

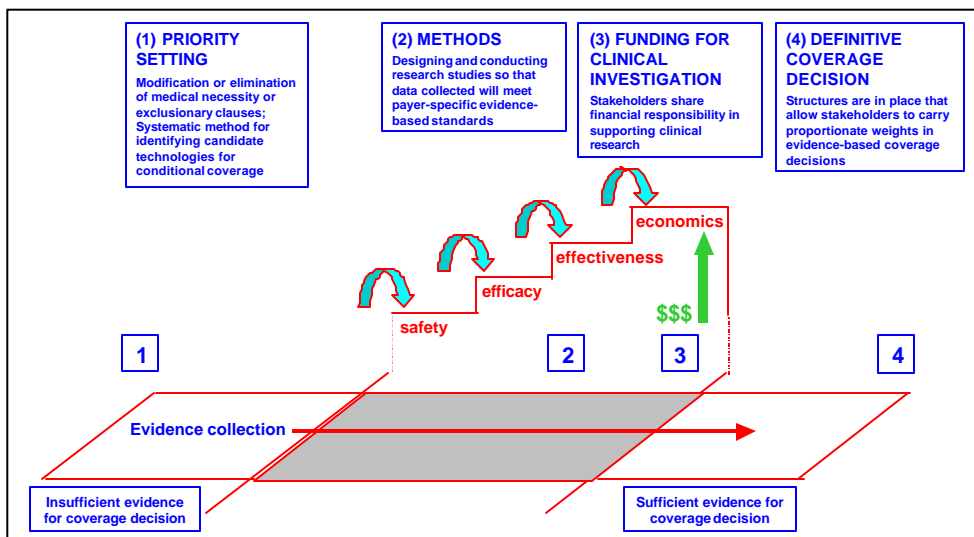
Executive Summary

Summit Meeting on Conditional Coverage of New Medical Technology

The Medical Technology Leadership Forum (MTLF) convened a summit on conditional coverage of new medical technologies on Monday, July 26th, 1999 in Bethesda, MD. Participants included an 18-member panel comprising representatives of public and private sector organizations involved in the development, regulation, and utilization of new medical technologies, as well as representatives of other MTLF member organizations and other observers.

The summit was divided into seven sessions, including two case studies. Four sessions addressed the stages in the pathway for the clinical investigation of new technologies (i.e., the pathway towards a coverage decision): priority setting, requirements for evidence collection, funding responsibilities, and coverage decision-making. A fifth session covered the overarching issues related to the implementation of conditional coverage programs (barriers, stakeholder responsibilities, legal and ethical concerns, etc.). The two case studies were: lung volume reduction surgery (LVRS) and FDA classification of Category A and B medical devices. The first case study presented a specific technology for which a multi-agency conditional coverage program has been developed and implemented, while the second presented a categorization system that may serve as a model for identifying technologies that are eligible for conditional coverage.

One discussant and two or three respondents presented topics at each session, followed by a discussion that involved other panelists and MTLF members in the audience. The open exchange of ideas and viewpoints, the presence of multiple stakeholder perspectives, and the revisiting of several central issues throughout the summit allowed for focused consideration of the issues surrounding conditional coverage of new medical technologies. Below is a summary of several key points raised in the summit.



I. Priority Setting

Unlike most coverage decisions, conditional coverage decisions are not binary. Instead of the coverage/non-coverage dichotomy, a conditional coverage program may include a category that will allow investigational technologies to receive provisional, or “conditional” coverage. The challenge to developing and implementing a conditional coverage program is to define a threshold at which new technologies are considered eligible for conditional coverage. A defined set of criteria can be used to determine the eligibility of new technologies for conditional coverage, as well as to prioritize new technologies for conditional coverage. The specific challenges to creating a systematic priority setting approach are as follows.

- The defined set of criteria (used to qualify new technologies as promising candidates for conditional coverage) must be applied consistently to new technologies. The alternative to a clearly defined set of criteria (and aggressive enforcement of such criteria) is to allow for exceptions to be made to the benefits language (i.e., the contractual language defining the treatments covered by a health plan). In such a case, technologies more likely would be evaluated on a per case basis, instead of being evaluated against systematic requirements.
- A system must be in place that would allow for the determination of whether a new technology meets the criteria for conditional coverage. This may take the form of a systemic evaluation of the available evidence supporting a new technology. Such an evaluation may consist of literature reviews, systematic reviews, and risk-benefit analyses.
- The scope of coverage should be clearly defined. The ultimate question is whether conditional coverage should apply to all beneficiaries or to individual patients: Should decisions be translated into national coverage policy or be confined to individual patient scenarios?

II. Requirements for Evidence

Medical evidence generated by clinical investigation of new technologies serves as the basis for coverage decisions. The two main issues surrounding evidence requirements are: 1) the adequacy of certain types of evidence to influence coverage and clinical decision-making; 2) the appropriateness of certain methods of evidence collection, given their effects on physician and patient uptake of new technology.

- Safety and efficacy are the basic evidence requirements for pharmaceuticals to receive FDA approval for marketing. The evidence threshold for coverage decisions, however, has been raised to include (in addition to safety and efficacy) effectiveness, and in some cases, cost-effectiveness. Heightened evidence thresholds also apply to medical devices, though the evidence collection process for medical devices may not be the same as that for pharmaceuticals. A challenge to creating a systematic approach to conditional coverage, then, is to adopt evaluation methods appropriate for particular medical technologies and health care delivery circumstances to allow evidence requirements to be met. Specific challenges that medical devices may face in reaching the evidence threshold are as follows:
- For devices that are generational advances, the challenge would be to generate evidence of the incremental clinical or economic value of the device relative to its predicate.

- For devices that are used as part of a larger operation, the challenge would be to isolate the impact of the device independent of the impact of the entire operation.
- For devices that may add incremental clinical value but no incremental economic value (or vices versa), the challenge would be to generate evidence of cost-effectiveness, which may be part of heightened evidence requirements.
- Efficacy may not be considered sufficient evidence because clinical trial results may not be applicable in clinical practice. Alternate models of evidence collection may not only generate effectiveness (“real world”) data, but also may also speed and lower the costs of evidence collection. One such alternative approach discussed at the summit meeting is the Clinical Practice Improvement Model. The feasibility and comparative advantages of such programs may need to be tested against more conventional approaches such as the randomized controlled trial (RCT).
- Included in the heightened evidence threshold for coverage decisions are increasing requirements for health outcomes, i.e., quality of life (QOL), morbidity, and mortality. Depending upon the health problem and the course of a disease episode, data on relevant health outcomes may not be available until months or even years after a medical intervention. The question that needs to be addressed is if and how a preliminary coverage decision can be made to allow access to a technology before the requisite health outcomes data are collected.
- There are many types of evidence that may influence coverage and clinical decision-making, and oftentimes, differing requirements stem from various public and private payers. The appropriateness of certain evidence types may be best assessed by taking into account the perspective from which the evidence will be viewed and evaluated. For instance, indirect costs measured as productivity losses may be more important to employers than to other stakeholders.

III. Funding Responsibilities

Since conditional coverage programs typically require partnerships among stakeholders, they also require a commensurate commitment of resources. A major challenge in assigning financial responsibilities to the various stakeholders is to determine cost types (e.g., costs of patient care, costs of the investigational treatment, costs of data collection and analysis) and their respective levels.

- The National Emphysema Treatment Trial (NETT) can be used as a model for assigning financial responsibilities to stakeholders. To cover the costs of the NETT, the National Heart, Lung and Blood Institute (NHLBI) covers research costs, the Health Care Financing Administration (HCFA) pays for Medicare and patient care services, and the Agency for Health Care Policy Research (AHCPR) pays for outcomes and cost-effectiveness work.
- As payers carry a heavy proportion of the financial risk of covering an investigational technology, it is important that the parameters of clinical research and funding distribution are clearly defined to reduce uncertainties in the return on their investment. Funding arrangements can also be developed to minimize the financial risk and uncertainty for payers. For instance, as in the case of the Promising Therapies Program launched by HealthPartners of Minnesota, payers may agree to pay a percentage of the clinical trial costs depending on how close the trial is to reaching a desirable outcome (e.g., measurable endpoints). If a

technology is less “proven,” then payers can be asked to pay a lower percentage, while if a technology is more “proven,” they can be asked to pay a higher percentage.

