER BILLING DATE

MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
FACILITY 1	20%	68%	76%	80%	83%	85%	87%	89%	91%	93%	95%	96%	97%	98%			
FACILITY 2	67%	87%	91%	95%	96%	97%	98%	99%	100%	100%							

Figure 1: Time graph showing 17 weeks since start of representative billing cycle for two facilities. At the bottom of the figure is the progressive collections history of a month's dialysis bills for the two facilities.

Inspection of Figure 1 shows some basic differences between the two facilities. Facility 1 requires a week to process charge slips and completely organize billing data before completing the basic HCFA 1483 forms. These are then “produced” either by automatic methods such as a word processor or a partially computerized billing system, or by manual typing. In most cases there is some finishing work to be done on the 1483 such as adding remarks, miscellaneous charges, footnotes and charge justifications. The claims are then mailed two to three weeks after the first of the month.

Facility 2, in contrast, begins on the first day of the month to complete the collection, screening, collation and finalization of data in addition to the printing and finishing of the HCFA 1483 and mails them to the intermediary the same day.

Facility 1 represents a composite of facilities that bill manually, have general hospital billing systems, use “computerized billing systems” with a large manual component or use other methods that result in billing delays. The main feature of the computerized systems used by units like Facility 1 is that either they originate from billing systems that are not specifically designed for dialysis or they are standalone systems using software that is not maintained or supported in-house. The result is that these systems tend to become inefficient. In both cases these automated systems require significant manual entry of billing data that is personnel intensive and increases the time required to produce a bill.

Facility 2 is modeled after an actual operating dialysis facility with approximately 150 patients. The billing system it uses is a computerized time sharing system specifically designed for dialysis billing; the system is fully maintained and supported.

The overall billing cycle is longer for Facility 1 than it is for Facility 2 because each of the sequential steps—from gathering billing information to completing co-insurance claims—takes longer. In addition, the total billing cycle can take more than a month, with the result that at least two separate cycles can be going on simultaneously. Completing co-insurance bills is a continuing activity for this unit that results in co-insurance bills from different time periods blending together. Resubmission of bills and resolution of more complicated or contested bills add yet another activity to the regular cycle.

The time needed for each of these two facilities to receive payment of a particular month’s bills is shown at the bottom of Figure 1. It is a direct result of the length and sequence of events in the billing process. This time/revenue relationship is the basis for the analysis to follow.

ANALYSIS

Consider that both Facility 1 and Facility 2 in Figure 1 are new freestanding dialysis units that until recently were in-hospital facilities. This consideration simplifies the analysis because it removes the financially confusing overlay of previous billing periods. In addition, it permits the assumption of a stable patient population and a reasonably constant level of monthly billing. Also important to this consideration is the fact that the administrative shift from in-hospital to freestanding status is becoming more common.

The initial economic fact is that capitalization must allow for at least one month of operating costs—one cannot bill for the first month's dialysis until the month has ended. At that time the series of events described in Figure 1 takes place and has the potential to increase this capitalization.

The collection history for Facilities I and 2 shown at the bottom of Figure 1 can be plotted as a function of time showing the length of time it takes to completely collect for the first month of billing. This collection time graph is shown as Figure 2.

