Robert Wood Johnson Foundation

Making the Business Case for Payment and Delivery Reform

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Tens of billions of dollars in health care spending could be saved every year by avoiding unnecessary tests, procedures, emergency room visits, and hospitalizations; by reducing infections, complications, and errors in the tests and procedures that are performed; and by preventing serious conditions and providing treatment at earlier and lower-cost stages of disease. However, current health care payment systems create large and often insurmountable barriers to the changes in patient care needed to achieve these benefits.

In order to support improvements in both health care delivery and payment systems, individuals and organizations that purchase health care services need a clear *business case* showing that the proposed change in care will achieve sufficient benefits to justify whatever change in payment health care providers need to support the change in care. Health care providers also need a clear business case showing that they will be able to successfully deliver high-quality care in a financially sustainable way under the new payment system.

This report describes a 10 step process to develop such a business case:

Step 1. Define the planned change in care and the results it is expected to achieve.

Step 2. Estimate how the type and volume of services will change.

Step 3. Determine how payments/revenues will change under the current payment system.

Step 4. Determine how the costs of services will change.

Step 5. Calculate the changes in operating margins for providers.

Step 6. Identify the changes in payment needed by providers to maintain positive operating margins.

Step 7. Determine whether a business case exists for both purchasers and providers.

Step 8. Refine the changes in care to improve the business case.

Step 9. Analyze the impact of potential deviations from planned care and expected outcomes.

Step 10. Design a payment model that pays adequately for desired services, assures desired outcomes, and controls variation and risk.

The report also describes the four major types of data that will generally be needed to carry out all of the steps in a good business case analysis:

- Health care billing/claims data;
- Clinical data from electronic health records or patient registries;
- Data on the costs of health care services; and
- Data on patient-reported outcomes.

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I. INTRODUCTION

Opportunities for Higher Value Health Care

Many current strategies for reducing the growth in health care spending involve one of two undesirable options – cutting health care benefits for patients or cutting fees to health care providers. Fortunately, there is a third option, which can improve care for patients and improve payment for providers as well as reduce spending for the purchasers of health care services.[1] If health care services are *redesigned* to improve quality and efficiency, tens of billions of dollars in health care spending could be saved every year by avoiding unnecessary tests, procedures, emergency room visits, and hospitalizations; by reducing infections, complications, and errors in the tests and procedures that are performed; and by preventing serious conditions and providing treatment at earlier and lower-cost stages of disease.

Barriers in Health Care Payment Systems

All too often, however, current health care payment systems create large and frequently insurmountable barriers to the changes in patient care needed to achieve these benefits. Under current fee-for-service payment systems:

- **Some high-value services aren't paid for adequately or at all**. For example, Medicare and most health plans don't pay physicians to respond to a patient phone call about a symptom or problem, even though those phone calls can avoid far more expensive visits to the emergency room. Medicare and most health plans won't pay primary care physicians and specialists to coordinate care by telephone or email, yet they will pay for duplicate tests and the problems caused by conflicting medications. A physician practice that does outreach to high-risk patients or hires staff to provide patient education and self-management support typically can't be reimbursed for those costs, even if the services help avoid expensive hospitalizations or allow diseases to be identified and treated at earlier stages.
- **Physicians, hospitals, and other health care providers are financially penalized for reducing unnecessary services and improving quality.** Under the fee for service system, providers lose revenue if they perform fewer procedures or lower-cost procedures, even if their patients would be better off. Most fundamentally, under the fee for service system, physicians don't get paid at all when their patients stay well.

Clearly, reforms to payment systems are needed to overcome these barriers, but both the payment system changes and the delivery system changes they support need to be designed in a way that works for providers, purchasers, and patients.

- Will the physician, hospital, or other health care provider receive enough money to cover the costs of delivering health care in a different and better way?
- Will purchasers spend less than they do today, or get better results for what they currently spend?
- Will patients receive better quality care and outcomes?

Creating the Business Case for Reform

When businesses in other industries want to develop a new product or significantly retool an existing product and they need financial support to do so, they seek loans from banks or equity capital from investors. In order to get a loan or an investment, a firm must present its *business plan* to the bank or investor. The business plan shows the bank or investor that it will be able to get its money back, with interest; the business plan also needs to show that the firm itself will be able to make (more) money on top of what is needed to repay the bank or investor with interest. If the firm isn't able to make money, it won't have either the ability or incentive to stay in business, much less pay back the loan or investment, and no bank or investor will be willing to take the risk of making a loan or investing money in such an enterprise.

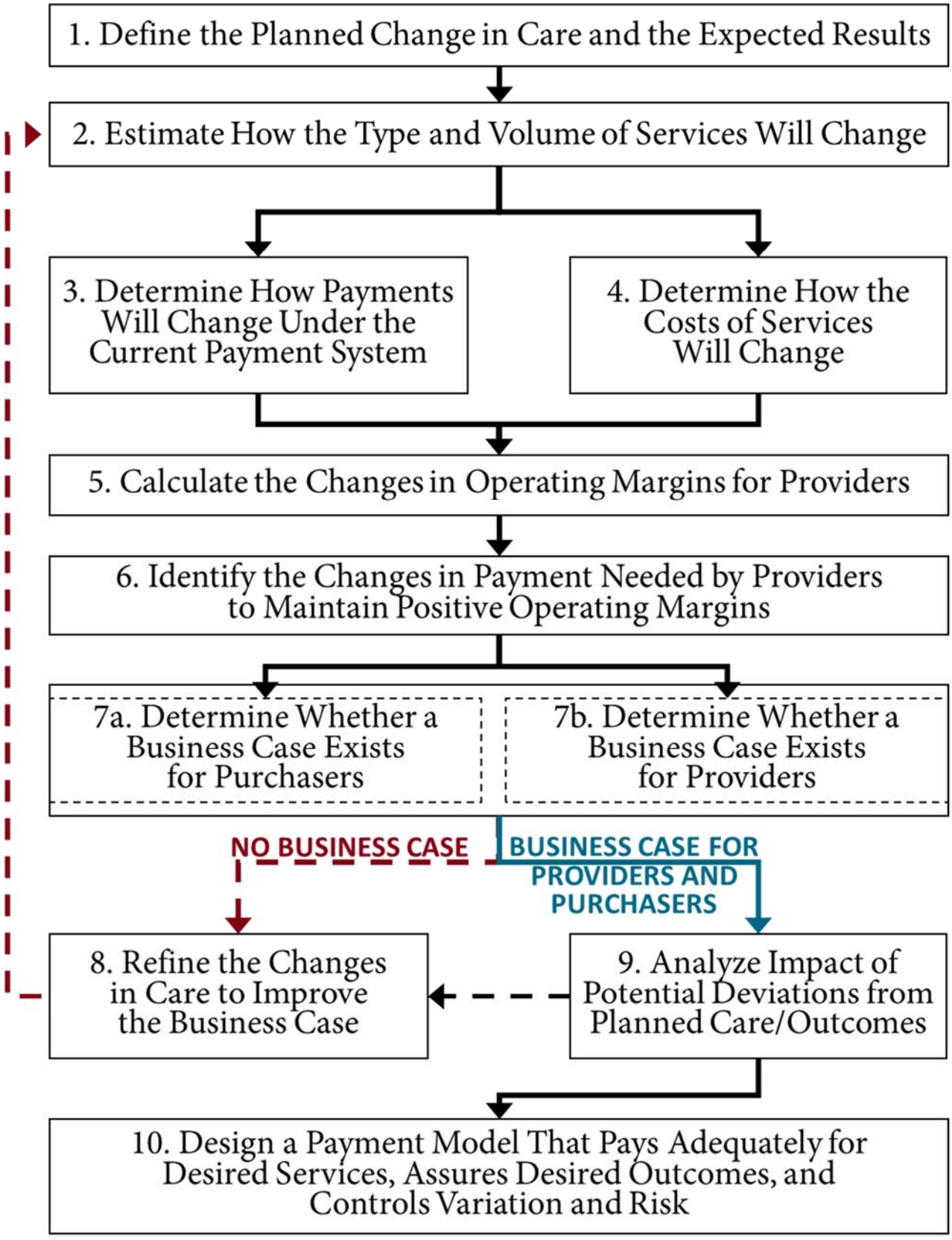
A similar process is needed to support successful payment and delivery reform in health care. If a health care provider wants to be paid differently in order to deliver care in a different way, it needs to present a *business case* to its customers – the purchasers of health care – showing that the proposed change in care will achieve sufficient benefits to justify the change in payment the provider needs. The converse is also true: if a purchaser or payer wants a health care provider to accept a different payment system, it needs to present a business case to the provider showing that the provider will be able to successfully deliver high-quality care in a financially sustainable way under the new payment system. Just like a business plan for a loan or investment, the business case for payment reform must be a carefully constructed analysis that examines the benefits and risks involved with the proposed changes for both providers and purchasers.

Guide to This Report

This report describes a 10-step process for developing a business case to support successful reforms to both health care payment and delivery systems.

- Section II (pages 4-14) provides a synopsis of the ten steps, accompanied by a detailed example for a hypothetical physician practice seeking to improve care for patients with chronic disease.
- Section III (pages 15-24) then provides a more detailed explanation of the tasks involved in each of the ten steps.
- Finally, Section IV (pages 25-26) describes the types of data needed to develop a business case analysis for a wide range of potential improvements in health care.

10 STEP PROCESS TO DEVELOP THE BUSINESS CASE FOR PAYMENT AND DELIVERY REFORM



II. OVERVIEW OF BUSINESS CASE DEVELOPMENT*

STEP 1: Define the Planned Change in Care and the Results Expected

What Changes in Patient Care are Planned?

The changes that will be made in the *kinds* of services that will be provided and the *way* services will be provided need to be specifically defined in order to develop the business case for implementing the changes.

Which Patients Will Receive the Change in Care?

A clear definition is also needed of the patients who will receive the changes in care. If the change in care will differ in systematic and significant ways for different types of patients, it will likely be desirable to analyze each group of patients separately and then combine the analyses for the entire population of patients.

Which Payers and Purchasers Will Be Involved?

It will generally be necessary to do a separate analysis for each purchaser and payer, since different purchasers/payers pay providers different amounts for health care services and their employees/members have different kinds of needs, so each purchaser and payer will want to know if there is a business case to support their own participation.

What Benefits for Patients and Purchasers are Expected?

There are three major categories of benefits that should be examined:

- A reduction in avoidable complications or preventable health problems such as hospital-acquired infections, hospitalizations for chronic disease exacerbations, communicable disease, progression of existing health problems, etc.
- An improvement in patients' quality of life or their work productivity.
- A reduction in the cost of services, such as using less time or lower-cost materials or equipment to achieve the same outcomes, that could improve provider profit margins and/or enable providers to reduce the amount of payments they receive for delivering the services.

In What Timeframe Will the Changes and Benefits Occur?

It is easier to create a successful business case for changes in care that will generate savings within the same year that costs are incurred.

Will There Be Temporary Transition Costs?

Both providers and payers will generally incur some kind of temporary costs during the transition to a new way of delivering and paying for care.

* *More detail on each of the steps described in Section II is provided in Section III.*

EXAMPLE OF STEP 1

A physician practice wants to improve care for patients with chronic disease in order to reduce avoidable emergency room visits and hospitalizations. The physician practice decides to focus on patients who have either mild-to-moderate congestive heart failure or mild-to-moderate COPD or both. The practice intends to hire a nurse care manager to visit the patients in their homes to educate them about how to manage their conditions and to encourage the patients to call the physician's office right away when they have early symptoms of an exacerbation of their chronic disease.

In addition to improving the patients' quality of life, the physician practice expects to significantly reduce the frequency with which the patients visit the emergency room and are hospitalized for exacerbations of their chronic disease. Because almost all of the patients visit the emergency room or are hospitalized at least once during the year, the impacts of the care change are expected to occur within the initial year that the program is initiated. The physician practice intends to promote an existing nurse into this new role, so the startup time and costs will be small.