- Aggregate levels of financial commitment for a particular technology by payers will depend on the extent to which coverage policy is applied. Coverage may be restricted to patients who agree to participate in an RCT, or to patients enrolled in designated medical centers. As previously mentioned, coverage decisions can be translated into national coverage policy or restricted to individual patient scenarios. Another decision that needs to be made is whether coverage is extended to patients assigned as controls in an RCT.

IV. Coverage decision-making

Conditional coverage serves as a means to reaching a definitive coverage decision on a new medical technology. A definitive coverage decision is based on the aggregate evidence accumulated through clinical investigation of a new technology. An important component of a definitive coverage decision is its timeliness. The decision should not be made so early that a technology diffuses before sufficient evidence is available to guide its use in the clinical setting. On the other hand, a coverage decision should not be so late that it restricts or denies access to a technology that has already diffused into medical practice.

- The timeliness of coverage decisions may depend on the degree of centralization (or systematization) of the coverage system. Given that many coverage systems are regionalized, the timing of an evaluation of a technology (e.g., when the technology is first available versus after the technology has diffused into medical practice) may vary. The times at which a coverage decision is made (i.e., at what point within or following clinical investigation the decision is made) may also vary. Clinical investigation of new technologies must be sensitive to the potential time lapse (between when the technology is first available and when the study results are available) that may reduce the relevance of study results by the time they are published.
- One possible way to “short-circuit” the delayed process of evaluating new technologies may be to create programs that will help physicians acclimate to new technologies. By shortening the learning curve normally associated with uptake of new technologies, such programs can reduce delays in the evaluation of new technologies. Educational programs for physicians can be enhanced through the involvement of policy-makers and specialty societies. Fast-tracking the process may improve the timeliness of clinical investigation, and may make trial results more clinically meaningful.

V. Implementation

Implementation of a conditional coverage program will require consideration of the aforementioned issues, as well as a keen sense of how the various stages in the pathway towards a coverage decision are intertwined and have direct impact on one another. Below is a rough list of the tasks involved in designing and implementing a conditional coverage program.

A. Structural

- *Interagency collaboration* – Conditional coverage programs require relevant stakeholders to commit to a partnership and sharing of financial responsibilities. Collaborative payment (i.e.,

participation of multiple payers in a conditional coverage program) may serve as a further societal benefit by making the technology accessible to a larger body of beneficiaries.

- *Third party oversight* – Data and safety monitoring and related means to protect human subjects can help to ensure the effectiveness of conditional coverage programs.

1. Timing

- *Timing of clinical investigation* – Clinical research on a new technology should begin prior to widespread diffusion, as such diffusion may hinder patient enrollment in clinical studies, particularly RCTs.
- *Timeliness of data collection* – Publication and dissemination of the results of clinical investigation of new technologies should be timely in order to make trial results clinically meaningful. This may help to prevent diffusion of unproven technologies and promote access to proven ones.

2. Process

- *Setting the parameters, or “conditions” of coverage* – In addressing the concerns payers may have regarding limits to their financial commitment, conditional coverage programs should clearly define the parameters for which coverage will be provided (e.g., the technology must be used to treat a particular disease, or patients must be enrolled in an RCT or at a designated medical center). Given the opportunity to link coverage to clinical research, conditional coverage programs have the potential to improve the quality of clinical trials.
- *Meeting evidence requirements* – New technologies must meet the heightened evidence thresholds set forth by payers. At the same time, new technologies must be subjected to methodologically sound clinical investigation that will assess their effects independent of a larger operation of which they may be a part, or assess their incremental (clinical or economic) value relative to their predicates if they are generational advances.
- *“Borrowing” from existing systems* – In creating a systematic approach to conditional coverage, a commonly acknowledged strategy is to apply evaluation methods used for pharmaceuticals to evaluating other medical technologies. The challenge behind such structural and conceptual transference is to identify the differences between drugs and other technologies (e.g., devices and surgical procedures) that may add substantial hurdles to such a task. The attributes of some new medical devices (e.g., if they are generational advances or components of larger operations) may require that they be evaluated in ways different from the methods commonly applied to pharmaceuticals.
- *Limits to conditional coverage* – Some payers have expressed that limits should be set as to where conditional coverage should “stop.” A patient with a chronic illness may not be effectively treated by the technology (or technologies) under investigation. Rules may be set to restrict the number of clinical trials in which a patient can enroll. Restriction of such patients from clinical trials can occur through the patient selection process.

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II. INTRODUCTION

The Medical Technology Leadership Forum (MTLF) convened a summit on conditional coverage of new medical technologies on Monday, July 26th, 1999, in Bethesda, Maryland.¹ Participants included an 18-member panel comprising representatives of public and private sector organizations involved in the development, regulation, and utilization of new medical technologies, as well as representatives of other MTLF member organizations and other observers. Panelists are listed in Appendix A.

The issue of conditional coverage of medical technology is of concern to manufacturers, payers, providers, clinicians, patients, and researchers. Conditional coverage refers to coverage of experimental or investigational procedures or other technologies given specified limitations by, e.g., type of patient, indication, severity of illness, or designation of the medical center providing a technology. Such early coverage provisions may allow for the technology to gain limited clinical exposure while evidence is collected to support more definitive coverage decisions. Conditional coverage is not a new concept. However, documented experience with it remains anecdotal and otherwise limited, and the barriers and utility of it are poorly understood.

The summit was divided into seven sessions, including two case studies. (The agenda is listed in Appendix B). Four sessions addressed conditional coverage in the context of several main stages of the process: priority setting, requirements for evidence collection, funding responsibilities, and coverage decision-making. A fifth session covered the overarching issues related to the implementation of conditional coverage programs (including barriers, stakeholder responsibilities, and legal and ethical concerns). The two case studies were: lung volume reduction surgery (LVRS) and Food and Drug Administration (FDA) designation of Category A and B investigational devices. The first case study presented a specific technology for which a multi-agency conditional coverage effort has been developed and implemented, while the second presented a categorization system that may serve as a model for identifying technologies that are eligible for conditional coverage.

One discussant and two or three respondents presented topics for each session, followed by a discussion that involved other panelists, as well as representatives of MTLF member organizations and other observers in the audience. The summit format, open exchange of ideas and viewpoints, and involvement of multiple stakeholder perspectives enabled careful consideration of several key themes pertaining to conditional coverage. The Lewin Group prepared and distributed a background paper on conditional coverage to panelists and MTLF members prior to the summit meeting, presenting basic issues that were discussed in more detail at the summit. The background paper is referenced in this report and is available from MTLF.

This report is organized in a manner that is similar to the summit meeting agenda. The initial section, "Structuring a conditional coverage program," presents the basic issues that must be considered prior to development of a conditional coverage program, including the distinction between various types of coverage, the discrepancies between the various types of technology (drugs, devices, and procedures), and the need to develop technology-specific paradigms for conditional coverage. Following is a section on priority setting, after which the case study on the

¹ The MTLF Summit was sponsored in part by Baxter Healthcare Corporation, and arranged and facilitated by MTLF and The Lewin Group

FDA Category A/B classification system is presented. The next three sections address issues regarding evidence collection, funding responsibilities and arrangements, and coverage decision-making. A section on the implementation tasks for conditional coverage follows, after which the case study on LVRS, and the National Emphysema Treatment Trial (NETT) in particular, is presented to apply previously discussed concepts to an ongoing conditional coverage effort.