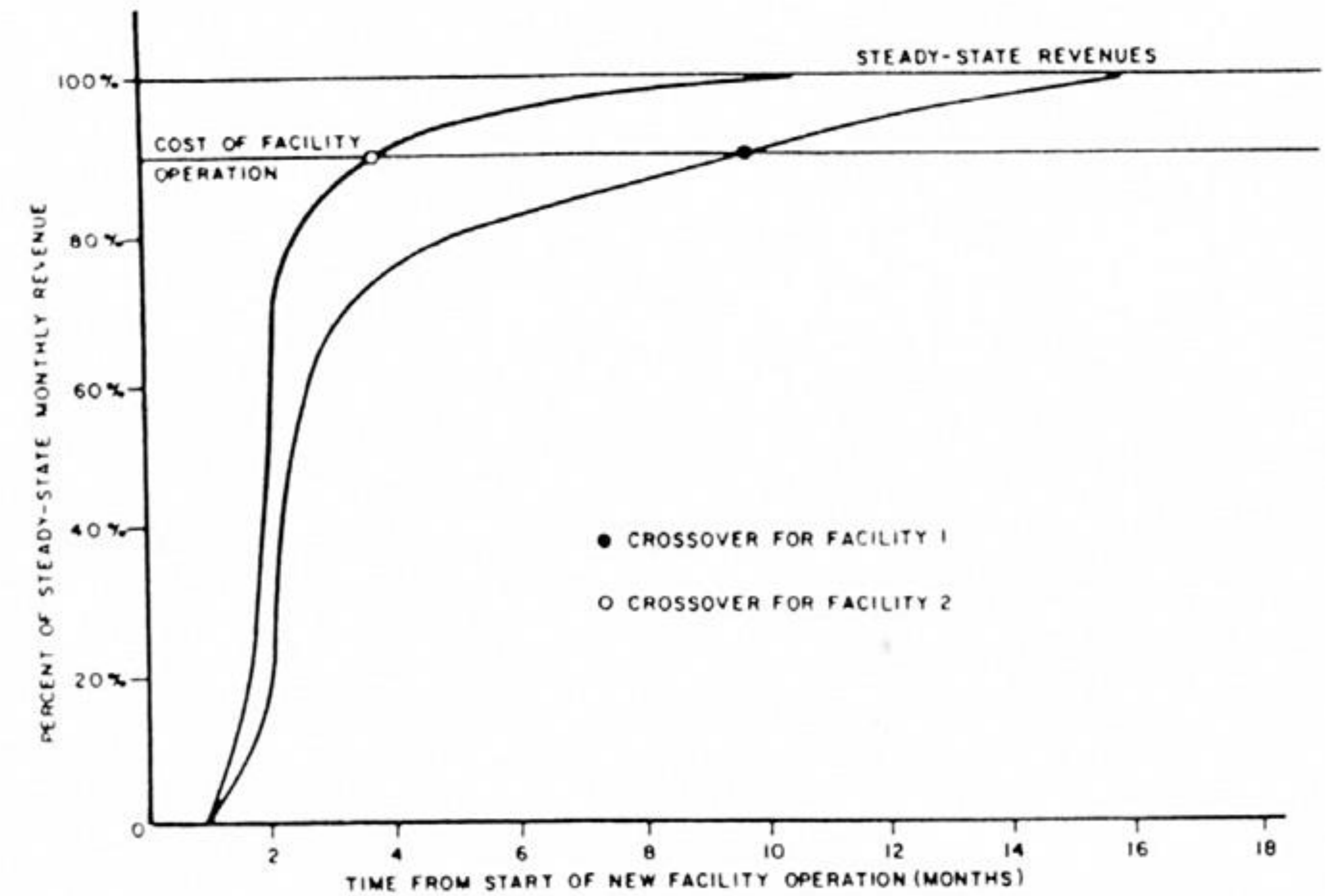


Figure 2: History of collections of the first month's billing for the two new facilities.

In Figure 2 the horizontal axis represents the time in months since the facility started operations. The vertical axis represents the percent of expected monthly revenue that is collected at any time. This vertical axis, however, is also a dollar amount if the total monthly revenue of a unit is known. For example, if the monthly revenue of the facility is

$100,000, then 20% on the vertical axis would correspond to $20,000, 40% would correspond to $40,000, etc. As such, the vertical axis can be used to compare the collection history of the first month to other fiscal constants such as the monthly cost of operating the dialysis facility.

Finally, although the curves show the collection history of one month's bills, they also represent collections for the two dialysis units over the first 18 months of operation. For example, in Figure 1 Facility 1 collects 20% of its expected revenues during the second month of operation (within one month after the billing date). It collects an additional 48% of the first month's billings during the third month. By the end of the third month of operation, it has collected 68% of the first month's bills plus 20% of the second month's bills. Thus, during the third month it has collected an amount equivalent to 68% of the month's billings: 20% from the second month and 48% from the first month. The data from Figure 1 are plotted in Figure 2.

The lines for both facilities rise as Medicare payments are received, but then tend to level off as slower co-insurance claims are collected and resubmitted Medicare bills are paid. Due to delays in getting its bills produced, Facility 1 receives only 20% of expected monthly revenues (one-quarter of Medicare payments) before it starts producing its second month's bills. By the end of the third month it has collected nearly 70% of the first month's billings. Total collection for this unit takes approximately one year.