A substantial portion of the physician practice's chronic disease patients are insured by a large local Medicare Advantage plan, so the practice decides to focus its initial efforts with that payer, and then expand to other payers if the initiative is successful.

STEP 2: Estimate How the Type and Volume of Services Will Change

Planned Changes in Care

Once the general concept for changing care has been identified, the number of patients affected and the changes in services need to be quantified, i.e., how many patients will receive what quantity of each type of service under the new approach to care, and how that compares to the number and type of services they receive today.

Number of Patients Eligible to Receive Changes in Services

It is not enough to do business case calculations on a per-patient basis, because for health care providers, the per-patient cost of delivering a service is generally higher when there are fewer patients receiving that service and the per-patient cost is lower when there are more patients receiving that service. (This is due to the high fixed costs most health care providers have to cover regardless of how many patients they treat.) Moreover, it will generally be important for purchasers and payers to understand the *total* costs of a delivery system or payment change, which will depend on the number of patients affected as well as the per-patient costs. If there is uncertainty as to how many eligible patients there will be, a range should be used (i.e., a projected minimum and maximum number).

Changes in Types and Number of Services for Eligible Patients

It is useful to divide the planned changes in care into three categories:

1. Providing (more of) a type of service that is *not* currently paid for.
2. Providing more or less of a service that *is* currently paid for.
3. Providing a current service in a different way that changes its costs.

Each of these categories will have different implications for revenues and/or costs under the current payment system and they will generally be affected differently by alternative payment systems.

Probability of Eligible Patients Receiving the New/Different Services

In some cases, the new set of services will be given to every eligible patient, but in other cases, the new services will only

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EXAMPLE OF STEP 2

A review of the practice's patient records indicates that there are currently 500 patients with the selected diagnoses in the practice's patient panel who are insured by the local Medicare Advantage plan. There has been a similar number of patients in the practice using that health plan in each of the past two years, so the practice assumes there will continue to be about 500 patients in the future.

A review of the billing records and clinical records for these patients shows that the physicians in the practice currently see the patients in the office an average of 6 times per year, and the physicians respond to an average of two telephone calls per year per patient about problems that can be addressed without an office visit. Under the new approach to care, the practice plans to have each patient come into the office twice per year to see their physician for a more extended evaluation than they have in the past, and to have the nurse see the patients in their homes and call them proactively during the intervening months. The physicians also encourage the patients to call them any time they have a health problem, but they expect that in most cases, these problems can be addressed over the phone or with a home visit by the nurse, rather than requiring the patient to come to the office for a visit.

The nurse care manager will be dedicated to managing the care of these patients, and will be paid a salary and benefits totaling $80,000. The physician practice has sufficient extra space in the office to accommodate the new position.

A review of the health plan's claims data indicates the patients have been visiting the emergency room (ER) between 2.5 and 3.0 times per year for reasons directly related to their chronic disease, and the rate of ER use has been increasing. The physician practice and health plan agree it is reasonable to assume the rate of ER visits next year will be 3.0 per patient if no improvements in chronic disease management are made. The same data show the patients have been admitted to the hospital, on average, between 0.45 and 0.5 times per year for exacerbations of their chronic disease, and the rate has been increasing over time, so the practice and health plan agree to assume that there will be an average of 0.5 admissions per patient during the following year if no improvements in care are made.

Based on a review of the results of similar programs in other communities, the physician practice expects to be able to reduce the average annual number of emergency room visits for these patients by 33% (from an average of 3 per year to 2 per year) and to reduce the average annual number of hospitalizations for these patients by 20% (from an average of 0.5 to 0.4).

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be delivered if an eligible patient experiences a particular problem or if the patient participates or adheres to the plan of care. In the latter cases, the probability that a patient will receive the service will need to be estimated.

Changes in Avoidable Complications and Health Problems

Existing Complications and Health Problems

Incorporating savings associated with reducing avoidable complications or health problems into the business case requires three pieces of information:

1. The current rate at which each type of complication or health problem is occurring for the patients for whom the care change will be made;
2. The magnitude of the reduction in the rate of each type of complication/problem that is expected to result from the planned change in care; and
3. The number and types of services typically needed to treat each type of complication/problem.

In addition to a reduction in complications or problems, the severity of some complications or problems may be reduced. For the purposes of the business case analysis, differences in the severity of complications/problems can be treated as different types of complications/problems.

Complications from New Services

If new types of complications could result from the new approach to service delivery, an estimate of the frequency of these complications and the types of services needed to treat them will also need to be included in the business case analysis.

Other Impacts on Health Care Services

There may be other changes in health care services that occur as an *indirect* result of the planned change in care, such as a reduction in the use of post-acute care if preventable hospitalizations are reduced.

Other Improved Outcomes

Many purchasers of health care (e.g., employers) can benefit from outcomes beyond the reduction in health care costs, such as when improved health care services enable employees to return to work, enable them to return to work faster than otherwise, or enable them to be more productive on the job. These benefits should be included in the business case analysis, but they should be shown separately from changes in the purchaser's health care spending.

STEP 3: Determine How Payments and Revenues Will Change Under the Current Payment System

Once the expected changes in services are defined and quantified, they need to be converted into the amount of payments each involved purchaser/payer would make *under the current payment system* to each provider that is providing any of the services that will change under the proposed redesign of care. Even if the ultimate goal is to change the payment system to better support the planned change in care, for this step of the analysis it should be assumed that only the *current* payment system is in place. The payments/revenues should be determined separately for each separate provider organization and for each purchaser/payer.

EXAMPLE OF STEP 3

The physician practice is currently paid an average of $100 each time one of the patients comes to the office. The health plan does not pay the practice for phone calls with the patient or for the services of the nurse care manager. This means that under the current payment system, if the practice reduces the average annual number of office visits for the 500 patients from 6 to 2, it will lose $200,000 in revenue per year. It will receive no additional revenue for the additional patient phone calls or the services of the nurse care manager.

The health plan estimates that it pays the hospital, on average, $1,000 each time one of the patients visits the emergency room for an exacerbation of their chronic condition and $10,000 each time one of the patients is admitted to the hospital for a chronic disease exacerbation. There may be additional payments for post-acute care services after these discharges, but it was not possible for the health plan to estimate these costs due to limitations in its claims data. If the practice reduces the rate of ER visits for the 500 patients from 3 to 2, it will reduce the hospital's revenue by $500,000, and if the rate of hospitalizations is reduced from 0.5 to 0.4, it will reduce the hospital's revenue by an additional $500,000.

STEP 4: Determine How the Costs of Services Will Change

In order to accurately determine how a provider's costs will change when it delivers more or fewer services of a particular type, a *cost model* is needed for that service. The cost model identifies the fixed costs, semi-variable costs, and variable costs associated with the service and how those costs will change based on the number of patients served or the number of services delivered. (See pages 20-21 for an example of a cost model.) If there are one-time, transitional costs, these should be amortized over the expected length of a payment contract.

STEP 5: Calculate the Changes in Operating Margins for Providers

The combination of the analyses from Steps 3 and 4 will show that one or more of the following scenarios exist for providers under the *current* payment system:

1. **Equal/better operating margins for a provider.** If the proposed change in care delivery will result in equal or better operating margins/profits for a provider under the

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EXAMPLE OF STEP 4

The physician practice estimates that the cost for an office visit with these patients is about $90, considering the amount of time the physician spends with the patient and associated office overhead. The practice estimates that this cost will increase to $150 when the patients come for longer visits less frequently. The practice estimates that the cost for the physician to address a patient problem over the telephone is about $40.

The physician practice wants to ensure that the hospital is supporting the initiative, so it contacts the hospital to determine the financial impact the initiative would have on the hospital. The hospital estimates that its cost for the types of emergency room visits these patients make is about $950 per visit, and the cost for the types of hospitalizations these patients have is about $9,500. The hospital estimates that if the physician practice successfully reduces the frequency of emergency room visits, the hospital's costs for the remaining emergency room visits will increase slightly (to $975 per visit) because of the higher severity of the remaining visits. The hospital expects the average cost of the inpatient admissions to stay the same, since even large changes in the relatively small number of admissions from the practice will not affect the hospital's costs significantly.

EXAMPLE OF STEP 5

Based on the above information, Figure 1 shows the payments by the payer to both the physician practice and the hospital under the current payment system, the costs the physician practice and hospital incur for the services they provide, and the operating margins for both the physician practice and the hospital, both under the current mix of services and under the projected change in services and outcomes.

Today, the health plan is spending $4.3 million per year on these patients (an average of $717 per patient per month) just for the services provided by the physician practice and the ER visits and hospitalizations. More than 90% of this money is going to the hospital for potentially avoidable hospitalizations and emergency room visits.

The physician practice is currently losing a small amount of money on these patients, primarily because the telephone support the practice is providing is not reimbursed by the health plan. The hospital is making a 5% margin on the emergency room visits and admissions for the patients.[2]

As shown in Figure 1, if the practice made the proposed changes with no change in payment, it would lose an additional $200,000 per year, due to fewer office visits with these patients, more time spent with the patients in office visits with no additional reimbursement, more time spent on the phone with the patients with no reimbursement, and the unreimbursed salary and benefits for the nurse care manager.

If the practice made the changes in care and was successful in reducing ER visits and hospitalizations by the projected amounts, the profit margin the hospital generates on these patients would decrease by $75,000 per year.

FIGURE 1

BUSINESS CASE ANALYSIS FOR IMPROVED CARE OF CHRONIC DISEASE PATIENTS (AFTER STEP 4)

		CURRENT SERVICES & PAYMENT				PROPOSED SERVICES & PAYMENT				CHANGE
PROVIDER REVENUE / COST TO PAYER										
Payments to Physician Practice	**# of Patients**	**Services per Patient**	**Payment Per Service**	**PMPM Spending**	**Total**	**Services per Patient**	**Payment Per Service**	**PMPM Spending**	**Total**	
Office Visits	500	6	$100		$300,000	2	$100		$100,000	
Telephone Calls	500	2	$0		$0	4	$0		$0	
Nurse Care Mgr	500				$0		$0		$0	
Subtotal	500				$300,000				$100,000	-$200,000 (-67%)
Payments to Hospital	**# of Patients**	**Services per Patient**	**Payment Per Service**		**Total**	**Services per Patient**	**Payment Per Service**		**Total**	
ER Visits for Chronic Disease	500	3	$1,000		$1,500,000	2	$1,000		$1,000,000	
Admissions for Chronic Disease	500	0.5	$10,000		$2,500,000	0.4	$10,000		$2,000,000	
Subtotal	500				$4,000,000				$3,000,000	-$1,000,000 (-25%)
Total Cost to Payer	500			$716.67	$4,300,000			$516.67	$3,100,000	-$1,200,000 (-28%)
PROVIDER COSTS										
Physician Practice Costs	**# of Patients**	**Services per Patient**	**Cost Per Service**		**Total**	**Services per Patient**	**Cost Per Service**	**Cost Per Month**	**Total**	
Office Visits	500	6	$90		$270,000	2	$150		$150,000	
Telephone Calls	500	2	$40		$40,000	4	$40		$80,000	
Nurse Care Mgr	500				$0			$6,667	$80,000	
Total Physician Practice Costs	500				$310,000				$310,000	$0
Physician Practice Margin					-$10,000				-$210,000	-$200,000
Hospital Costs	**# of Patients**	**Services per Patient**	**Cost Per Service**		**Total**	**Services per Patient**	**Cost Per Service**		**Total**	
Emergency Room Visits	500	3	$950		$1,425,000	2	$975		$975,000	
Admissions	500	0.5	$9,500		$2,375,000	0.4	$9,500		$1,900,000	
Total Hospital Costs	500				$3,800,000				$2,875,000	-$925,000 (-24%)
Hospital Margin					$200,000				$125,000	-$75,000 (-38%)

ER = Emergency Room

Mgr = Manager

PMPM = Per Member Per Month

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current payment system, there may be no need for any change in the payment system for that provider.