A. Structuring a conditional coverage program

Summit participants generally agreed that conditional coverage should be used to enable clinical investigation of new technologies and generation of data to support coverage decisions. Further, they generally concurred that conditional coverage may enable broader, selected patient access to technology, subject to the specified conditions. It also was acknowledged that there was not yet consensus on how conditional coverage should be used to validate new technologies. The issues regarding conditional coverage are tied to the broader concept of coverage of medical technologies and, as such, a recurrent question raised at the summit was how to distinguish conditional coverage from the conventional “binary” coverage decisions made by payers, i.e., where a technology simply is covered or it is not. Another recurring theme concerned how inherent differences in types of technologies (drugs, devices, procedures, etc.) warrant the application of technology-specific approaches for conditional coverage.

B. Definition of conditional coverage

Conditional coverage is distinguishable from conventional coverage decision-making primarily due to the purpose of the “conditions,” that is, to enable data collection for determining the clinical and/or economic value of a technology and to support a definitive coverage policy. Summit participants noted that even positive coverage policies typically are conditional in the sense that they are delimited in specified ways. For example, a payer may cover lung transplantation, but only for patients with end-stage lung disease with acceptable surgical risks and other clinical attributes, and only if the procedure is performed at a recognized “center of excellence” with demonstrated acceptable surgical outcomes. In the context of this summit, conditional coverage for investigational technologies refers to limited, temporary coverage under specified conditions, e.g., the technology is used for specific patient populations, at designated medical centers, and under a clinical protocol. By restricting coverage to use of the technology within the context of a clinical trial, the data quality and diffusion of the technology can be controlled. The data are intended to serve as the basis for a definitive coverage policy.

Exhibit 1 illustrates a basic pathway for clinical investigation of new technologies, and shows how different forms of coverage apply depending on a technology’s position within the pathway. Three types of coverage can be defined.

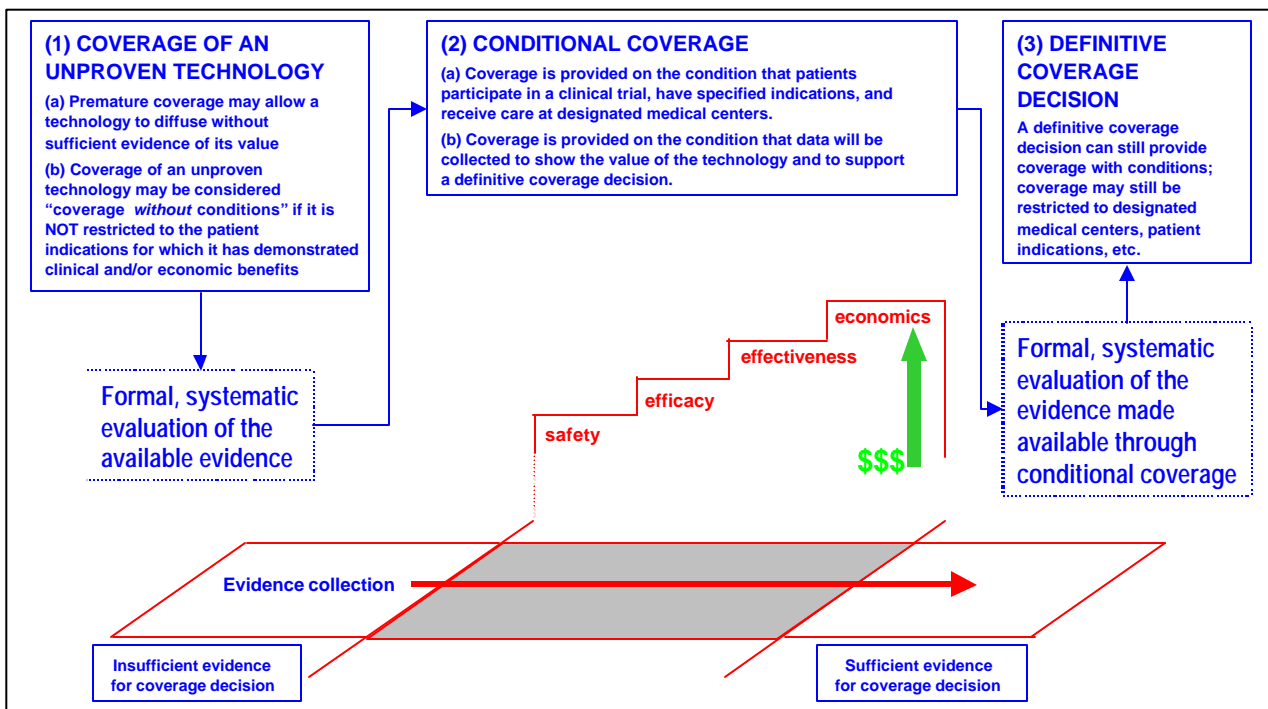
- 1) An “early” or “premature” coverage decision is one that is made before clinical research has sufficiently proved the clinical and/or economic value of the technology. Early coverage decisions can include decisions not to cover given insufficient evidence to show the benefits of an investigational technology, as well as positive coverage decisions that were made despite inadequate evidence, such as in the instances of certain legislative mandates.

A higher-than-expected incidence of adverse events associated with an unproven technology or the emergence of other new data may prompt payers to reconsider a coverage decision.

Payers may conduct a formal, systematic evaluation of the available evidence to determine if the coverage policy should be modified.

- 2) If a payer decides that additional data are needed before a definitive coverage policy can be structured, the payer may provide coverage only on the condition that data are collected for use of the technology. A conditional coverage policy may provide coverage on the conditions that, e.g., patients participate in a multicenter clinical trial, designated patient inclusion and exclusion criteria are followed, the intervention is provided at designated medical centers, and data are collected and presented in a specified manner.
- 3) Once the clinical trial has been completed, another assessment can be performed using the new data collected through the trials. If the new data yield valid clinical and/or economic findings for the investigational technology, payers may formulate a definitive coverage policy (coverage or non-coverage).

Exhibit 1: “Conditions” of coverage



C. Technology-specific paradigms for a conditional coverage program

One of the underlying challenges in designing and implementing conditional coverage programs is deciding what aspects of such programs should be systematized, and what aspects should remain flexible (i.e., tailored to technology-specific attributes). Summit participants concurred that differences among the needs and priorities of payers and other decision-makers as well as inherent differences among types of technology may warrant the establishment of adaptable or customized approaches to conditional coverage. These approaches or paradigms should be developed in such a way as to enable equitable consideration of different technology types.

Whether for purposes of device R&D, regulation, or payment, differences among technology have implications for research design and interpretation of data. Three broad categories of medical technology according to its physical nature include: drugs, devices, and procedures.² Another way to categorize technology is by its application, including: prevention, screening, diagnosis, treatment, rehabilitation, and palliation. The use of technology-specific regulatory approval processes by the FDA and other national and international regulatory agencies suggests the need for considering an appropriately adaptable approach in coverage decisions. Certainly, the FDA process for regulating market entry for new drugs was not appropriate for medical devices, and the FDA uses alternative approaches for regulating different classes of devices. Technology-specific paradigms for conditional coverage would have to address such factors as those shown in Exhibit 2: the nature (attributes) of the technology, appropriate tools for scientific validation of the technology, and related financial implications.

Exhibit 2: Diverse attributes of medical technology

	Drugs	Devices	Procedures
Nature of the technology	New drugs typically represent distinct or novel molecular entities. They are typically the focal therapy for a health problem with direct, measurable effects on health outcomes	New devices tend to be generational advances (modifications of predicate devices). They may have complementary or indirect effects on health outcomes, such as in the cases of diagnostic tests or imaging.	New procedures may embody new drugs and/or devices; other procedures may involve existing drugs or devices (e.g., a new surgical procedure using conventional instruments) or none at all.
Tools for scientific validation	Clinical trials, particularly multiple, large, double-blinded, placebo controlled RCTs, play an integral role in the validation of drugs.	Certain attributes of clinical trials that are appropriate for drugs often are impractical for devices (e.g., blinding, placebo control). Extensive new RCTs may not be appropriate for new devices that represent only generational advances of predicate devices.	Use of new procedures that embody new drugs or devices is subject to regulatory requirements for those embodied technologies, so role of a device in such a procedure is evaluated. Procedures that involve approved drugs or devices (or neither) generally are not subject to regulatory approval.
Financial ramifications	New drugs and devices usually have some patent protection, though effective market exclusivity for devices is often shorter than patent life as competitors can “invent around” device patents easier than new molecular entities. Lack of patent protection can diminish financial incentives for developing new technologies.		Procedures generally do not have patent protection, so sponsors cannot rely on market exclusivity to recoup investment in clinical trials and related scientific validation of the procedures. ³

² Broad definitions of technology include broader and more specific categories, e.g.: drugs, vaccines, blood products, etc.; devices, equipment, and supplies; medical and surgical procedures, and organizational and administrative systems used in health care.