Facility 2, because it gets its bills out more rapidly, receives two-thirds of its monthly billing before it starts the next billing cycle and collects nearly 90% within two months. However, it takes Facility 2 nine to eleven months to collect all of its first month's billings.

What this means is that the more rapid and efficient methods used by Facility 2 permit its staff to concentrate on co-insurance bills and Medicare resubmissions before the next billing cycle starts. Thus only a small number of the more-difficult-to-collect bills remains.

Analysis of Figure 2. Systematic analysis of Figure 2 yields insight into the costs associated with receivables and collections. It also relates expected income to other financial milestones such as the cost of operating the dialysis facility.

Superimposed onto Figure 2 are two horizontal lines. The upper line represents 100% of expected monthly revenue. The lower line represents the cost of operating the dialysis unit. It is shown below the 100% (or steady state) revenue line because no unit can stay in business if costs exceed revenue in the absence of outside support.

Intersection of Income Curve with Cost Line: "Crossover." The intersection of the income curve with the cost line provides very important financial information for the dialysis unit and thus is enormously important. This is the point at which income is sufficient to meet costs. Because the curve rises more gradually after the receipt of Medicare payments, crossover becomes dependent on the speed and efficiency of collections from other carriers. In Facility 1 it takes more than nine months to reach the point of crossing; in Facility 2 it takes three months.

Figure 3: Areas on the Time/Revenue Graph. The intersection of the income curve and cost line is the point at which the dialysis unit is self-sustaining. As such, it is perhaps the most crucial financial milestone for a new unit; it is certainly the one that can be most easily identified with.