2. **Lower but positive operating margins for a provider.** If operating margins decrease but remain positive under the current payment system, then it might be *feasible* for the provider to implement the care changes without payment reform, but the provider would be financially *disadvantaged* for doing so. In these cases, payments may need to be modified to preserve current margins on these specific services in order to avoid creating overall losses for the provider or undesirable impacts on other services or patients.
3. **Negative operating margins for a provider.** If operating margins would become negative for a provider, then the payment system will need to be changed in order to make it financially feasible for that provider to deliver the change in care.

STEP 6: Calculate the Changes in Payment Needed By Providers

If the operating margin for a provider would be lower or negative under the proposed change in care delivery, then the next step is to determine what change in payment would be needed to restore the margin for that provider. It may also be possible to further redesign the change in care to either reduce costs or improve outcomes or both, as discussed in Step 8.

STEP 7: Determine Whether a Business Case Exists for Both Purchasers and Providers

There are several different scenarios for purchasers/payers which may emerge at this stage of the business case analysis:

1. **No changes in payments are needed.** If all providers would have equal or better margins for all purchasers/payers under the current payment system, then there would appear to be a business case for providers to proceed with the care changes without any change in payment systems.
2. **The proposed changes in payments would result in *lower* total spending by the purchaser/payer.** If the payment change needed to enable providers to implement the care change would result in the purchaser/payer spending less than it would have otherwise, then there would be a business case for that purchaser/payer to make the necessary payment changes.
3. **The proposed changes in payments would *increase* total spending for a purchaser/payer while achieving *better outcomes* for patients.** In this case, the purchaser/payer will need to decide whether the improved outcomes are worth the higher spending needed to support the care changes.
4. **The proposed changes in payments would *increase* total spending for a purchaser/payer *without* achieving significantly better outcomes for patients.** In this sce-

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EXAMPLE OF STEP 6

The previous step indicates that there is no business case for either the practice or the hospital to support the proposed change in care unless there is a different payment model to offset the losses.

The physician practice proposes that the health plan begin paying $50 for each telephone call that the practice makes with these patients, and it proposes that the health plan pay the practice $20 per patient per month to support the care management services and to offset the loss of revenue from fewer office visits. As shown in Figure 2, when totaled across the 500 patients, this would generate enough new revenue to cover the practice's new costs and also provide the practice with a small positive operating margin.

The hospital proposes that the health plan pay it 2.5% more for each of the remaining emergency room visits and hospitalizations that the patients do have, in order to offset the loss of margin the hospital experiences from fewer ER visits and admissions. Figure 2 shows that this would give the hospital the same operating margin it had before, despite the reduction in the number of patients.

EXAMPLE OF STEP 7

The payment changes proposed by the physician practice and hospital would preserve or improve their operating margins while allowing a significant improvement in care for patients. Even with the proposed payment increases, the health plan will save over $900,000, a 21% reduction in its spending on these patients.

FIGURE 2

BUSINESS CASE ANALYSIS FOR IMPROVED CARE OF CHRONIC DISEASE PATIENTS (AFTER STEP 6)

		CURRENT SERVICES & PAYMENT				PROPOSED SERVICES & PAYMENT				CHANGE
PROVIDER REVENUE / COST TO PAYER										
Payments to Physician Practice	**# of Patients**	**Services per Patient**	**Payment Per Service**	**PMPM Spending**	**Total**	**Services per Patient**	**Payment Per Service**	**PMPM Spending**	**Total**	
Office Visits	500	6	$100		$300,000	2	$100		$100,000	
Telephone Calls	500	2	$0		$0	4	$50		$100,000	
Nurse Care Mgr	500				$0			$20	$120,000	
Subtotal	500				$300,000				$320,000	$20,000 (7%)
Payments to Hospital	**# of Patients**	**Services per Patient**	**Payment Per Service**		**Total**	**Services per Patient**	**Payment Per Service**		**Total**	
ER Visits for Chronic Disease	500	3	$1,000		$1,500,000	2	$1,025		$1,025,000	
Admissions for Chronic Disease	500	0.5	$10,000		$2,500,000	0.4	$10,250		$2,050,000	
Subtotal	500				$4,000,000				$3,075,000	-$925,000 (-23%)
Total Cost to Payer	500			$716.67	$4,300,000			$565.83	$3,395,000	-$905,000 (-21%)
PROVIDER COSTS										
Physician Practice Costs	**# of Patients**	**Services per Patient**	**Cost Per Service**		**Total**	**Services per Patient**	**Cost Per Service**	**Cost Per Month**	**Total**	
Office Visits	500	6	$90		$270,000	2	$150		$150,000	
Telephone Calls	500	2	$40		$40,000	4	$40		$80,000	
Nurse Care Mgr	500				$0			$6,667	$80,000	
Total Physician Practice Costs	500				$310,000				$310,000	$0
Physician Practice Margin					-$10,000				$10,000	$20,000
Hospital Costs	**# of Patients**	**Services per Patient**	**Cost Per Service**		**Total**	**Services per Patient**	**Cost Per Service**		**Total**	
Emergency Room Visits	500	3	$950		$1,425,000	2	$975		$975,000	
Admissions	500	0.5	$9,500		$2,375,000	0.4	$9,500		$1,900,000	
Total Hospital Costs	500				$3,800,000				$2,875,000	-$925,000 (-24%)
Hospital Margin					$200,000				$200,000	$0 (0%)

Changes in Payment

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nario, the proposed changes in payment and care delivery are unlikely to proceed as designed, and it will be necessary to explore whether the proposed approach to care delivery could be changed in order to lower costs or improve outcomes, as described in Step 8.

STEP 8: Refine the Changes in Care to Improve the Business Case

If there is not a business case for some purchasers/payers, it will be necessary to determine if it is possible to redesign care to improve the business case so that both purchasers and providers will be willing and able to implement the necessary delivery and payment reforms. Potential ways to improve the business case include:

- Eliminating unnecessary or low-value components of the proposed set of services.
- Reducing the cost of delivering the proposed services.
- Targeting the services to a different set of patients.

Once the redesign is completed, Steps 2-7 should be repeated to determine whether there is now a positive business case for both the providers and purchasers/payers.

STEP 9: Analyze the Impacts of Deviations from Planned Care and Expected Outcomes

If there is a business case at the *expected* levels of services and outcomes, a good business case should also include a "sensitivity analysis" which calculates the impact on payments, costs, and margins if participation, services, outcomes, etc. turn out to be *different* than expected. If the sensitivity analysis shows that a particular scenario would seriously harm the business case for either the purchaser or provider (or both), and if either purchasers or providers believe there is a reasonable probability that the scenario could occur, then two types of actions can be considered:

- Mechanisms could be established in the care delivery process to reduce or eliminate the possibility of the undesirable scenario occurring.
- The payment model could be structured in a way that protects the provider or purchaser from the adverse consequences of the undesirable scenario.

EXAMPLE OF STEP 8

Since there is a good business case to support both the proposed care changes and the proposed payment changes for all of the involved parties – the physician practice, the hospital, the health plan, and the patients – there is no need to try and refine the proposed changes in care at this stage.

EXAMPLE OF STEP 9

Both the physician practice and the health plan carry out sensitivity analyses to determine the impacts on payments, costs, and margins if the services delivered or the outcomes turn out to be different than expected.

From the physician practice's perspective, the proposed payment change would more than cover the unreimbursed costs for the new services and if the patients need more office visits than planned, that would be covered through the existing payment system. The proposed payment change would also protect the hospital's margins as long as the physician practice does not achieve a significantly greater reduction in hospitalizations for these patients than projected.

Although the projections from Step 7 show a significant benefit for the health plan if the physician practice achieves its goals, the health plan is concerned that the practice could provide even more office visits and phone calls than projected but the practice would have no incentive to ensure patients' use of the emergency room and hospital actually decreases. Figure 3 shows a simulation of what would happen if the physician practice continues to see the patients in the office at the same frequency as today (rather than reducing the number of office visits) and if it has more reimbursed phone calls with the patients than projected, but if it also fails to achieve any reduction in ER visits or hospitalizations. Under this scenario, the physician practice and hospital would benefit financially, but the health plan would spend more than it does today, so the health plan wants to modify the payment changes proposed by the practice and hospital in order to discourage this kind of scenario from occurring.

FIGURE 3

BUSINESS CASE ANALYSIS FOR IMPROVED CARE OF CHRONIC DISEASE PATIENTS (AFTER STEP 9)

		CURRENT SERVICES & PAYMENT				PROPOSED SERVICES & PAYMENT				CHANGE
PROVIDER REVENUE / COST TO PAYER										
Payments to Physician Practice	**# of Patients**	**Services per Patient**	**Payment Per Service**	**PMPM Spending**	**Total**	**Services per Patient**	**Payment Per Service**	**PMPM Spending**	**Total**	
Office Visits	500	6	$100		$300,000	6	$100		$300,000	
Telephone Calls	500	2	$0		$0	6	$50		$150,000	
Nurse Care Mgr	500				$0			$20	$120,000	
Subtotal	500				$300,000				$570,000	$270,000 (+90%)
Payments to Hospital	**# of Patients**	**Services per Patient**	**Payment Per Service**		**Total**	**Services per Patient**	**Payment Per Service**		**Total**	
ER Visits for Chronic Disease	500	3	$1,000		$1,500,000	2.5	$1,025		$1,281,250	
Admissions for Chronic Disease	500	0.5	$10,000		$2,500,000	0.5	$10,250		$2,562,500	
Subtotal	500				$4,000,000				$3,843,750	-$156,250 (-4%)
Total Cost to Payer	500			$716.67	$4,300,000			$735.63	$4,413,750	$113,750 (+3%)
PROVIDER COSTS										
Physician Practice Costs	**# of Patients**	**Services per Patient**	**Cost Per Service**		**Total**	**Services per Patient**	**Cost Per Service**	**Cost Per Month**	**Total**	
Office Visits	500	6	$90		$270,000	6	$100		$300,000	
Telephone Calls	500	2	$40		$40,000	6	$40		$120,000	
Nurse Care Mgr	500				$0			$6,667	$80,000	
Total Physician Practice Costs	500				$310,000				$500,000	$190,000 (61%)
Physician Practice Margin					-$10,000				$70,000	$80,000
Hospital Costs	**# of Patients**	**Services per Patient**	**Cost Per Service**		**Total**	**Services per Patient**	**Cost Per Service**		**Total**	
Emergency Room Visits	500	3	$950		$1,425,000	2.5	$975		$1,218,750	
Admissions	500	0.5	$9,500		$2,375,000	0.4	$9,500		$2,375,000	
Total Hospital Costs	500				$3,800,000				$3,593,750	-$206,250 (-5%)
Hospital Margin					$200,000				$250,000	$50,000 (25%)

Changes in Services

STEP 10:
Design a Payment Model to Pay Adequately for Desired Services, Assure Desired Outcomes, and Control Variation and Risk

At this point, an appropriate payment model can be designed to support the planned changes in care in a way that achieves the business case developed in the analysis and protects against scenarios that could damage the business case. To be successful, a payment model will need to have the following elements:

- *Adequate* payment from the purchaser/payer to the provider with sufficient *flexibility* to enable delivery of the planned services.
- *Accountability* by the provider to the purchaser/payer for successfully achieving the intended *outcomes*.
- *Protection* for the provider against *inappropriate* financial risk.

EXAMPLE OF STEP 10

Based on the sensitivity analysis, the health plan proposes a different payment arrangement for the physician practice and the hospital.

First, rather than creating a new fee for phone calls for a subset of patients, the health plan proposes to pay the physician practice a bigger monthly payment per patient ($35 per patient per month rather than the $20 proposed by the physician practice) so that the practice would have the flexibility to use that payment for phone calls, the nurse care manager, or whatever other services the practice thinks would be best. The practice would receive more predictable revenue this way than if it were being paid fees for individual phone calls, and it would also have less administrative work to document the phone calls and file claims for them. The health plan would also have more predictable spending without worrying that a large number of phone calls would be billed.