³ Although highly controversial, patents on medical procedures and techniques are becoming more common in the last decade. A recent high-profile example concerns patenting of a “chevron” incision used in ophthalmologic surgery. Proponents of these types of patents argue that patenting is necessary to promote procedural advances. Opponents, including the American Medical Association, view this as unethical and against the principle of sharing information across the medical community.

The development of technology-specific paradigms for conditional coverage must be responsive to such issues as the following.

- 1) The extent to which clinical and economic outcomes can be causally linked to technology may differ among drugs, devices, and procedures.
- 2) The tools for scientific validation vary according to the nature of the technology (drugs, devices, or procedures) and to the specific attributes of the technology. Randomized clinical trials (RCTs) of the types used to validate drugs can have distinct limitations for validation of many devices and procedures. Also, while certain of its evaluative aspects are relevant across types of technology, the considerable recent interest and advances in pharmacoeconomics (based on economic studies of pharmaceuticals) are more concerned with drugs than for devices or procedures.
- 3) Given the vulnerability of market exclusivity (e.g., limited practical utility of patent protection) for many devices, conditional coverage that provides even limited patient access and revenue for use of investigational devices may have significant impact on the development and ultimate availability of those devices for patients in need, as well as on the viability of the sponsoring device companies.

III. PRIORITY SETTING

Conditional coverage decisions are not binary. Instead of the coverage/non-coverage dichotomy, conditional coverage allows investigational technologies to receive coverage under certain conditions. A challenge to developing and implementing a conditional coverage program is to define a threshold at which new technologies are considered eligible for conditional coverage. Summit panelists agreed that not any technology should be eligible for conditional coverage, and that some threshold of promise or potential should be evident for consideration of conditional coverage. A defined set of criteria can be used to determine the eligibility of new technologies for conditional coverage, as well as to set priorities among new technologies, as appropriate.

A. Benefit language

Benefit language, or the contractual language defining the technologies or procedures covered by a health plan, can have a large impact on the coverage decision-making process. Exclusionary clauses in such language can deny coverage for a technology that is subject to clinical investigation (or is otherwise designated as “investigational” or “experimental”). While an exclusionary clause can serve as the basis of a general coverage policy that is applied to all patients enrolled in a health plan, “medical necessity” clauses guide implementation of coverage decisions on individual patients. Medical necessity clauses can deny coverage on the grounds that an investigational technology is not reasonable or necessary in the diagnosis and/or treatment of a health disorder for a given patient. While exclusionary clauses remain integral to the coverage-related policies of many payers, there is growing agreement that exclusionary clauses should no longer suffice as the basis for non-coverage policies. As discussed by summit panelists, payers are shifting away from the use of exclusionary clauses to substantiate coverage decisions and toward evidence-based approaches to coverage decision-making.

Another reason for challenging the practical utility of these contractual clauses is that the uncertainties and ambiguities arising from interpretations of this language can introduce variability into the criteria and processes used to determine coverage eligibility. Inconsistencies in coverage decision-making may subject beneficiaries to unfair and inconsistent decisions regarding access to care, and may compromise the quality of care afforded to them.

“Experimental” or “investigational” exclusions can, effectively, treat all clinical trials as if they are the same; as long as a technology is being evaluated in any such clinical trial, payers may consider the technology to be investigational by definition of its being used in such an investigation. As described during the summit meeting, the Interregional New Technologies Committee (INTC) of Kaiser Permanente has had to deal with the lack of standard, widely accepted definitions for “experimental” and “medically necessary.” While a payer may establish definitions for these terms in its contracts, it may also overlook these, intentionally or unintentionally, and cover a technology that is considered to be experimental or not medically necessary.

B. Defining criteria for determining eligibility for conditional coverage

The potential ambiguity and inconsistency of exclusionary policies in payer contractual language may warrant a more progressive policy that explicitly allows and describes eligibility for

conditional coverage. For example, rather than relying on exclusionary criteria, payers can develop “inclusionary” criteria for qualifying new technologies as eligible for conditional coverage. Inclusionary criteria may allow a new technology to be considered on certain individual merits (based on characteristics that make it a promising technology), rather than being labeled simply as “investigational.”

Criteria used to qualify technologies for conditional coverage must be distinguished from criteria used to qualify technologies for definitive coverage, or payment outside the investigational setting. Exhibit 3 lists the criteria used by the Blue Cross Blue Shield Association (BCBSA) to evaluate whether new medical treatments are effective enough to justify payment by the health plan. While the BCBSA criteria are used to form definitive coverage policy, they may serve as a model for inclusionary criteria for conditional coverage. Criteria for conditional coverage may not be as stringent as criteria for definitive coverage, as an underlying purpose of conditional coverage is to allow for the collection of evidence that may support a definitive coverage policy. An explicit set of criteria may introduce more consistency and transparency into the process of selecting technologies for conditional coverage.

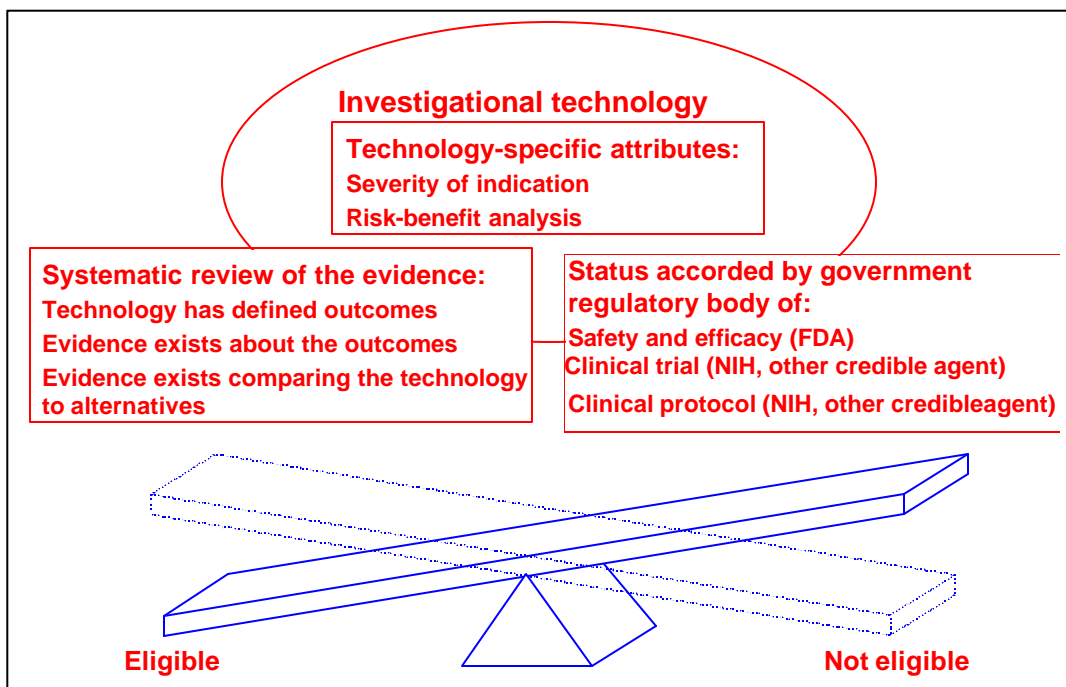
Exhibit 3: BCBSA criteria for definitive coverage policy

4The technology must have approval from the appropriate government regulatory bodies.
4The scientific evidence must permit conclusions concerning the effectiveness of the technology.
4The technology must improve the net health outcomes.
4The technology must be as beneficial as any established alternative
4The improvement must be attainable outside the investigational settings.