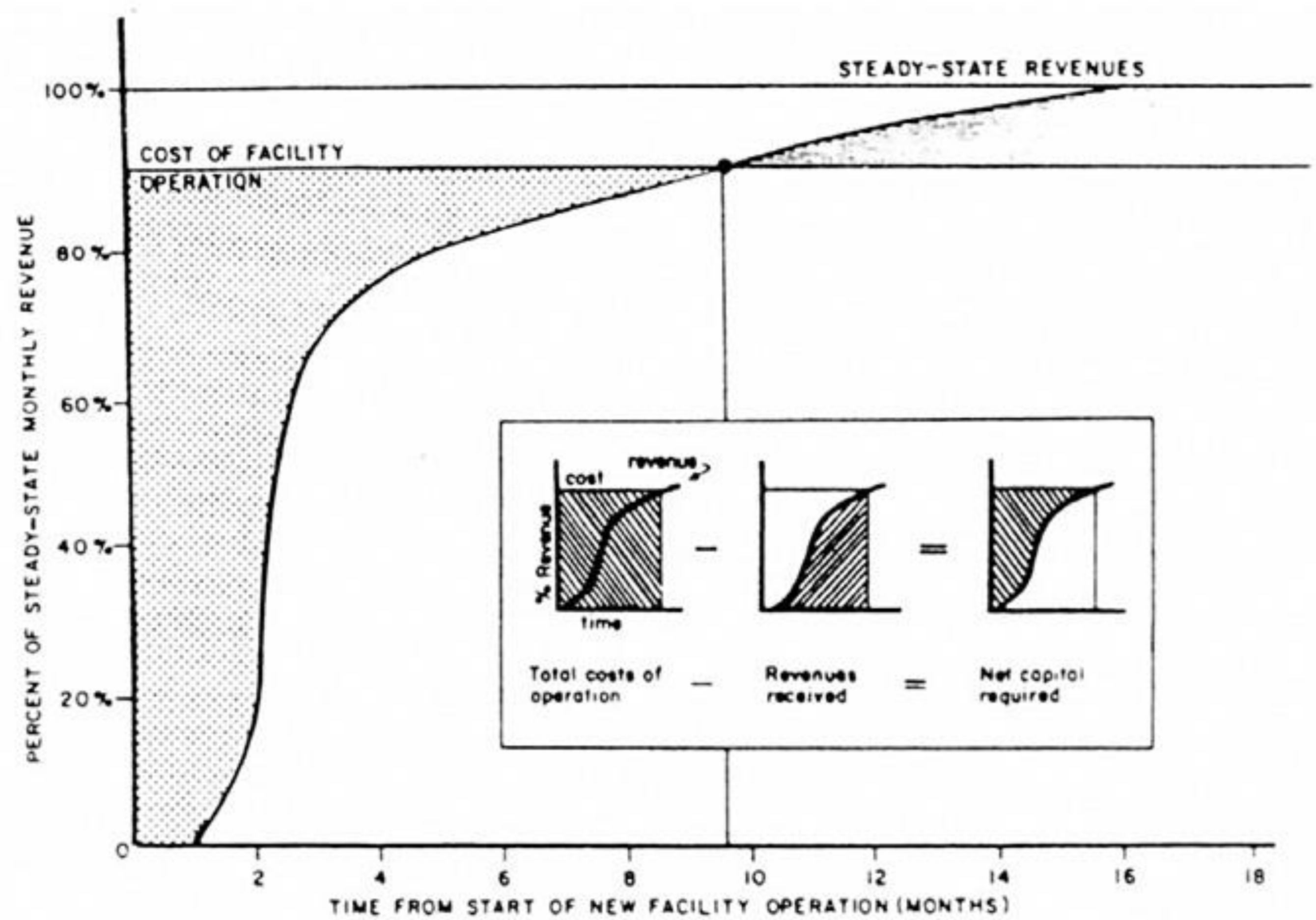


Figure 3: Capital cost for Facility 1 (see Table I) to reach crossover and the time to pay back start-up capital.

When a vertical line is constructed at the time of this intersection, two overlapping areas—diagramed in the inset of Figure 3—can be evaluated. The first, Total Cost of Operations, is the rectangle formed by the axes, the cost line and the vertical line constructed at the crossover point. The second, smaller area, Revenues Received, is formed by the horizontal axis, the vertical crossover line and the time/revenue curve. These two areas and the difference between them, Net Capital Required, are shown in the inset of Figure 3 as hatched areas. In the figure itself, Net Capital Required is the dotted area to the left of the crossover point.

The area of a plane figure is the product of its height and width. Dimensionally, with reference to Figure 3, the area will be the height (percent of monthly revenue) times the number of months. Consequently, an area on this figure will equal some fraction or multiple of monthly revenue. It can be converted into dollars by substituting the level of monthly revenue adjusted to expected revenue.

Table I: Facility statistics and revenue-time, accounts receivable information on two sample facilities (see Figures 1–5).

Basis:
100 patients dialyzing three times per week
13 treatments per month per patient (average)
1300 dialyses per month
$130.00 per treatment as a prospective reimbursement rate
$169,000 expected total monthly revenue
$152,100 (or 90% of monthly revenue) cost of operations

Item	Facility 1	Facility 2
Time to crossover	9.6 months	3.6 months
Total costs to crossover	8.64 x monthly revenue 1,460,160	3.24 x monthly revenue 547,560