Second, the health plan proposes to create an outcome-based payment for the physician practice to encourage it to use its new services in a way that reduces ER visits and hospitalizations for its patients. The health plan proposes that if the rate of chronic disease-related ER visits is reduced below the current rate, it will pay the physician practice a $100 bonus for each avoided visit, but if the rate of ER visits increases, the health plan will deduct $100 from the physician's overall payment for each additional ER visit. If the rate of chronic disease hospitalizations is reduced below the current rate, the health plan proposes to pay the practice an additional $500 for each avoided hospitalization, and to deduct $500 from the practice's total payments for each additional hospitalization above the current hospitalization rate.

The physician practice wants to ensure it is not penalized for random variation in ER and hospital utilization, and the health plan wants to ensure it does not reward the practice for random variation, so the health plan and practice agree that the bonus payments will be triggered when the rate of ER visits falls below 2.8 per patient per year and the rate of hospitalizations falls below 0.48 per patient per year, and the penalty payments will be triggered when the rate of ER visits increases beyond 3.2 per patient per year and the rate of hospitalizations increases above 0.52. In addition, the health plan agrees to cap the total deductions from the practice's income at $10,000, so the practice will not be at risk of bankruptcy if ER visits and hospitalizations increase significantly.

Third, instead of simply paying the hospital more for each ER visit or hospitalization regardless of the actual rate of ER visits and hospitalizations, which is what the hospital proposed, the health plan proposes an arrangement for the hospital similar to what it proposed for the physician practice. The health plan will calculate the rates of ER visits and hospitalizations and compare them to the baseline rates. It will then pay the hospital $200 times the reduction in ER visits compared to the baseline and $1,000 times the reduction in hospitalizations, whereas it will reduce the hospital's total payment by the same amounts if the rates of ER visits and/or hospitalizations increase. This will protect the hospital's margins if the rate of ER visits and hospitalizations decreases, and it will also give the hospital an incentive to cooperate with the physician practice's efforts to successfully reduce ER visits and admissions.

Figure 4 shows how the health plan, physician practice, and hospital would fare under the revised payment model. If the physician practice achieves its goals of improving patient care, the health plan's spending would decrease by 19%, the physician practice would experience a significant increase in its operating margin, and the hospital would also experience an increase in its operating margin, a win-win-win for all of the stakeholders, including the patients.

FIGURE 4

BUSINESS CASE ANALYSIS FOR IMPROVED CARE OF CHRONIC DISEASE PATIENTS (AFTER STEP 10)

	CURRENT SERVICES & PAYMENT				PROPOSED SERVICES & PAYMENT				CHANGE
PROVIDER REVENUE / COST TO PAYER									
Payments to Physician Practice	**# of Patients**	**Services per Patient**	**Payment Per Service**	**PMPM Spending**	**Total**	**Services per Patient**	**Payment Per Service**	**PMPM Payment**	**Total**	
Office Visits	500	6	$100		$300,000	2	$100		$100,000	
Telephone Calls	500	2	$0		$0	4	$0		$0	
Nurse Care Mgr	500				$0			$35	$210,000	
Subtotal	500				$300,000				$310,000	$10,000 (3%)
Outcome Payment						**Change**	**Payment**		**Total**	
$100 per ±ER Visit	500					0.8	$100		$40,000	
$500 per ±Admit	500					0.08	$500		$20,000	
Subtotal									$60,000	
Total Payments to Physician Practice	500				$300,000				$370,000	$70,000 (23%)
Payments to Hospital	**# of Patients**	**Services per Patient**	**Payment Per Service**		**Total**	**Services per Patient**	**Payment Per Service**		**Total**	
ER Visits for Chronic Disease	500	3	$1,000		$1,500,000	2	$1,000		$1,000,000	
Admissions for Chronic Disease	500	0.5	$10,000		$2,500,000	0.4	$10,000		$2,000,000	
Subtotal	500				$4,000,000				$3,000,000	-$1,000,000 (-25%)
Outcome Payment						**Change**	**Payment**		**Total**	
$200 per ±ER Visit	500					0.8	$200		$80,000	
$1000 per ±Admit	500					0.08	$1,000		$40,000	
Subtotal									$120,000	
Total Payments to Hospital	500				$4,000,000				$3,120,000	-$880,000 (-22%)
Total Cost to Payer	500			$716.67	$4,300,000			$581.67	$3,490,000	-$810,000 (-19%)
PROVIDER COSTS										
Physician Practice Costs	**# of Patients**	**Services per Patient**	**Cost Per Service**		**Total**	**Services per Patient**	**Cost Per Service**	**Cost Per Month**	**Total**	
Office Visits	500	6	$90		$270,000	2	$150		$150,000	
Telephone Calls	500	2	$40		$40,000	4	$40		$80,000	
Nurse Care Mgr	500				$0			$6,667	$80,000	
Total Physician Practice Costs	500				$310,000				$310,000	$0
Physician Practice Margin					-$10,000				$60,000	$70,000
Hospital Costs	**# of Patients**	**Services per Patient**	**Cost Per Service**		**Total**	**Services per Patient**	**Cost Per Service**		**Total**	
Emergency Room Visits	500	3	$950		$1,425,000	2	$975		$975,000	
Admissions	500	0.5	$9,500		$2,375,000	0.4	$9,500		$1,900,000	
Total Hospital Costs	500				$3,800,000				$2,875,000	-$925,000 (-24%)
Hospital Margin					$200,000				$245,000	$45,000 (23%)

III. DETAILS OF BUSINESS CASE DEVELOPMENT

Step 1: Define the Planned Change in Care and the Results Expected

What Changes in Patient Care are Planned?

Obviously, there can be no improvement in the quality or costs of health care unless some types of changes are made in the way care is delivered. In order to analyze the business case for payment and delivery reform, the changes to be made in the *kinds* of services that will be provided and the *way* services will be provided need to be defined fairly specifically. Even if the goal is to pay for care based on outcomes, rather than on the specific services delivered, the physicians, hospitals, and other providers involved will need to know whether the payments will be adequate to cover the cost of services they will need to provide in order to achieve the outcomes. Purchasers considering a change in payment will also want to know that it will be feasible for providers to deliver better care under the new payment model.[3]

EXAMPLE

If a hospital wants to be paid differently so that it is rewarded for reducing preventable readmissions, rather than losing money for doing so, it will need to define what new services it plans to provide, what existing services it plans to eliminate, and what changes it plans to make in continued services in order to reduce readmissions. The way these changes in services affect the hospital's costs will determine the amount of revenue it needs to receive under a revised payment system.

EXAMPLE

A community clinic is providing high-quality care to uninsured individuals, but cannot obtain sufficient charitable contributions to sustain its operations. If the community clinic were forced to close, its patients would likely receive care through expensive hospital emergency rooms and would likely require expensive treatments for illnesses that could have been prevented through the clinic's screening and early intervention programs. Therefore, the business case analysis should treat the community clinic's services as a "new service" being substituted for emergency room services and treatments for preventable conditions.

In some cases, the current set of health care services may already be achieving high levels of quality, and there may be no need or desire to change the way care is being delivered. However, if the provider is losing money on those services under the current payment system (and subsidizing those losses with grant funds or lower profits), payment reform may still be needed to enable continuation of the current high-quality approach to care.[4] In this case, the "change in care" would be defined by what kinds of services *would* be delivered *if the current services/processes did not exist*.

Which Patients Will Receive the Change in Care?

In most cases, changes in care are intended for specific types of patients. In order to analyze the business case for reform, a clear definition is needed of the patients to whom the changes in care are intended to be applied.

EXAMPLE

A provider wants to establish a home-based tele-monitoring program for patients with mild to moderate congestive heart failure who have been discharged from the hospital. A clear definition will be needed of which patients have the relevant condition, how recently a hospital discharge would need to have occurred for the patient to qualify for the services, etc.

If the change in care will differ in systematic and significant ways for different types of patients, then it will likely be desirable to analyze each group of patients separately and then combine the analyses for the entire population of patients. This way, if it turns out there is a positive business case for some types of patients and not others, different approaches to care for the latter patients could be explored, or the delivery and payment changes could be limited just to those patients for whom there is a positive business case.[5]

Which Payers and Purchasers Will Be Involved?

If a change in care is going to be made for patients whose care is paid for by multiple payers or purchasers, then it will generally be necessary to do a separate analysis for each purchaser and payer. Since different purchasers/payers may pay different amounts for services, may pay for services in different ways, may have different sets of providers delivering care to their patients, and may have patients with different characteristics, the business case analysis will likely differ for each purchaser/payer, and each purchaser/payer will want to know if there is a business case to support their own participation.

From the provider's perspective, if it intends to make the same changes in care for patients from multiple purchasers/payers, but only a subset of those purchasers/payers adopt the changes in payment needed to support the changes in care delivery, there may not be an adequate business case for the provider to implement the change in care. It may or may not be appropriate or feasible for the provider to limit the change in care to the patients associated with the purchasers/payers who will adopt a different payment system, and even if it is feasible, the smaller number of patients associated with the smaller number of payers may increase the cost of delivering the services and/or reduce the revenues the provider receives to unaffordable levels.

What Benefits for Patients and Purchasers are Expected?

There would be no reason to go to the trouble of changing care delivery and payment if it were not expected to achieve some benefits. There are three major categories of benefits that should be examined:

1. A reduction in avoidable complications or preventable health problems such as hospital-acquired infections, hospitalizations for chronic disease exacerbations, communicable disease, progression of existing health problems, etc.
2. An improvement in patients' quality of life or their work productivity.
3. A reduction in the cost of services, such as using less time or lower-cost materials or equipment to achieve the same outcomes, that could in turn improve provider profit margins and/or enable them to reduce the amount of payments they receive for delivering the services.

In What Timeframe Will the Changes and Benefits Occur?

It will be important to define the timeframes in which both the changes in care and the benefits are expected to occur. Some types of care changes can be implemented very quickly, while others might require years to put in place, particularly if facilities have to be redesigned, new staff need to be recruited and trained, etc. Similarly, some types of benefits might be expected very quickly (e.g., a reduction in flu cases might occur within several months following expanded outreach for influenza immunization, and a reduction in 30-day hospital readmissions might occur within a month after implementation of a new care transitions program), while other benefits might only occur over many years (e.g., improved screening for cancer will reduce the frequency and cost of cancer treatments years in the future). Some of the biggest challenges for payment reform efforts will be associated with care changes that require significant new services now but whose benefits will only appear in the future. Since many patients change their health care coverage each year, the purchaser/payer who pays for the new services today may not reap the savings from the delayed benefits.[6]

Will There Be Temporary Transition Costs?

Transition Costs for Providers

It is rare that any organization can go from one way of delivering services to another way of delivering services without incurring some kind of temporary costs during the transition. For example, if a new employee needs to be hired and trained before a new service can be provided, the provider will incur short-run costs for interviewing, training, and paying initial wages to that employee before the employee can deliver a billable service or achieve the desired benefits for patients. New ways of delivering existing services may temporarily reduce the productivity of existing employees until the new processes are learned and the bugs are worked out.

Transition Costs for Payers

There will also likely be transition costs for payers in adopting changes to payment systems. Implementing different payment systems requires health plans to incur significant expenses for reprogramming computers, changing provider contracts, etc., and health plans may have difficulty recovering these costs under their current contracts with purchasers or existing regulatory structures. Even changing the types of services that are paid for and the amounts paid for those services under current payment systems will cause payers to incur some temporary costs.

Step 2: Estimate How the Type and Volume of Services Will Change

Planned Changes in Care

Once the general concept for changing care has been identified, the number of patients affected and the changes in services need to be quantified, i.e., how many patients will receive what quantity of each type of service under the new approach to care, and how that will compare to the number and type of services they receive today.