In addition to the BCBSA criteria, other criteria that may be relevant to qualifying new technologies for conditional coverage are the level of severity of illness of, or lack of viable treatment options for, the target clinical problem and the current stage of clinical research of the technology.

Exhibit 4 presents a set of criteria that can be used to qualify new technologies as eligible for conditional coverage. Such criteria should be made explicit by payers to clinicians, employers, technology sponsors, and other relevant stakeholders. The legitimacy of the process can be maintained only if the criteria are applied consistently to new technologies. The alternative to clearly defined and consistently implemented criteria is to allow for exceptions to be made to the benefits language. In such instances, technologies would more likely be evaluated on a per case basis, instead of against systematic requirements. Its flexibility notwithstanding, the drawback to such an approach is that repeated exceptions may diminish the legitimacy of the contractual language and introduce even more inconsistency and variability to the decision-making process. Also, exceptions to contractual language made for one technology and group of patients may raise legal challenges concerning why a payer has not made comparable exceptions for other technologies and patients.

Exhibit 4: Sample criteria for qualifying eligibility of new technologies for conditional coverage



Two systematic approaches to priority setting discussed at the summit, Aetna’s “promising” category and HealthPartner’s promising therapies methodology, serve as useful models, as follows. (This report does not endorse any particular model; the Aetna and HealthPartners approaches are presented here as examples of viable priority-setting approaches for conditional coverage.)

1. Aetna’s “promising” category

In 1991, Aetna developed a new category of coverage, “promising,” which was intended to allow Aetna to cover investigational technologies with the potential to become standard care. The promising category was established to increase the flexibility of coverage decision-making and to make it more consistent with clinical data. There were no data requirements for assigning a technology into the “promising” category. Aetna reviewed the available evidence to identify health outcomes and to determine whether the technology had high probability of achieving the desired outcomes. For technologies cited as “promising,” there were no requirements or constraints placed on the data collected in subsequent studies. The “promising” category is still used by Aetna-US Healthcare, and is applied most often to interventions for terminally ill patients.

2. HealthPartners’ promising therapies methodology

HealthPartners of Minnesota has established a process that determines a “grade” for recommending an investigational technology for conditional coverage. The process involves a literature review and additional research to collect data that can be entered into a matrix, as shown in Exhibit 5. The factors that are considered in determining a technology’s eligibility for

conditional coverage, shown in Exhibit 6, include: quality of the evidence, health outcomes, probability of success in achieving the health outcomes, and cost. The data are used to establish a grade (or strength) of recommendation as to whether the technology is promising and eligible for conditional coverage. Technologies assigned a grade of A usually become standard of care and receive positive coverage decisions, while technologies receiving grades of D or E are typically denied coverage and seldom revisited. Technologies receiving grades in the middle categories (B and C) may be qualified as eligible for conditional coverage, and may be revisited if they are initially disqualified for conditional coverage. The process of qualifying new technologies for conditional coverage is an ongoing process in the Promising Therapies program. Technologies can be revisited as they mature, since data may change over time, and information on long-term outcomes may be as important as information on short-term or intermediate outcomes.

Exhibit 5: HealthPartners' promising therapy grid

Date	Intervention	Quality of Evidence	Health Outcomes	Probability of Success	Cost	Strength of Conclusion	Status for Coverage Consideration
x-x-9-x	X Transplant	C All case series (56 cases)	1-2	60% 2 yr. graft survival 80% 2 yr. survival	\$100,000 \$XXX Annual cost for standard treatment	C	Experimental

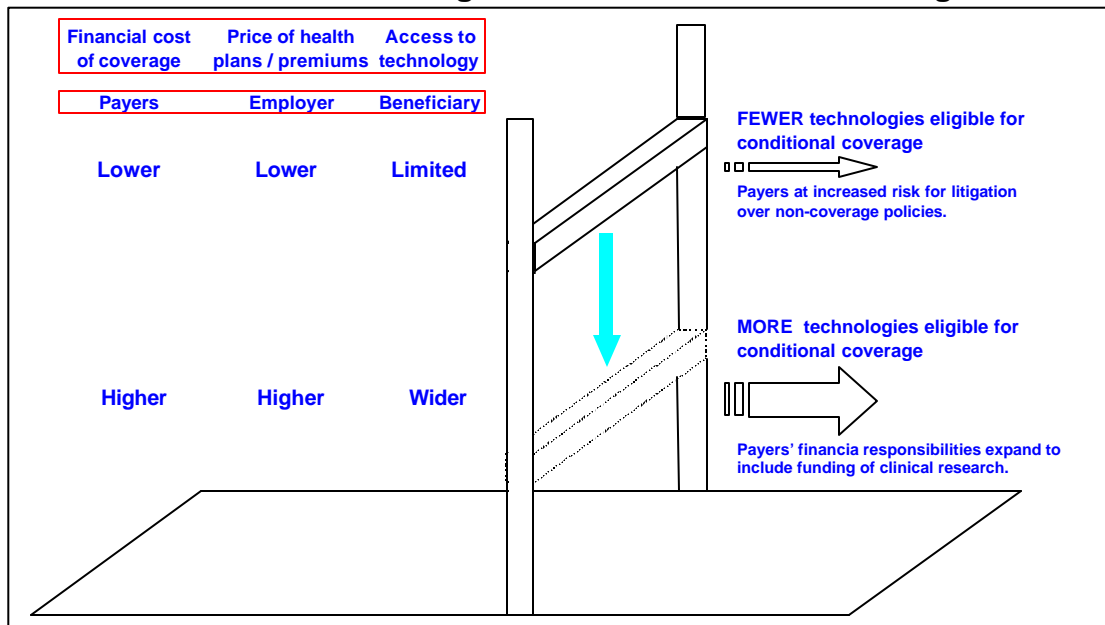
Exhibit 6: HealthPartners' criteria for promising therapy grid

Quality of Evidence		Health Outcomes
Primary Reports of New Data Collection	Reports that Synthesize or Reflect Upon Collection of Primary Reports	1. Significantly increased life expectancy
A. Randomized, control trial	M. Meta-analysis, etc.	2. Restored function to normal levels
B. Prospective cohort study	R. Review article, etc.	3. Improved function
Case-control study nested within a prospective cohort study	X. Medical opinion	4. Palliative/minimal increase in life expectancy for terminal condition
C. Nonrandomized trial with concurrent or historical controls		5. Custodial/cosmetic/convenience
Case-control study (except as above)	Research report quality categories	
Retrospective cohort study	Plus (+), Minus (-) or Neutral (Ø)	
Study of sensitivity and specificity of a diagnostic test		Strength of Conclusion
Population-based descriptive study	Conclusion Grades	A. Good evidence to support the conclusion
D. Cross-sectional study	Grade I: Supported by good evidence	B. Fair evidence to support the conclusion
Case series	Grade II: Supported by fair evidence	C. Insufficient evidence to conclude for or against
Case report	Grade III: Supported by limited evidence	D. Fair evidence to support the evidence against
	Grade IV: Supported only by opinion	E. Good evidence to support the evidence against

C. Lowering the threshold

A defined set of criteria would establish a bar or threshold that new technologies must reach in order to be considered eligible for conditional coverage. A high threshold (rigorous criteria) would limit the number of technologies eligible for conditional coverage, while a low threshold (flexible criteria) would increase the number of technologies eligible for conditional coverage. As shown in Exhibit 7, the height of the bar has ramifications on the financial responsibilities of payers and employers, and on beneficiary access to new technologies. A high bar that limits access to new technologies also would limit the financial responsibility of payers and employers. A low bar, by contrast, would increase beneficiary access to new technology, thus potentially increasing the financial responsibility of payers and employers. Setting the height of the bar would require focused consideration of the interests of relevant stakeholders. Employers, for instance, may not be willing to pay higher premiums to health plans, while payers may not want to take on the additional responsibility of funding clinical research.