Total revenue to crossover	5.67 x monthly revenue 958,230	1.56 x monthly revenue 263,640
Cost in excess of revenue at crossover (net cost)	2.97 x monthly revenue 501,930	1.68 x monthly revenue 283,920
Time to break even (surplus equals net cost to crossover)	35.8 months	19.7 months
Total accounts receivable at steady state	3.85 x monthly revenue 650,650	2.54 x monthly revenue 429,260

To illustrate, consider that both Facilities 1 and 2 are 100-patient units with the treatment numbers, billing rates and costs shown in Table I. As shown in Figures 2 and 3, Facility 1 requires nine months to crossover. Total costs over this period are represented as the rectangle with dimensions: 90% revenue (height) and 9.6 months (width) or (.96) (9) = 8.64 (months revenue). Consequently, total costs incurred to the point where revenue equals costs are 8.64 times monthly revenue, or (8.64) (169,000) = $1,460,160 (see Total Costs of Operation in the inset in Figure 3). These costs are paid using initial capitalization, delaying payables and using payments received during this interval.

This latter source of cash, Revenue Received, is represented by the second, smaller area shown in Figure 3. This area equals the total revenue received to the point of crossover and amounts to 5.67 x monthly revenue, or (5.67) (169,000) = $958,230.

In Figure 3 the dotted area to the left of the crossover point is the difference between these two areas for Facility 1, or the cost of operation to crossover minus the revenue received during this interval (2.97 x monthly revenue, or $501,930). The difference between costs and revenue received is the amount required to finance the unit to the crossover point. For the new facility such costs are very real and generally must be provided by outside sources such as investors or by debt financing from a bank.