Number of Patients Eligible to Receive Changes in Services

Business case calculations for significant changes in care cannot be done solely on a per-patient basis. Even though purchasers and payers tend to think about their spending on a "per member" basis, the per-patient cost to a *provider* will generally differ depending on the number of patients involved. As will be discussed in Step 3, most providers have significant fixed costs, which means that the per-patient cost of a particular service will likely decrease if the number of patients receiving the service increases significantly, and vice versa. Consequently, the number of patients may be an important factor in determining the per-patient cost.

EXAMPLE

If a health system wants to have a nurse make home visits and phone calls to recently discharged patients with chronic diseases in an effort to reduce hospital readmissions, it would need to determine how many chronic disease patients are being discharged from the hospital that would be appropriate for contact by the nurse and how many home visits and phone calls the nurse would make with each of those patients.

Moreover, in many cases, it will be important to understand the *total* costs of a delivery system or payment change, and that depends on both the number of patients and the per patient costs. If upfront investment is required before savings are achieved, or if there is uncertainty about the magnitude of the costs or savings involved, then the risk to a purchaser or provider will depend on the total costs, payments, or savings, not the per-patient amounts.

There may well be uncertainty as to how many patients will be affected by the care changes at any given point in time. In such cases, it will be more appropriate to use a range (i.e., a projected minimum and maximum number) for the number of patients when developing the business case rather than a single point estimate. An "expected value" for the number of patients (e.g., the midpoint between the minimum and maximum) can be used for initial calculations, but the sensitivity of the business case to variation in the number will also need to be estimated, as described in Step 9.

Changes in Types and Number of Services for Eligible Patients

In some cases, there may be a very clear plan for how the types and number of services will be changed for the patients for whom the delivery change is being targeted. For example, a provider may plan to automatically refer patients who have new symptoms of back pain for physical therapy before ordering an MRI unless there are specific indications justifying immediate imaging.

In other cases, however, there may be considerable flexibility as to the types and number of services that will be provided depending on a patient's unique needs, or there may be uncertainty as to exactly how many services will be appropriate for any type of patient. For example, a care management program may be designed to provide both home visits and phone calls for chronic disease patients discharged from the hospital in order to reduce hospital readmissions, and the nurses will have the flexibility to determine how many home visits or phone calls are appropriate for individual patients. In such cases, it will be more appropriate to use a range for the number of services in developing the business case rather than a single point estimate, similar to the strategy described above for dealing with uncertainty about the number of patients.

In either case, because of the need to determine the implications for payments and provider revenues, it is useful to divide the planned changes in care into three categories:

1. **Providing (more of) a type of service that's not currently paid for.** One of the most common reasons why payment reform is needed is that a desirable service is not currently reimbursed by payers, so it is important to explicitly identify these types of services and the frequency with which they would occur under the proposed change in care. For example, most payers do not pay physician practices for telephone calls with patients, so if a physician practice wanted to encourage patients to call the practice about certain problems before going to an emergency room, it would not be paid for doing so unless payers changed their payment policies. In some cases, a provider may already be providing the uncompensated service to some patients. It will be important to determine the extent to which this is already occurring, because if a purchaser or payer agrees to pay for this service, the cost to the payer and the new revenue to the provider would not just result from the *new* services, but also from the *existing* volume of the services that are already being provided.
2. **Providing more or less of a service that is currently paid for.** Another common reason why payment reform is needed is that if the change in care involves a provider delivering fewer of the services that are paid for, the provider will lose revenue. For example, if a physician practice begins responding to patient concerns through telephone or email contact when appropriate rather than asking the patient to come into the office, the practice will lose revenue by having fewer reimbursable office visits. If a hospital reduces readmissions, it will lose the revenue it would have otherwise received for those readmissions. In some cases, even if a provider currently receives revenue for a service, the revenue may not cover the provider's costs for that service. Decreasing the number of those services could actually improve the provider's margins, whereas increasing the number of services might harm its operating margins. However, this will also depend on how the costs of the service change at different volumes, as discussed in Step 3.
3. **Providing a current service in a different way that would affect costs or outcomes.** In some cases, the provider might plan to continue delivering an existing service at the same frequency, but to deliver it in a different way that would be expected to affect outcomes and/or costs. Even if payment does not change, the change in costs or outcomes could significantly affect the business case for the change. If there is uncertainty about whether the service will always be delivered in the different way, it may be desirable to treat the new approach to the service as if it were a completely new service, and then estimate how often it will be used, as described in the next section.

> *EXAMPLE*
> *The use of electronic health records has meant that providers need to spend more time on documentation just to deliver the same services they had been delivering, as well as to pay the costs of maintaining the EHR system. This can mean that provider operating margins and patient access can decline even with no change in the actual number or type of services.*

Probability of Eligible Patients Receiving the New/Different Services

In some cases, the intention will be for the new set of services to be given to every eligible patient. For example, the proposed change in care might be to check every diabetic patient's feet once per year. In this case, the intended services can be directly translated into a number of services per patient.

In other cases, however, the intention may be for the new services to only be delivered if an eligible patient experiences a particular problem. For example, a physician practice might set up a nurse hotline that patients can call when they have a

problem or experience a particular condition. In this case, all of the practice's patients would be *eligible* for the service, but only a subset of the patients would likely *use* the service; moreover, some patients might use the service frequently, and others less so. In this case, the probability of each patient having the problem or condition will need to be estimated so that probability can be multiplied by the number of services that are planned to be provided to the patients who have the problem or condition in order to estimate the total number of services which will actually be provided.

Even in cases where the intention is to provide the service to *every* patient, the provider's ability to actually deliver the service to a patient may depend on something the patient does that is out of the control of the provider. For example, if the provider plans to check a diabetic patient's feet during visits to the physician's office, the service will only occur if the patient actually comes to the office. Consequently, the rate of patient participation/adherence will also need to be estimated and multiplied by the number of services planned for patients who do participate in the desired approach.[7]

As with the number of patients and number of services, there may be uncertainty about the probability of patients receiving the services, and so a range of probabilities should be used, rather than a single estimate.[8]

Changes in Potentially Avoidable Complications and Health Problems

Current Complications or Health Problems

If the change in services reduces the rate at which undesirable complications occur, prevents new health problems from developing, or slows the progression of health problems, the impact on the business case will depend on the magnitude of the reductions in the health care services that would otherwise have been used to treat those complications or problems. Incorporating any savings associated with these reductions into the business case requires three pieces of information:

- The current rate at which each type of complication or health problem is occurring for the patients for whom the care change will be made;
- The change in the rate of each type of complication or health problem that is expected to result from the planned change in care; and
- The number and types of services typically needed to treat each type of complication or health problem.

In addition to a reduction in the number of complications or health problems, there may also be an expectation that the *severity* of some or all of the remaining complications or problems will be reduced. For the purposes of the business case analysis, the lower-severity complications should be treated as a different type of complication, and then in the business case calculations, the reduction in severity of complications can be shown as an increase in the rate of the lower-severity complication and a reduction in the rate of the higher-severity complications.

As with all of the parameters discussed previously (i.e., the number of patients, the number of services per patient, etc.), there will likely be some degree of uncertainty both about how often complications currently occur and how effective the planned changes in care will be in reducing those complications, and so a range (i.e., a minimum and maximum) should be used for both of those figures, rather than single, point estimates.[9]

EXAMPLE

A change in procedures during and after a particular type of surgery is expected to reduce the rate of surgical site infections by 50%. If treating the surgical site infections typically requires a course of antibiotics and requires rehospitalization in a certain percentage of cases, then the reduction in infections could be projected to result in a 50% reduction in the use of the antibiotics for this purpose and a 50% reduction in the number of hospital readmissions for this type of surgical site infection.

Complications from New Services

Although the goal of a new approach to service may be to *reduce* the number or severity of *existing* complications, there is always the possibility that the new services will result in *new* types of complications or an *increase* in the severity of some existing complications. In some cases, these new complications may be known (e.g., side effects of a new drug or complications of a new procedure may already have been identified in clinical trials or previous pilot projects), and the rates of the complications and the services associated with addressing them can be estimated based on that information. In other cases, however, there may be unexpected complications from a new approach. Although it would obviously be desirable if there were no such complications, it would be safest to assume that some such complications may occur, and to incorporate into the business case analysis an estimate of their frequency and the types of services needed to treat them.

Other Impacts on Health Care Services

Independently of any changes in avoidable complications that are *intended* results of the planned changes in care, there may be other changes in health care services that occur as an *indirect* result of the planned change in care. For example, if chronic disease patients receive more proactive primary care designed to reduce preventable hospitalizations, the reduction in hospitalizations will also likely reduce the frequency with which post-acute care services (such as inpatient rehabilitation facilities and home health services) are used, and this may also lead to a reduction in the avoidable complications that would have resulted from those downstream services (e.g., hospital readmissions during the post-acute care period). To the extent that these changes are predictable, they should be estimated as part of the planned changes in care.

Other Improved Outcomes

There are other improvements in outcomes that can result from improved care, such as reducing the rate at which patients die or extending patients' lifespans, enabling patients to return to work (or return to work faster than otherwise), and reducing pain or improving the patient's quality of life. In some cases these outcome improvements may have impacts on health care spending (e.g., a reduction in a patient's pain may result in a reduction in spending on pain medications and treatments), but the value of these outcomes goes well beyond the impact on health care spending.

However, this additional value cannot be directly added to or subtracted from the costs and benefits defined earlier in calculating the business case for a purchaser or payer. Although economic benefit-cost analyses often try to attach a dollar value to a saved life or to a year with improved quality of life (a "quality-adjusted life year" or QALY) and then compare this assumed dollar value of the improved outcomes to the cost of the services needed to achieve those outcomes, these types of analyses can be misleading because the assumed dollar value of benefits cannot directly offset the costs of health care services being paid by a purchaser. For example, even if one feels that it is worth spending $50,000 more on services to save a life, it still will cost someone $50,000 to achieve that outcome, and the direct beneficiary of longer life – the patient – may not have the money to pay for that outcome.

One of the reasons for developing a business case for *purchasers* rather than just *payers* is that businesses do receive monetary benefits from having their employees able to return to work or to return more quickly than otherwise. It will be important to show these benefits in any business case analysis, but they should be shown separately from changes in the purchaser's health care spending.

Step 3: Determine How Payments/Revenues Will Change Under the Current Payment System

Once the expected changes in services are defined and quantified, they need to be converted into the amount of payments each involved purchaser/payer would make *under the current payment system* to each provider that is delivering any of the services that will change under the proposed redesign of care. Even if the ultimate goal is to change the payment system to better support the planned change in care, for this step of the analysis it should be assumed that only the *current* payment system is in place. The payments/revenues for *current* services need to be determined as well as the payments/revenues (if any) that would be associated with the *new or changed* services.

For many types of services, this may simply involve multiplying the volume of services by the current payment amounts for those services.

However, some aspects of payment systems are more complex than this. For example, Medicare will pay a hospital an "outlier payment" for an inpatient admission that requires an unusually large number of services or unusually expensive services. Outlier payments can be triggered by potentially avoidable complications, so if the change in care is designed to reduce the frequency of potentially avoidable complications, it may reduce or eliminate outlier payments for patients who would have experienced those complications. Determining the reduction in payments/revenues due to outlier payments requires a somewhat complex calculation based on the hospital's total *charges* for the case as well as the amount Medicare would have paid in the absence of the complications.

EXAMPLE

Assume that the change in care for a group of 1000 patients involves decreasing the number of annual office visits per patient from 4 visits to 3 visits, but scheduling 3 new phone calls per year for each patient. If a physician is paid $100 for an office visit and $0 for a phone call, then the change in care will cause payments to the physician practice and the practice's revenues to decrease by $100,000.[10]

The payments/revenues need to be determined separately for each separate provider organization, since an increase in payments/revenue to one provider organization will not offset a decrease in payments/revenue or an increase in costs for a separate provider organization unless there is an explicit mechanism for transferring revenues between those organizations. One of the many reasons to consider payment reforms is to avoid creating unfair "win-lose" situations for different providers.