Exhibit 7: Lowering the bar for conditional coverage



The height of the bar may have legal ramifications as well. A higher bar may place payers at increased risk for litigation over non-coverage policies, particularly in cases where the technology in question is targeted for a high profile indication such as breast cancer or a serious pediatric condition. At the same time, the bar cannot be lowered too far, since coverage of a large number of investigational technologies may shift the focus of payers' financial responsibilities from coverage of promising technologies with some evidence of clinical merit to funding of clinical research on unpromising technologies with no, or very limited, evidence of clinical merit. The funding of clinical research as such is generally considered to be outside of payer responsibilities. The 1995 FDA-HCFA Interagency Agreement on Category A and B investigational devices (discussed below) is a mechanism that has lowered the bar for coverage by extending eligibility for Medicare coverage to devices that largely comprise improvements on predicate devices that have already been validated.

D. Systematic evaluation of the available evidence

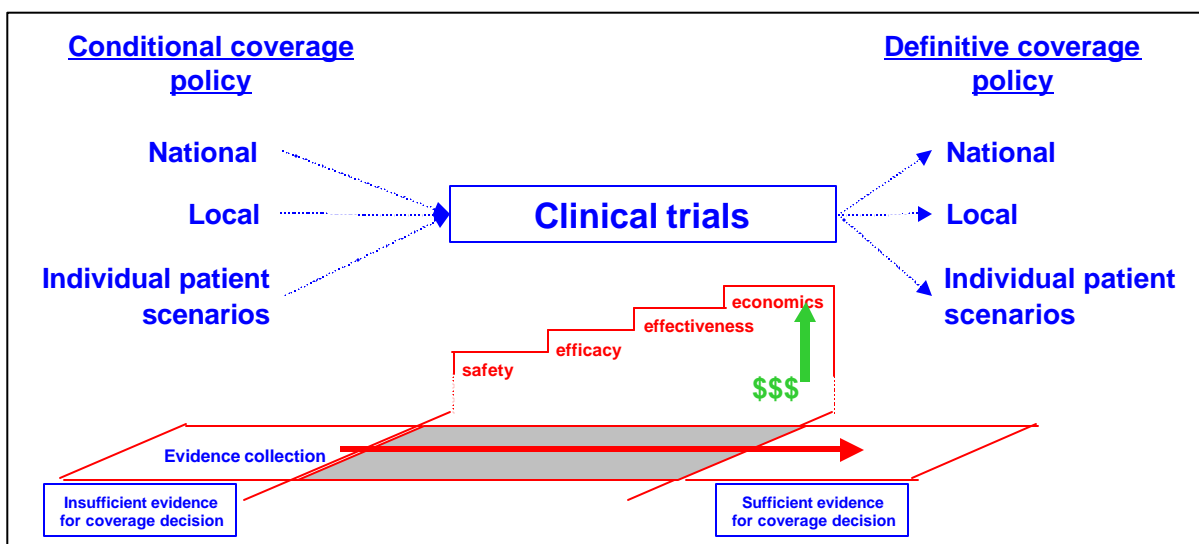
A system must be in place that would allow for the determination of whether a new technology meets the criteria for conditional coverage. This may take the form of a systemic evaluation of the available evidence, consisting of a literature review and/or a risk-benefit analysis. A systematic approach to qualifying technologies for conditional coverage also may assign relative weights to the criteria considered in the decision-making process. Panelists noted that, rather than simply accounting for the level of severity of the targeted indication, the known or anticipated risks of using an investigational technology should be weighed against the potential benefit it may have on patients, including but not limited to patients with life-threatening disease. Thus, higher-risk technologies may be eligible for conditional coverage for patient indications that are severe or life-threatening, particularly where no other viable treatments exist, but not for less severe indications. Similarly, lower-risk technologies also may be eligible for conditional coverage for less severe patient indications. Still, severity of illness may be a determinant of the amount of evidence needed to qualify a technology for conditional coverage. For life-threatening diseases, a promising technology that offers even marginal opportunity for improvement may be given high priority and be subject to less rigorous evidence requirements to qualify for conditional coverage. For a non-threatening disease in an otherwise healthy person, a promising technology that offers only marginal opportunity for improvement may be given low priority and be subject to more rigorous evidence requirements.

E. Defining the scope of conditional coverage: national versus local

An underlying question regarding the implementation of conditional coverage programs concerns the scope of coverage. Conditional coverage could apply to all beneficiaries within a health plan or to individual patients. Along the same lines, coverage decisions could translate into a national coverage policy, or coverage policies restricted to beneficiaries or individual patient scenarios. The determination of the scope of a definitive coverage policy can be reserved until after evidence has been collection proving the value of a new technology, thus allowing the decision to be made based on the patient subgroups shown to be associated with the best outcomes. The scope of conditional coverage, however, must be determined at the priority-setting stage (Exhibit 8).

The decision of whether conditional coverage should apply at the national, local (health plan), or individual patient level is dependent on many factors, including judgments of the risk-benefit and the prevailing legal environment. Local practice patterns may dictate higher or lower thresholds. The presence of centers of excellence may facilitate conditional coverage of certain more advanced technologies or those requiring special tertiary care resources. Serving a competitive market area could encourage plans to provide conditional coverage options as an enrollment incentive. Of course, individual health plans often provide care to multiple employer groups and other enrollee groups, each of which may negotiate broader or narrower coverage, so that an individual plan may offer conditional coverage to some enrollee groups and not to others.

Exhibit 8: Scope of coverage



1. Cooperation among relevant stakeholders

Summit participants generally concurred that there is insufficient consistency among stakeholders in the selection and evaluation of new technologies. Lung volume reduction surgery may serve as an example of how differing thresholds for evidence and coverage decisions may lead to delays in the validation of, and coverage policy formation for, new technologies. The Health Care Financing Administration (HCFA) and various private payers have taken different paths on coverage decisions pertaining to LVRS. While some payers were in the process of evaluating the technology for coverage, policies enacted by other payers allowed thoracic surgeons and pulmonologists to use LVRS in clinical practice. Early diffusion of the technology appears to have delayed a more coordinated data collection effort that could have provided more rigorous findings regarding appropriate use of the technology. It was not until HCFA and the National Heart, Lung and Blood Institute (NHLBI), prompted by the Agency for Health Care Policy and Research (AHCPR), decided to conduct a multicenter RCT to evaluate the technology that some payers decided to reconsider their coverage policy for LVRS. The earlier fragmented approach to coverage for the procedure has already delayed a coordinated, systematic effort to evaluate the technology, and the National Emphysema Treatment Trial (NETT; the randomized study of LVRS) is expected to entail several more years.