The shaded area in Figure 3 after crossover shows the amount by which revenues exceed operating costs and represents profit, or a surplus, for the unit. When this shaded area equals the dotted area, the initial cost of start-up will be paid back (ignoring interest). For Facility 1 this will be 35.8 months after the unit is opened. For Facility 2 it will be 19.7 months. These values are shown in Table I.

As is apparent from Figure 3, these areas—capital required to crossover and time needed to pay it back—are very sensitive to the percent of surplus once steady state is achieved.

A smaller surplus may result from higher costs of operation; it may also be an indirect result of smaller collections. As shown in Figure 1, the more tedious aspects of the billing/collection process (such as resubmission of rejected bills) may be neglected or partially abandoned because of overlapping billing cycles and delays. This will then raise the cost line relative to the steady-state revenue line because costs, though fixed, are a greater percentage of revenue. Take this one step further and assume costs in Facilities 1 and 2 are identical. If Facility 2, with a more efficient billing process, has higher collections, its cost line will move downward and will be a smaller percent of revenue.

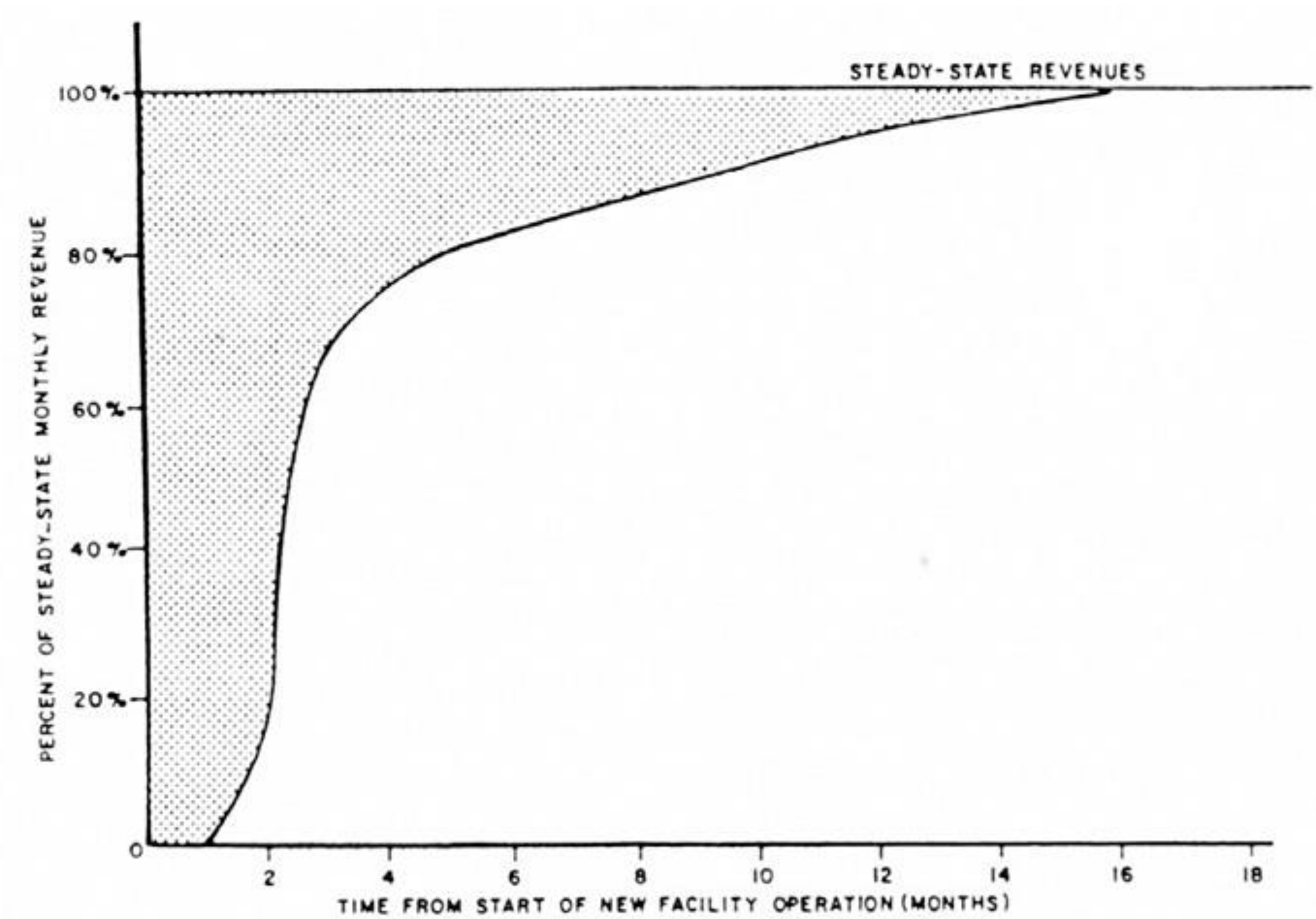


Figure 4: Total accounts receivable when steady-state revenues are achieved.

ccounts Receivable, Relation to Revenue-Time Curve. The total accounts receivable for Facility 1 is shown graphically in Figure 4. This figure is constructed, as was Figure 3, by subtracting the amount actually collected from the total collectibles. Total collectibles (amount billed less write-offs) are equal to the rectangle formed by a vertical line at the point when the rate of revenue equals the rate of billing (steady-state revenues). Actual collections are represented by the area under the time/ revenue curve over the same interval. The difference between these two areas is the total accounts receivable and is the dotted area of Figure 4 (see inset of Figure 3 for a description of the area subtraction method).

This dotted area represents the amount that has been billed but not yet collected. In the absence of modifications in billing and collection procedures, this composite amount will remain permanently uncollected; it represents, in effect, a non-interest-earning investment. It is obvious that the dotted area in Figure 4 cannot be eliminated; the portion that represents the first month (before bills are even produced), for example, can never be collected. However, this area in many cases can be reduced by modifying the contour of the right boundary, that is, by alternate billing methods.