The changes in payments/revenues also need to be determined separately for all purchasers who pay for the types of patients who would experience the planned changes in care. Even if the change in care and associated payment reform is being designed for one particular purchaser, the provider may be unable or unwilling to limit the change in care to only the patients insured by that purchaser. Different calculations may be needed for different payers because not only do payment amounts differ from payer to payer, but the payment systems may also differ.

EXAMPLE

Medicare pays most hospitals a predetermined amount for a patient admission based on the patient's diagnoses and the procedures they received. However, many commercial payers pay hospitals on a per diem basis, i.e., a predetermined amount for each day that a patient is in the hospital. If a hospital is able to reduce the length of stay for a particular type of patient, payments to the hospital for the patients covered by Medicare will not change, but total payments for the commercially-insured patients will decrease.

Step 4: Determine How the Costs of Services Will Change

A major flaw with many analyses of potential payment reforms is that they stop at Step 3 and fail to also analyze how the *costs* of services for the providers will change. Looking only at how payments change may be sufficient to determine the business case for a purchaser or payer, but it is generally not adequate to establish the business case for a provider. An increase in payment may be undesirable for a provider if it is accompanied by even bigger increase in the provider's costs, and conversely, a reduction in payment may be acceptable if the provider's costs will decrease by a larger amount than the payment reduction.

It is more difficult to determine how a provider's costs will change than how payment will change. Although the fee-for-service system typically pays the same amount per service regardless of how many services are provided, this does not mean that the cost for a provider to deliver a service is the same regardless of the number of services. A significant proportion of most health care providers' costs are *fixed*, at least in the short run (i.e., the costs will not change even if the number of services provided changes). This means that the average cost of services (i.e., the cost per service or cost per patient) will increase when fewer services are provided and the average cost will decrease when more services are provided. This is particularly true of hospitals, which are expected to have emergency rooms, laboratories, surgery suites, and nursing units staffed and ready to go at all hours even if there are no new patients who need them. However, it is also true of physician practices, which still have to cover the same monthly costs of rent, salaries, EHRs, etc. even if fewer patients come for revenue-producing office visits. Consequently, an estimate of the average costs of services based on current volumes of services will be inadequate to determine how costs will change when volumes of services change significantly.

EXAMPLE

Two physician practices are each planning to hire a nurse to provide care management services to the practice's patients who have congestive heart failure. Each nurse's salary and benefits total $75,000 per year. The first practice has 500 patients with congestive heart failure, so the cost per patient per month of the nurse's services for that practice will be $12.50. The second practice only has 350 CHF patients, so the cost per patient per month for the nurse's services to that practice will be $17.86, or 43% higher. This is because the cost to each practice of employing a nurse is fixed at $6,250 per month, regardless of the number of patients the nurse sees.

A relatively small proportion of health care costs are truly variable, i.e., they change in direct proportion to the number of patients treated or the number of services provided. These are costs for items such as drugs, syringes, medical devices, etc. which are only used if there is a patient to treat. Some costs may be "semi-variable," i.e., the costs will not change when the number of patients or services changes by a small amount, but the costs will change when the number of patients or services changes significantly.

In order to accurately determine how a provider's costs will change when it delivers more or fewer services of a particular type, a *cost model* is needed for that service. The cost model identifies the fixed costs, semi-variable costs, and variable costs associated with the service and how those costs change based on the number of patients served or the number of services delivered.

EXAMPLE

A hospital unit has 35 patients and is staffed with seven nurses on a shift in order to maintain a staffing ratio of one nurse for every 5 patients. If the average patient census decreases by 10% (from 35 to 32), the same number of nurses will still be needed to maintain the minimum staffing ratio, so nursing costs will not change, and the cost per patient will increase. However, if the average patient census decreases by 15% (from 35 to 30), the number of nurses could be reduced from 7 to 6 and nursing costs could be reduced by 15%. (Other costs on the unit would still remain fixed, so even with the reduction in nurses, the cost per patient will still increase, but by a lower amount.)

For example, Figure 5 shows a simple cost model for a hypothetical care management service in a primary care practice. The care managers are nurses that travel to the homes of patients with chronic diseases to help them learn how to manage their health problems. Assume that the care manager is a salaried employee (with total salary and benefits of $80,000) who can handle up to 400 patients. Assume also that if the primary care practice has more than 400 patients who will need services from a care manager, a second care manager will be hired. Assume further that the care manager incurs an average of $50 in travel expenses for visiting each patient. Finally, assume that the practice incurs $20,000 in costs each year for office space and secretarial support for the care managers, but these costs will not change unless more than 3 care managers are hired.

Figure 6 (which is a graphical representation of the data in the table in Figure 5) shows that the cost per patient is very high if there is only a small number of patients in the practice who need the service; initially, the cost per patient decreases rapidly as the number of patients grows, but then the cost per patient becomes more stable. When the number of patients increases beyond a break-point for the semi-variable costs (i.e., there are enough patients to justify hiring an additional care manager), the cost per patient increases and then begins decreasing again if the number of patients continues to increase.

It is important to note that at any point, the marginal cost of delivering the service to additional patients is below the average cost. For example, the data in Figure 5 show that with 600 patients, the average cost per patient is $350, but adding an additional 100 patients to the caseload only adds an additional $5,000 in cost (the variable cost), or $50 per patient, not

FIGURE 5
Service Cost Per Patient at Different Caseload Sizes

# of Patients:	100	200	300	400	500	600	700	800
Fixed Cost ($20,000)	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000
Semi-Variable Cost ($80,000, 0-400 Patients)	$80,000	$80,000	$80,000	$80,000	$160,000	$160,000	$160,000	$160,000
Variable Cost ($50/patient)	$5,000	$10,000	$15,000	$20,000	$25,000	$30,000	$35,000	$40,000
Total Cost	$105,000	$110,000	$115,000	$120,000	$205,000	$210,000	$215,000	$220,000
Cost Per Patient	$1,050	$550	$383	$300	$410	$350	$307	$275

$350, and the average cost decreases to $307. Conversely, reducing the number of patients to 500 patients only reduces costs by $50 per patient, not by $350, and the average cost increases to $410. Under a fee-for-service model, if the provider were paid $350 per patient for the service, the provider would break even with 600 patients, make a 14% profit with 700 patients, and have a 15% loss with 500 patients.

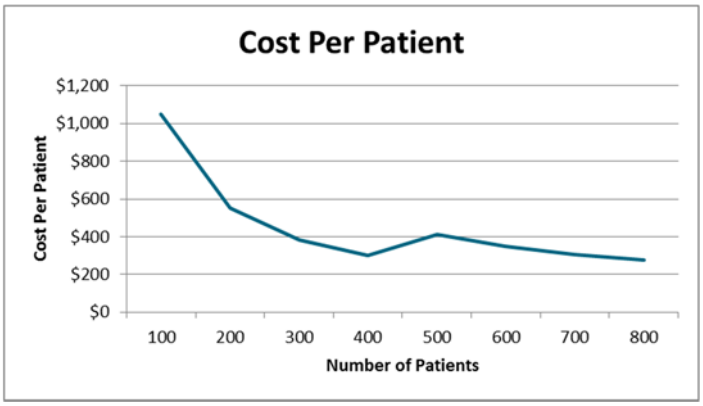
As noted in Step 1, some costs will only be one-time, transitional costs, rather than ongoing costs. Unless there is a plan to pay for these costs through a one-time startup payment, the provider or payer incurring these costs will need to recover the one-time costs through payments or savings over a period of time. If the new care delivery model and the payment to support it are expected to be in place for several years, then the costs can be amortized over that multi-year period, i.e., an amount can be added to the payments to the provider each year sufficient to recoup the initial costs over a period of years. However, if payment contracts will only be for one or two years, amortizing upfront costs over that short time period will make it more difficult to demonstrate a positive business case.

Step 5: Calculate the Changes in Operating Margins for Providers

What should matter to providers is their *margins*, not their revenues. Most providers assume that lower revenues will lower their margins, because of the way that current payment systems are structured. Under current payment systems, a health care provider loses all of its current revenue for every fewer patient it sees or service it delivers, even though its costs will not decline proportionately because of the fixed costs the provider must still support.

However, better payment systems can actually allow providers to improve their margins while also reducing spending for purchasers. If the analysis in Step 4 shows that the health care provider's costs will decrease under the proposed change

FIGURE 6



in care delivery, then the provider will be able to accept a smaller amount of revenue, as long as that smaller amount of revenue is higher than the provider's new lower cost. The change in the payment system is needed to ensure that the payments to the provider are higher than the provider's new (lower) costs, but also lower than what the purchaser/payer was spending previously.

With the estimates generated in previous steps of how both costs and revenues for providers would change with the planned changes in care under the current payment system, the changes in operating margins/profits can now be calculated for all involved providers. This analysis will show that one or more of the following scenarios exist for providers under the current payment system:

1. **Equal/better operating margins for a provider.** If the proposed change in care delivery will result in equal or better operating margins/profits for a provider under the current payment system, then there may be no need for any change in the payment system for that provider. (The provider may still want payment reform, however, so that it can benefit from some of the savings being generated for purchasers/payers under the care change.)
2. **Lower but positive operating margins for providers.** If operating margins decrease but remain positive under the

current payment system, then it might be *feasible* for the provider to implement the care changes without payment reform, but the provider would be financially *disadvantaged* for doing so. A provider may be able to continue operations in the short run with a reduction in operating margins, but it may have more difficulty succeeding in the future if lower retained earnings reduce its ability to invest in new facilities or equipment or to test new approaches to care. Moreover, in many cases, providers use the high margins they generate on certain procedures or patients to offset the losses they incur on other procedures or patients (e.g., services given to uninsured patients). In these cases, payments may need to be modified to preserve current margins on these specific services in order to avoid creating overall losses for the provider or undesirable impacts on other services or patients. (It would be inappropriate to describe this as creating a financial "incentive" for the provider to participate, because in reality it is eliminating the financial *disincentive* to improve care delivery that exists under the current payment system.)

3. **Negative operating margins for providers.** If operating margins would become negative, then the payment system poses an even more significant barrier to implementing the proposed change in care. Here again, the provider doesn't need an "incentive" to implement the change; the provider needs to have a payment structure that *enables* it to implement the desired changes in care while remaining financially viable.
4. **Different impacts on margins for different providers.** It could well be that different providers will be affected very differently by a change in care delivery. For example, referring back pain patients to physical therapy before ordering high-tech diagnostic imaging could increase margins for physical therapists and rehabilitation facilities but reduce margins for radiologists and imaging centers.
5. **Different impacts on margins for different payers.** Because different payers pay differently for the same services, a provider could experience very different impacts on operating margins for patients associated with different payers.

Step 6: Calculate the Changes in Payment Needed By Providers

Payer-Provider Payment Changes

If the operating margin for a provider would be lower or negative under the proposed change in care delivery, then the next step is to determine what change in payment would be needed to restore the margin for that provider. Even if the goal of the provider or payer is to implement a new type of bundled payment that would *not* pay separately for individual services, it is useful to start by determining how much more (or less) would need to be paid for individual services, particularly any new services that are not currently reimbursed, in order to create a positive business case.

Restoring a provider's *margins* does not mean that the provider's *revenues* would need to be the same as they were before. As noted earlier, this is because the provider's *costs* will also likely be different than they were before, and a provider with lower costs can accept a smaller amount of revenue without reducing its margin.

The change in care may mean that one set of providers will be delivering more of a higher-value service so that other providers can deliver fewer lower-value services. (For example, a primary care practice may see patients more often in order to reduce the frequency with which they go to the emergency room.) Consequently, some providers will need an increase in total revenues to cover the higher costs of the services they are delivering under the new care model.

It is important to note that although providers that are delivering fewer services than before will need less *total revenue* than before, the *per-service payment* they receive may need to *increase* if their cost per service has increased, since their fixed costs will have to be covered by the revenues from the remaining services. Purchasers/payers need to understand that they may need to pay more *per service* for a particular type of service in order to *spend less in total* on that service if a new approach to care delivery assures that fewer of the services will be used.