Stakeholders are considering approaches to facilitating interagency (or other multi-organizational) cooperation in conditional coverage. Certainly, achieving broader interagency involvement may require overcoming more bureaucratic hurdles. Once implemented, it may enable more sweeping studies and definitive findings. Positive findings, i.e., leading to favorable coverage decisions for technology sponsors, may speed technological diffusion; however, negative findings may halt such diffusion. In contrast, more fragmented conditional coverage efforts offer chances for smaller-scale “wins” as well as “losses.” As discussed below, some summit participants consider that professional societies should get more involved in the

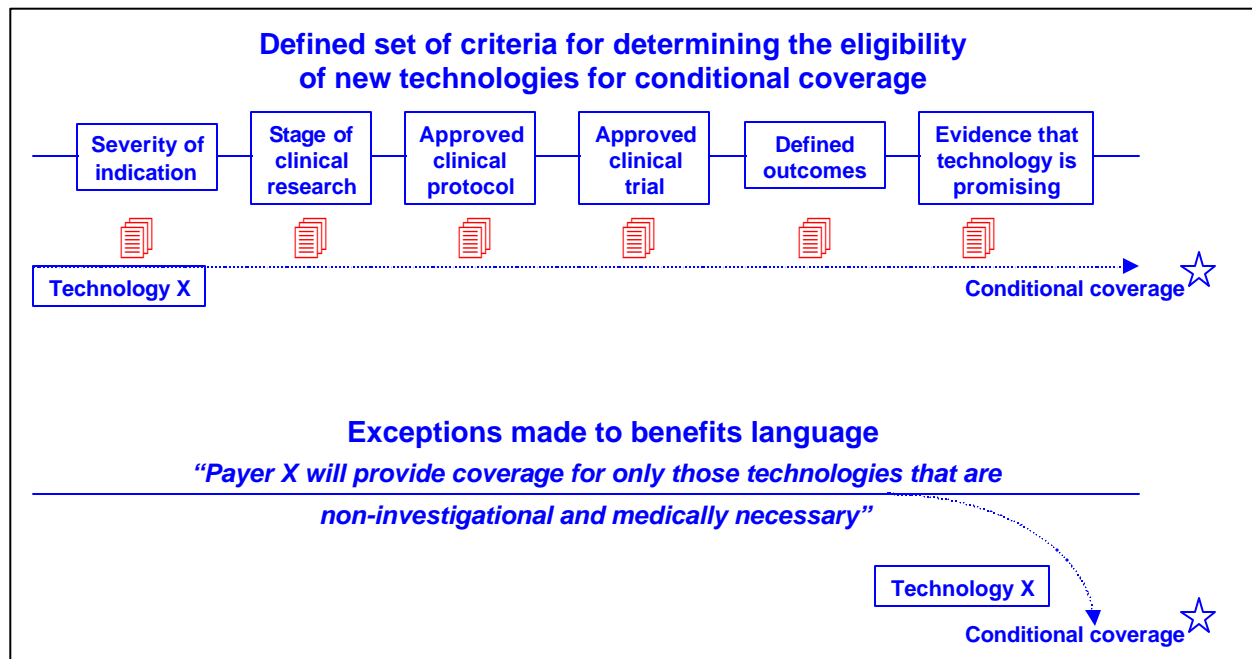
evaluation process in order to better incorporate clinical and patient-oriented considerations in conditional coverage.

2. National priority setting standard – a form of external validation

Policy innovations such as conditional coverage are subject to controversy and criticism. Since payers may be hesitant to participate in a conditional coverage program due to the downside financial risks and further pressure to expand coverage, a form of external validation may provide some assurance (and defensibility) for their decisions. One panelist suggested that to assist payers in setting priorities among candidate technologies for conditional coverage, it may be conducive to establish a web site listing the priorities for conditional coverage (either by indication or by technology), giving payers a broader context for their decisions. It may be appropriate for a national body to be assigned the responsibility of creating and maintaining the web site, particularly if it is used to facilitate any coordinated effort to consider technologies for conditional coverage.

Exhibit 9 summarizes two general approaches to priority setting. The first approach is to define a set of criteria for qualifying new technologies as promising candidates for conditional coverage. Such criteria must be applied consistently to new technologies. The alternative to a clearly defined set of criteria is to allow for exceptions to be made to the benefits language. In such a case, technologies more likely would be evaluated on a per-case basis, instead of being evaluated against systematic requirements.

Exhibit 9: Criteria and exceptions: two approaches to priority setting



IV. CASE STUDY: FDA CATEGORIZATION OF A & B INVESTIGATIONAL DEVICES

A 1995 Interagency Agreement between FDA and HCFA established a system for determining whether an investigational device is eligible for coverage by HCFA. (See background paper, Priority setting for conditional coverage). At the time that FDA grants an Investigational Device Exemption (IDE), allowing clinical investigation of a new device, the agency also places the device into one of two main categories. Category A devices are typically novel, first-of-a-kind devices, which remain ineligible for Medicare coverage. Category B devices are typically newer generations of devices already approved for marketing, which are eligible for Medicare coverage.

A. Reasons for and consequences of the Interagency Agreement

The Interagency Agreement was instituted in part because of the increasing recognition that many devices that are granted FDA-approved IDEs⁴ for clinical testing were, by designation as “investigational,” excluded from coverage, though they may represent only marginal changes to currently covered devices that have been demonstrated to be safe and effective.

The Interagency Agreement recognizes other concerns regarding non-coverage policies for medical devices. Many device companies are small (approximately 80% of device companies have fewer than 50 employees), particularly compared to pharmaceutical companies, with very limited resources for conducting clinical trials. In the absence of revenue flow to recover at least some of the costs of clinical research, the timing of trials sponsored by some companies may be delayed or their protocols may have to be restricted. Patient recruitment may be slowed or fail to reach magnitudes needed to determine the safety and effectiveness of devices; data collection may be curtailed by limiting patient follow-up or the number of clinical and economic endpoints assessed. To the extent that conditions for conducting clinical trials and gaining payment are more favorable overseas, patient access in the U.S. may be delayed. Taken together, these factors can delay determination of the clinical and economic value of technologies, delay or reduce access to proven technologies, and increase the risk to companies of pursuing innovation.

To date, the FDA has categorized more than 1,100 IDEs into one of the two categories (A or B). In 1995, the first year of the agreement, 6% of IDEs were assigned to Category A, and thus were ineligible for Medicare coverage, and 94% were assigned to Category B. Recently, however, due in part to the growth of ophthalmic lasers, the percentage of devices with IDEs assigned to Category A has increased, so that about 8-12% of IDE devices are assigned to Category A each year).

Exhibit 10 lists the A and B subcategories. Most devices with an IDE assigned to Category B fall into the first three of six subcategories (B1-B3), indicating that the device is under study for a 510(k) (premarket notification clearance) to show substantial equivalence.

⁴ Summit participants indicated that IDEs have served as a de facto indication that such devices are not “reasonable and necessary,” and Medicare coverage was denied for a device under an IDE that had not yet received pre-market notification clearance (510(k) clearance) and/or Pre-Market Approval (PMA). Devices that are refinements or replications of existing technologies receive IDEs in order to enable gathering data to establish their safety and efficacy.

Exhibit 10: FDA-approved IDE categories

Category A: Experimental
1. Class III devices of a type for which no marketing application has been approved through the pre-market approval (PMA) process for any indication for use
2. Class III devices that would otherwise be in Category B but have undergone significant modification for a new indication or use
Category B: Non-experimental/Investigational
1. Devices, regardless of classification, under investigation to establish substantial equivalence to a predicate device, i.e., to establish substantial equivalence to a previously/currently legally marketed device
2. Class III devices whose technological characteristics and indications for use are comparable to a PMA-approved device
3. Class III devices with technological advances compared to a PMA approved device, i.e., a device with technological changes that represent advances to a device that has already received pre-market approval (generational changes)
4. Class III devices that are comparable to a PMA-approved device but are under investigation for a new indication for use. For purposes of studying the new indication, no significant modifications to the device were required
5. Pre-amendments Class III devices that become the subject of an IDE after FDA requires premarket approval, i.e., no PMA was submitted or the PMA was denied
6. Non-significant risk device investigations for which FDA required the submission of an IDE

Subcategories B2 and B3 are for “me-too” devices (whose technological characteristics and indications for use are comparable to a PMA-approved device) and generational advances, or for devices under investigation for a new indication. Exhibit 11 lists some indicators for the success as well as some concerns about the Interagency Agreement that were expressed at the summit.

Exhibit 11: Indicators for the FDA/HCFA Interagency Agreement

Indicators for the success of the FDA/HCFA Interagency Agreement	Concerns regarding the FDA/HCFA Interagency Agreement
The quality of clinical trials is improving (e.g., patient recruitment has been facilitated).	Local carriers do not follow the agreement (and are not required to).
Device companies do not have to be asked to perform a second, confirmatory study.	B1-B3 devices are most likely reimbursed, while B4 devices are not likely to be reimbursed.
Medicare beneficiaries have increased access to advances in proven technologies.	Care provided to patients in control groups in clinical trials for Category A devices may not be reimbursed.