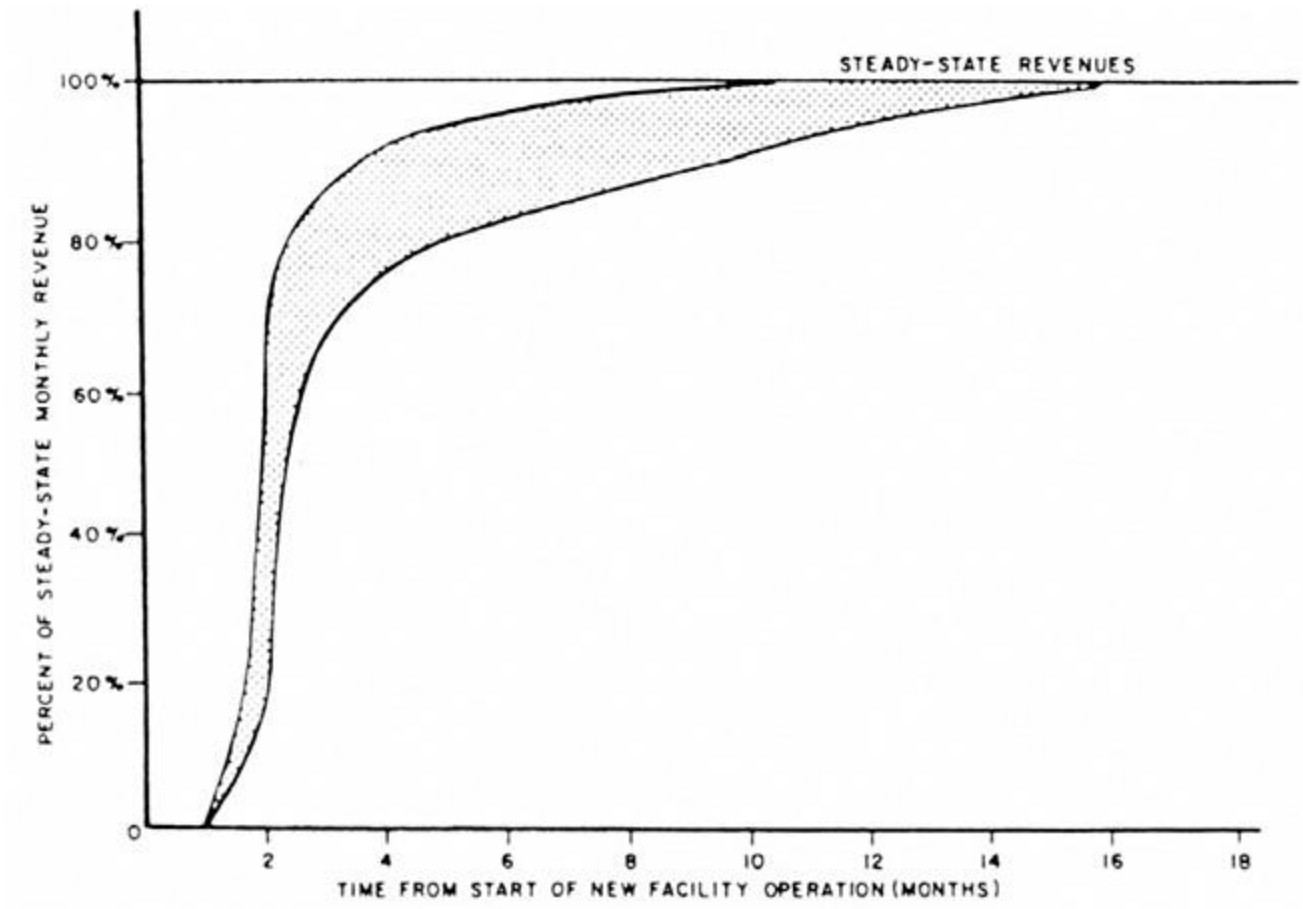


Figure 5: Difference in accounts receivable between Facility 1 and Facility 2. Also net cash influx possible in changing from Facility 1 to Facility 2 billing methods and cost incurred in changing from Facility 2 to Facility 1 methods.

Figure 5: Area Between Facility 1 and 2 Curves. Figure 5 shows the area between the two time/revenue curves of Facilities 1 and 2. It is a graphic representation of the amount by which accounts receivable can be reduced by increasing the efficiency of billing and collections. Further, it is that portion of accounts receivable that is amenable to manipulation and can be viewed as the amount of money that can be invested if accounts management is made more efficient. In the case of debt financing, it is the amount that has been borrowed because of slow collections.

It should be emphasized that total accounts receivable can never be reduced to zero; consequently, this overall figure cannot be considered as money to be used or invested. The amount that is potentially available is the amount graphically represented by the dotted area in Figure 5—the amount by which accounts receivable can be reduced by improved billing and collection methods.

The value of improving these methods can be conservatively estimated to be the dollar amount represented by this area times a realistic interest rate. For the case of Facilities 1 and 2, this difference is $221,390 (see Table I); if this amount is invested at an interest rate of 10%, it would yield $22,139 per year, or $1,845 per month.

Even more important, the area between these two revenue curves ($221,390) can also be viewed as the cash infusion that is possible by changing from Facility 1 to Facility 2 billing methods.

The time/revenue relationships shown in Figures 2—5 are, of course, dynamic. Consequently, the area in Figure 5, the possible reduction in accounts receivable by improved billing methods, also represents the cost to Facility 2 of adopting less efficient billing methods. A decrease in billing efficiency could be due to abandoning a proven billing method for a less reliable one. An example of such a change might be the purchase of an in-facility computing system that is not thoroughly tested, has a large manual component or is not routinely updated as Medicare and other billing requirements change.

Facility 2 is a prototype dialysis unit based on an actual 150-patient facility with three separate dialysis centers. As such, the upper line in Figures 2—5 (Facility 2) is entirely possible. For both facilities the cost line has been constructed arbitrarily at 90% of revenue and does not necessarily represent the actual costs of this or any specific facility.

SUMMARY AND CONCLUSIONS

Cash flow and collections, once considered unexciting, are potentially a topic of great interest in the medical field. Particularly in the field of dialysis, as new stand-alone facilities start, the amount of money required to capitalize a new unit can be significant. The magnitude of accounts receivable is also of importance in existing units because it represents a source of available cash to be used or invested. The value of excessive accounts receivable can be estimated as its amount times the prevailing interest rate. The interest value alone can be on the order of several thousand dollars per year. Viewing this money as a non-interest-yielding investment, however, actually understates the real impact of this uncollected cash. Large amounts of money are required to fill the gap between billing and collections, and this amount, if billing and collection methods can be improved, represents capital that can be made available to the facility at no cost.

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