Merely restoring a provider's margins may be insufficient to encourage implementation of the change in care. If considerable time and effort are needed to implement the change, or if significant transitional costs will be incurred, providers may well need an increase in their margins in order to justify investing the time and resources for the proposed change rather than pursuing other initiatives that will provide them with a higher return on investment. Busy health care providers only have a limited amount of time to invest in care redesign efforts, so it only makes sense that they will focus on changes that will benefit both the patients and the provider's own financial health.

A change in payment is not the only solution if a provider's margins are lower or negative; it may also be possible to further redesign the change in care to either reduce costs or improve outcomes or both. This is discussed in more detail in Step 8.

Inter-Provider Transfer Payments

In cases where the change in care results in one provider experiencing a reduction in its margin while another provider experiences an increase, the payment change could consist, in effect, of an "inter-provider" transfer. In other words, the purchaser/payer would not need to increase its *total* payments for *all* of the services and outcomes associated with the care change, but it would need to create a mechanism for distributing the total payment *differently*.[11]

Step 7: Determine Whether a Business Case Exists for Both Purchasers and Providers

At this stage, a preliminary determination can be made as to whether there is a business case for *purchasers* as well as providers. There are several different scenarios for purchasers/payers which may emerge at this stage of the business case analysis:

1. **No changes in payments are needed.** If the conclusion at the end of Step 5 was that by making the proposed change in care, all providers would have equal or better margins for all payers under the current payment system, then there is a business case for providers to proceed with the care changes without any change in payment systems. However, as noted earlier, if significant savings would be generated for purchasers/payers through the care change, providers may still want payment reform so that they can also benefit from these savings.
2. **The proposed changes in payments would *reduce* total spending by the purchaser/payer.** If the payment change needed to enable providers to implement the care change would reduce spending by a purchaser/payer, then there would appear to be a business case for that purchaser/payer to make the necessary payment changes, since both the purchaser and provider would be financially better off for making changes that would benefit patients.
3. **The proposed changes in payments would *increase* total spending for a purchaser/payer while achieving *better outcomes* for patients.** In this case, the purchaser/payer will need to decide whether the improved outcomes are worth the higher spending needed to support the care changes.
4. **The proposed change in payments would *increase* total spending for a purchaser/payer *without* achieving significantly better outcomes for patients.** In this scenario, the proposed changes in payment and care delivery are unlikely to proceed as designed, and it would be necessary to explore whether the proposed approach to care delivery could be improved in order to lower costs or improve outcomes. (This is described in Step 8.) If the proposed changes in payments and care delivery would benefit some purchasers/payers but not others, then the provider would need to assess whether it could proceed to make the proposed changes in care delivery with only a subset of purchasers/payers paying in the desired fashion.

Step 8: Refine the Changes in Care to Improve the Business Case

As described in the previous step, if there is not a business case for some purchasers/payers, changes in the proposed approach to care delivery may need to be explored. However, even if the preliminary analysis shows there *is* a business case for both the provider and a particular purchaser/payer, it may *still* be desirable to reanalyze the care changes to determine if it is possible to redesign care to improve the business case for either the provider, the purchaser/payer, or both, so that the incentive for them to implement the necessary delivery and payment reforms will be increased.

Potential ways to improve the business case include:

- **Eliminating unnecessary or low-value components of the proposed set of services.** Within the mix of proposed services, if there are components that are not essential to achieving the outcomes or that will have relatively limited benefit in improving outcomes, they could be dropped or restructured, particularly if they have high costs.
- **Reducing the cost of the proposed services.** There may be different ways to deliver the same services at lower cost, such as using different types of staff, different types of medications or devices, different facilities, etc.
- **Targeting the services to a different set of patients.** If the goal of the care change is to reduce avoidable complications or to prevent development or progression of health problems, there may be subsets of patients who experience the complications or problems at higher rates, or for whom it will be easier to prevent complications or problems. In this case, targeting the services to these patients could increase the benefit on a per patient basis and thereby improve the business case for the care change. Conversely, if the cost of a service is too high because it is targeted on too small a group of patients (even if those patients will experience the greatest benefits), expanding the number of patients served may make the service more cost-effective, thereby improving the business case. (It is important to note that there may be costs associated with the tasks needed to identify specific subsets of patients or to limit services to them. These tasks, in effect, become an additional service that may or may not be compensated.)

Once the redesign is completed, Steps 2-7 should be repeated to determine whether there is now a positive business case for both the providers and purchasers/payers.

Step 9: Analyze the Impacts of Deviations from Planned Care and Expected Outcomes

Up to this point, the business case analysis has been done based on *expected* levels of services, outcomes, costs, etc. or within the range of uncertainty or variation estimated in Step 2. If there is no business case at the expected levels of service and outcomes, there is no reason to proceed further in considering implementing the changes in care delivery or payment. However, even if there is a business case at the expected levels of services and outcomes, reality often turns out to be different than expected, and those differences could affect the business case for providers, purchasers, or both.

- Purchasers will be concerned that smaller improvements in outcomes will be achieved than the minimum levels estimated by providers, or that a larger volume of reimbursable services will be provided than the maximum levels predicted by providers. This could result in more

spending by the purchasers than expected, invalidating the calculations shown in the business case.

- Providers will fear that the number of services needed or the costs of the services provided will be higher than expected, that fewer patients will participate than expected, or that fewer payers will participate than promised, thereby resulting in lower margins or negative margins for the providers.

To address these concerns, a good business case should also include a sensitivity analysis which calculates the impact on payments, costs, and margins if participation, services, outcomes, etc. turn out to be *different* than expected. Anywhere that an assumption has been made about a volume or rate at which services will be offered, even if the assumption already included a high/low range, the sensitivity analysis should assess the impact if the volume/rate were to be higher or lower than assumed.[12]

If the sensitivity analysis shows that there is still an acceptable business case for both the providers and purchasers under a particular scenario, then there is no need to take any further action with respect to that scenario. However, if the sensitivity analysis shows that a particular scenario would seriously harm the business case for either the purchaser or provider (or both), and if either purchasers or providers believe there is a reasonable probability that the scenario could occur, then two types of actions can be considered:

1. **Mechanisms could be established in the care delivery process to reduce or eliminate the possibility of an undesirable scenario occurring.** For example, in order to address the possibility that new services would be provided at significantly higher rates than projected in the business case, the health care provider might establish procedures for verifying the necessity of the services when they reach a certain frequency, or the provider might agree to operate within an overall budget that is not dependent on the number of services they deliver.
2. **The payment model could be structured in a way that protects the provider or purchaser from the adverse consequences of the undesirable scenario.** For example, the payment model might include penalties if a provider fails to achieve the outcomes that were expected to result from the change in services.

More detail on the ways the payment model could be structured to support the business case is provided in Step 10.

Step 10: Design a Payment Model to Pay Adequately for Desired Services, Assure Desired Outcomes, and Control Variation and Risk

At this point, an appropriate payment model can be designed to support the planned changes in care in a way that achieves the business case developed in the analysis and protects against scenarios which could damage the business case. To be successful in supporting the business case for both providers and purchasers/payers, a payment model will need to have the following elements:

1. **Adequate payment from the purchaser/payer to the provider with the flexibility to enable delivery of the planned services.** The provider will need to receive adequate payment to enable it to deliver the planned set of services to the eligible patients while maintaining or improving the provider's margins. This payment could be based on individual payments for individual services (including new payments for new services and different payments for existing services), similar to the current fee-for-service structure, or the payment could be based on one or more "bundled" or "condition-based" payments that give the provider the flexibility to choose which service to use within a larger budget.
2. **Accountability from the provider to the purchaser/payer for successfully achieving the intended outcomes.** The business case for the purchaser/payer likely depended on the savings or better outcomes that were projected to result from the improved approach to delivering care. In return for the change in payment to support the new care model, the provider needs to take accountability for ensuring that the lower costs and better outcomes expected by purchasers are achieved. This accountability can be built into the payment model either by creating a performance-based component to the payment (i.e., an increase or decrease in the provider's payment for the new services based on whether the outcomes were achieved) or by bundling the services associated with outcomes into the payment through a warrantied payment, episode payment, condition-based payment, or global payment.[13]
3. **Protection for the provider against inappropriate financial risk.** Providers should only be expected to take accountability for outcomes they can reasonably expect to control or significantly influence. Specific mechanisms should be built into the payment model to ensure that purchasers/payers are retaining "insurance risk" (i.e., the risk that patients will have specific health problems requiring more health care services or resulting in poorer outcomes) and that providers are taking on "performance risk" (i.e., the services and costs of treating a particular health problem and preventing avoidable complications). Four such mechanisms are risk adjustment, risk corridors, risk limits, and risk exclusions.[14]

IV. SOURCES OF DATA TO DEVELOP THE BUSINESS CASE

Often, the biggest challenge in developing a business case for payment and delivery reform is obtaining the data necessary to make the calculations described in Section III. Typically, no provider, purchaser, or payer will have all of the types of data needed to create a complete business case, and outside entities will have even fewer of the necessary elements of data. Moreover, merely possessing the data is insufficient; the data must be extracted and analyzed in a way that enables it to be used effectively for the business case analysis. Frequently, the processes involved in collecting, correcting, and analyzing data take considerable amounts of time, and so even when the relevant types of data and information become available, they may be out of date. Although improvements in health care information systems will likely reduce this lag time somewhat, the accelerating pace of change in health care services means that even relatively recent data may not accurately reflect the way services are currently being delivered.

An inability to get complete or timely data should not stop efforts to analyze the business case for delivery and payment reform. Filling in missing data with estimates can enable a preliminary version of a business case analysis to be developed, and if this analysis suggests that there is a positive business case for a particular delivery and payment reform approach, then it will be worth making the investment of time and resources to obtain more complete and current data.

There are four major types of data that will generally be needed to carry out all of the steps in a business case analysis:

- Health care billing/claims data, including data both on services delivered and the amounts paid for those services;
- Clinical data from electronic health records or patient registries;
- Data on the costs of health care services; and
- Data on patient-reported outcomes.

Health Care Billing/Claims Data

Data on Services Delivered

Billing records of providers and records of paid claims from health plans can serve as an important source of information on the reimbursable services currently being received by patients.

- An individual provider's billing records will indicate which services *that particular provider* delivered to all of the provider's patients, regardless of which purchaser/payer was paying the bill; however, the services delivered by any *other* provider to those patients will *not* be included. A large multi-specialty provider organization will inherently have data on a more comprehensive set of services provided to a particular group of patients, but unless the patients are restricted to using only that provider organization's services, the provider's data will be missing information on some services those patients received.
- An individual purchaser's or payer's claims data will indicate which services any provider delivered to the subset of the providers' patients whose claims are paid by that *payer*, but not the patients of any *other* payer. The more separate purchasers and payers there are in a market, the less representative any one payer's claims data will be about all of the patients a provider serves.

Because no provider's billing data and no payer's claims data contain a complete picture of what is happening to patients across all payers and providers, a number of states and regions have created multi-payer claims databases which combine claims data from multiple purchasers and payers to enable more comprehensive analyses. A provision in the federal Affordable Care Act has enabled a number of these organizations to become "Qualified Entities" and receive Medicare claims data to complement claims data from commercial health insurance plans and Medicaid programs. There is now a growing number of communities with a Regional Health Improvement Collaborative organization that is designated as a Qualified Entity and that has claims data from all or most other payers in the community; these Regional Health Improvement Collaboratives can use their data and analytic expertise to help providers, payers, and community leaders to develop successful payment and delivery reforms.[15]

Data on Payment Amounts

Unfortunately, many of the communities with multi-payer claims databases only have access to information on the type and number of services provided, not on the *amount of money paid* for those services.[16] Although the amounts that Medicare pays providers for services is public information, the amounts that commercial insurance companies pay providers are usually confidential.

Although the lack of information on payment amounts is not a problem for many of the purposes for which multi-payer claims databases are being used, it is a serious limitation for performing a business case analysis. For example, if a change in care is intended to reduce the frequency of avoidable hospitalizations, it matters a lot whether a provider will lose and a payer will save $5,000 or $50,000 for each avoided hospitalization. Since a number of recent research studies have shown that there is significant variation in the amounts that are paid to different providers for ostensibly the same services, both within geographic regions and across regions, information on the actual amounts paid is essential.

If data on actual payment amounts are not available for the services that would be affected by a proposed care change, two potential workarounds include:

- **Using Medicare payment amounts as a basis for estimating commercial payment amounts.** If a commercial payer uses the same payment system as Medicare, then that payer's payment amounts are often based on a multiple of Medicare's payment amounts. Commercial payers typically use a multiplier greater than 1, and Medicaid payers often use a multiplier less than 1. The business case can be tested at different multipliers to determine the payment levels where the business case would be positive and where it would not.[17]
- **Using a provider's published charges for services.** Rather than using a pre-defined fee schedule based on Medicare, some payers pay providers a defined percentage (the "discount") of the provider's charges for services, so the business case can be tested at different discount levels to determine when the business case would be positive and when it would not. Since the actual current "discounts" will vary from payer to payer and from provider to provider, the analysis would need to be done separately for each provider and payer.

Clinical Data

For the purposes of business case analysis, there are two important weaknesses in claims data:

- Claims data generally do not include information on any services a provider delivers that are not currently reimbursable by payers. If there is a plan to begin paying for a service that has not been reimbursed before, the business case analysis will underestimate the cost of the change and overestimate its impact on outcomes without information on whether and how often the service is already being provided.
- Claims data generally do not have accurate or complete information on clinical characteristics of patients, e.g., what types of health problems they have, what kinds of complications they experienced during treatment, etc. These data can be very important for targeting services to particular patients, for risk-adjusting payment amounts, and for estimating the rates of avoidable complications. Although claims data frequently contain diagnosis codes, the diagnosis codes recorded are intended to justify the service being billed, not to give a complete picture of the patient's health conditions, and so key diagnoses that are important for the business case analysis may not be recorded in the claims records.[18]

Clinical data from providers' electronic health records (EHR) systems can provide many of these missing pieces of data. However, EHRs are primarily designed to give clinicians information on a patient-by-patient basis, and so it is often difficult to extract information from EHRs for information that spans a population of patients. Moreover, EHR-based data only relate to the services the provider using the EHR delivered to its patients, so unless a provider is part of a large group or health system or is connected to other providers through a Health Information Exchange, it is also difficult to obtain comprehensive information from an EHR related to all of the providers and services involved with a patient.

Where they exist, patient registries have the potential to fill some of these gaps because they are designed specifically to support better care of groups of similar patients. Moreover, a growing number of Regional Health Improvement Collaboratives are collecting clinical data from providers as well as claims data from payers; in some cases, they are combining the two sources of data to enable truly comprehensive analysis of both services and patient characteristics.

Data on the Costs of Services

A provider's actual cost of delivering a service is not available from either payer claims data or clinical data systems. Cost data can only be obtained through a provider's cost accounting system. Many providers do not have good cost accounting systems and if they do, they may be reluctant to make that information available outside the organization.

A common workaround used to estimate the cost of an individual service is to calculate the ratio of a provider's total annual costs and its total annual charges for services (i.e., its gross revenues before discounts) and apply this "cost-to-charge" ratio to the amount that a provider charges for an individual service to estimate the cost of that service. However, in general, this methodology is so inaccurate as to be useless. Since most providers do not set their charges for services based on the actual costs of the services, applying a single cost-to-charge ratio to charges for different services results in numbers that likely have little relationship to the actual costs of the services.

Moreover, as described in Step 3 in Section III, one needs to know not only the *current* costs of services, but how those costs will *change* as the volume of services changes. This means that cost models, similar to what is shown in Figure 5, need to be estimated for any service that will change in volume significantly. This requires determining the amounts of money that have been spent and are being spent on facilities, equipment, personnel, supplies, etc. associated with the service, and estimating how those individual items will change, if at all, as the number of patients receiving the service increases or decreases.

Data on Patient-Reported Outcomes

Many aspects of the outcomes of health care services can be determined or estimated from the claims and clinical data described above. However, as noted in Step 2 in Section III, other important aspects of the value of health care services relate to improving patients' quality of life and productivity, and those are frequently not captured even in clinical data records. The only way to obtain this information is directly from patients. As more types of patient-reported outcomes data become available, business case analyses will be in a better position to quantify the full range of outcomes associated with improvements in care.

ENDNOTES

1. For the purposes of this report, a "purchaser" is an individual or organization that serves as the ultimate source of funds to pay for health care services for a patient, and a "payer" is an individual or organization that delivers the payment to a provider. For example, a self-insured business that covers the majority of health care costs for its employees is the primary "purchaser" of care for those employees, but it will likely use a commercial health plan as the "payer" to actually pay claims to the health care providers that deliver services to its employees. A "provider" is a physician, nurse, hospital, or other individual or organization that delivers health care services to patients.

2. For some service lines, the hospital may be generating a very high margin for that service line. This does not necessarily mean that the hospital is making excess profits or that the hospital could accept lower revenues without a change in payment. Many hospitals are forced to cross-subsidize service lines, generating high margins on some service lines in order to cover losses on other service lines, particularly those lines of service that are heavily used by uninsured patients and Medicaid recipients. In these cases, if the care redesign initiative is going to affect the hospital's high margin services, the margins on those services can be treated as a "fixed cost" that the hospital needs to continue covering. As long as the underlying costs go down, the hospital can still accept lower revenue from payers while covering its fixed costs, covering its new lower variable costs, and preserving its current margins.

3. Defining how services are expected to change does not mean that payment should be tied directly to the way services are delivered. There is growing recognition that too many current measures of the "quality" of health care are based solely on whether specific services are delivered or specific processes are followed, and that instead, "quality" should really be measured in terms of the outcomes achieved for patients. However, in order to analyze the business case for payment reform, both providers and purchasers need to know whether payments are adequate to support the kinds of services and processes needed to achieve better outcomes.

4. There are many examples of demonstration projects that have achieved better outcomes or lower costs, but the changes in care had to be discontinued when the demonstration project funding ended because there was no way to sustain the changes under the current payment system.

5. In addition, a common element of payment systems is an "outlier payment" or "stop-loss provision" to protect providers from financial losses if they care for a patient who needs unusually expensive services or an unusually large number of services.

6. One approach would be to pair two different initiatives together, one with a shorter-term return on investment, and one with a longer-term return, and show a combined business case for both. The Institute for Clinical Systems Improvement (ICSI) in Minnesota (http://www.ICSI.org) convinced payers to support its DIAMOND initiative to improve care for patients with depression by pairing it with an initiative to control utilization of high-tech diagnostic imaging, since the cost savings from the first initiative were expected to take longer to achieve than the savings from the second initiative.

7. If patient participation or adherence is a problem, then an alternative approach to delivering services may be needed. For example, a member of the practice's staff could go to the patient's home rather than relying on the patient coming to the office, but this would be a different service, and the frequency with which this alternative would be used, as well as the cost of the alternative service, would need to be estimated.

8. It may be possible to get information on these probabilities from other providers who have implemented similar initiatives, but if the proposed change in care is unique or innovative, there may be few or no past experiences to draw upon for this information. In these cases, an educated guess about the range may be the best that can be done.

9. There may also be some uncertainty as to whether other things are occurring that will also have an impact on the targeted complications. Although some types of preventable complications can be fairly directly associated with a particular set of services (e.g., surgical site infections will tend to be most directly affected by surgical technique and post-surgical wound care), other types of service utilization or complications may be affected by a variety of factors outside of the control of the providers implementing the care change. For example, the rate at which patients use the emergency room for conditions that could be treated by a primary care practice may be affected not only by the improvements in care that a primary care practice intends to make, but also by the patients' access to transportation, by changes in patient cost-sharing requirements, by the location of emergency rooms, by advertising by hospitals, etc. Uncertainty about the extent to which changes in these other factors may occur should be considered in estimating the potential impacts of the planned changes in care.

10. -$100,000 = [3 visits-4 visits] x $100/visit x 1000 patients + [3 calls -0 calls] x $0/call x 1000 patients

11. One approach would be for the purchaser/payer to make this transfer as an adjustment to each provider's payment, but an alternative approach would be for the two providers to receive a "bundled" payment from the purchaser/payer, and the providers could then work out the details of the inter-provider transfer. Either way, a calculation is needed to determine how the total revenues to each provider need to change to maintain or improve their margins.

12. The sensitivity analysis should be limited to scenarios that are viewed as realistic possibilities. It is almost always possible to construct a "worst case" scenario where the financial impact would be negative, but if it is also possible to construct a "best case" scenario where the financial impact would be very positive, it generally makes sense to assume that the bad and good scenarios will average out.

13. For more detail on different types of payment systems, see Miller HD. Transitioning to accountable care: Incremental payment reforms to support higher quality, more affordable healthcare. Pittsburgh, PA: Center for Healthcare Quality and Payment Reform; 2012. Available from: http://www.chqpr.org/reports.html.

14. For a more detailed discussion of the mechanisms for separating insurance risk and performance risk in payment systems, see Miller HD. Ten barriers to payment reform and how to overcome them. [Internet] Pittsburgh, PA: Center for Healthcare Quality and Payment Reform; 2013. Available from: http://www.chqpr.org/reports.html.

15. More information on Regional Health Improvement Collaboratives can be obtained from the Network for Regional Healthcare Improvement (http://www.NRHI.org).

16. This is generally referred to as the "allowed amount" for a service, in contrast to the higher amount that the provider "charged" for a service.

17. It should be noted that the multipliers will likely differ not only across payers, but also across providers, since payers generally negotiate different payment amounts to different providers.

18. Most claims forms only have a limited number of fields to record diagnosis codes, so patients with multiple health problems may not have all of those conditions recorded on a claim form designed to obtain payment for treatment of a subset of the conditions.

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Miller also served as the President and CEO of the Network for Regional Healthcare Improvement (NRHI) from 2008 to 2013, and he organized NRHI's national Summits on Healthcare Payment Reform in 2007 and 2008 and its Summit on Regional Healthcare Transformation in 2013. His report *Creating Payment Systems to Accelerate Value-Driven Health Care: Issues and Options for Policy Reform* which was prepared for the 2007 Summit was published by the Commonwealth Fund in September, 2007, and his summary of the recommendations from the 2008 Payment Reform Summit, *From Volume to Value: Transforming Healthcare Payment and Delivery Systems to Improve Quality and Reduce Costs*, was published in November 2008 by NRHI and the Robert Wood Johnson Foundation.

Miller has worked in over 27 states and metropolitan regions to help design and implement payment and delivery system reforms, and he assisted the Centers for Medicare and Medicaid Services with the implementation of its Comprehensive Primary Care Initiative.

ABOUT NRHI

The Network for Regional Healthcare Improvement (www.NRHI.org) is the national membership association for Regional Health Improvement Collaboratives. NRHI works to support the efforts of Regional Health Improvement Collaboratives by:

- Increasing the awareness of policy-makers and health care professionals about the key role that Regional Health Improvement Collaboratives play in improving the quality and controlling the costs of health care;
- Providing technical assistance to Regional Health Improvement Collaboratives in addressing specific challenges they face;
- Facilitating the ability of Regional Health Improvement Collaboratives to share the practical knowledge they develop in order to help all Collaboratives improve;
- Assisting additional communities to establish Regional Health Improvement Collaboratives;
- Encouraging the development and implementation of health care payment systems, benefit designs, and regulatory structures at the federal, state, and local levels which support improved population health and higher-value health care delivery systems; and
- Advocating for national policies and programs that support the work of Regional Health Improvement Collaboratives.

NRHI has benefited from generous support from the Robert Wood Johnson Foundation (RWJF) throughout its history. This report was prepared as part of a grant from RWJF to NRHI to support RWJF's payment reform initiatives.

ABOUT RWJF

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