The Interagency Agreement states that HCFA will pay for a new IDE device, but only in an amount equal to or less than the technology that replaces, usually its predicate device. There may be cases, however, where a device has no predicate or its predicate is indeterminable. For devices that have received premarket notification clearance, predicate devices may have entirely different uses. FDA may have to clearly describe how predicate devices should be identified and used to guide payment for new IDE devices.

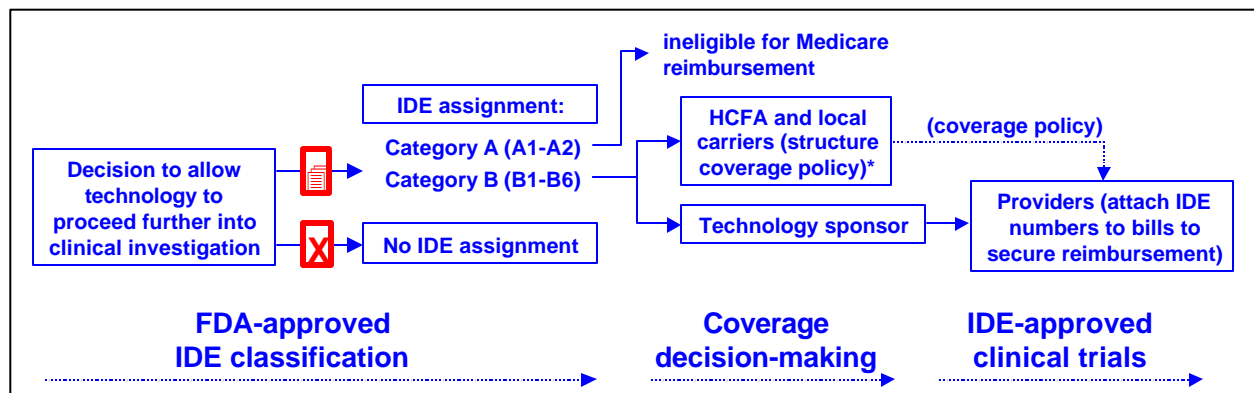
Some summit participants suggested that Category A devices should be covered too, based on their potential clinical and/or economic value. With a new device, it may be more important to look not at the initial cost and outcomes of the device, but at the cost and outcomes of the device as it matures. In this view, a device with a high potential for health benefit and low cost potential, for example, should have high priority for conditional coverage regardless of whether it is assigned to Category A or B. Determining the potential health benefit of a new device may

include evaluating the technology’s potential marginal benefit relative to existing technologies for the targeted indication(s). A new device targeted for an indication for which several alternative treatments already exist may have low potential marginal benefit, while a technology for a new indication may have high potential marginal benefit because it addresses a new public health concern.

B. Implementation

When FDA makes a decision to allow a device to proceed further into investigation, it assigns the IDE to Category A or B (and to a subcategory). (If FDA decides against permitting clinical investigation of a new device, it does not assign an IDE). FDA transmits the IDE categorization and relevant information to HCFA. Any of the various Medicare carriers can approve the technology for payment within the context of an IDE-approved clinical trial. HCFA also may choose to make a national coverage decision, i.e., a policy requiring coverage or non-coverage by all Medicare carriers for the device. FDA also gives the IDE category and relevant information to the technology sponsor. The technology sponsor in turn can provide the information to providers, enabling them to be reimbursed for using the device if their Medicare carrier has chosen to pay for the particular Category B device. Exhibit 12 diagrams the categorization system that enables an investigational device to receive reimbursement.

Exhibit 12: Reimbursement pathway for investigational devices



*HCFA and local carriers may wait for FDA approval (510(k) or PMA) before structuring a coverage policy

One panelist suggested that in structuring a national non-coverage policy, HCFA should no longer use exclusionary clauses to deny coverage on the basis of “experimental” or “investigational” designation. Further, to justify a non-coverage policy, HCFA should review the available evidence and show how the data warrants non-coverage policy for a new technology. HCFA and local carriers should be able to make a non-coverage policy for a Category B device as long as the decision is based on a review of the data and not on exclusionary clauses.

In addition to granting premarket approval and IDEs classifications, FDA, as a Public Health Service agency, may take on an advisory role in IDE trials. FDA may have responsibility for reviewing the clinical trial protocol, and for determining whether the risks and benefits of the new device justify allowing the clinical trials to proceed. The FDA may also play a role in

monitoring IDE studies, in such capacities as ensuring that a device is not used or reimbursed outside of the IDE trials.

C. FDA and HCFA roles in the Interagency Agreement

FDA and HCFA have distinct responsibilities in the Interagency Agreement. FDA assigns IDEs to one of two categories to determine the eligibility of new devices for Medicare coverage. In addition, FDA grants premarket approval (premarket notification clearance, or 510(k), and/or premarket approval, or PMA) to new devices on the basis of safety and efficacy. HCFA is responsible for structuring national coverage policies for new devices, as appropriate. Though Category B devices are eligible for Medicare coverage, the designation does not require HCFA or local Medicare carriers to pay for the technology.

1. FDA-approved IDE categories versus FDA-approval (510(k) or PMA)

Once FDA assigns an IDE to Category B, HCFA can develop a coverage policy for the technology. HCFA, however, may still wait for FDA approval (510(k) or PMA) to make a coverage decision. An illustrative example discussed at the summit involved transmyocardial revascularization (TMR). PLC Medical Systems is the manufacturer of a laser used for TMR, a technology used to revascularize the heart in patients who are not candidates for traditional revascularization procedures such as percutaneous transluminal coronary angioplasty (PTCA) or coronary artery bypass graft surgery (CABG). Three IDEs for TMR were assigned to Category B. In 1996, when HCFA considered national coverage for TMR, the agency did not address whether it was appropriate for the technology to be assigned to Category B, but instead focused its position on the fact that the technology had not yet received FDA approval. While the IDE categorization system provides a way for technologies to receive earlier coverage decisions (based on coverage eligibility), HCFA may still require a more definitive assessment of safety and efficacy (provided by FDA premarket approval) prior to making a coverage decision.

2. Timing of FDA approval relative to HCFA coverage policy formation

While one panelist held the view that the IDE categorization system should reduce reliance on FDA premarket approval to proceed with coverage decision-making, another panelist held an alternative view. The clinical trial protocol for TMR had already been completed when FDA stated that an RCT was not necessary and that it would consider the available data. Since the protocol was complete, HCFA wanted to make a more permanent decision ahead of FDA approval. In the first review, however, the FDA advisory committee recommended non-approval for TMR, which led to the conclusion that it may not be safe for HCFA to structure a coverage policy in advance of FDA approval.

3. FDA and HCFA evaluate a technology differently

TMR involves incorporating an FDA-approved device into a new surgical procedure. The device was assigned to category B4 (an approved device under investigation for a new indication). To structure its coverage policy, HCFA evaluated both the laser (whether the device functions as a heart laser) and the whole surgical procedure (whether the device led to good

outcomes when used to revascularize a patient’s heart). In contrast, FDA focused primarily on the laser, which led it to assign the device to Category B.

Exhibit 13 illustrates the separate roles FDA and HCFA have in structuring coverage policy for investigational devices. FDA assigns an IDE to Category A or B to determine eligibility for Medicare coverage. HCFA and local carriers structure national and regional coverage policies, respectively, based on whether the technology is “reasonable and necessary” within the parameters defined by an IDE-approved clinical trial (designated medical centers, patient indications, etc.). If HCFA or local carriers decide to cover a device, the payment must be equal to or less than the cost of the predicate device. Local carriers and HCFA can also decide not to cover a device that is eligible for Medicare coverage (Category B devices), but should base that decision on a thorough review of the evidence, and not on an exclusionary clause. HCFA and local carriers may also wait for FDA approval (510(k) or PMA) before structuring a coverage policy.

Exhibit 13: FDA and HCFA (and local carrier) roles in structuring coverage policies for investigational devices

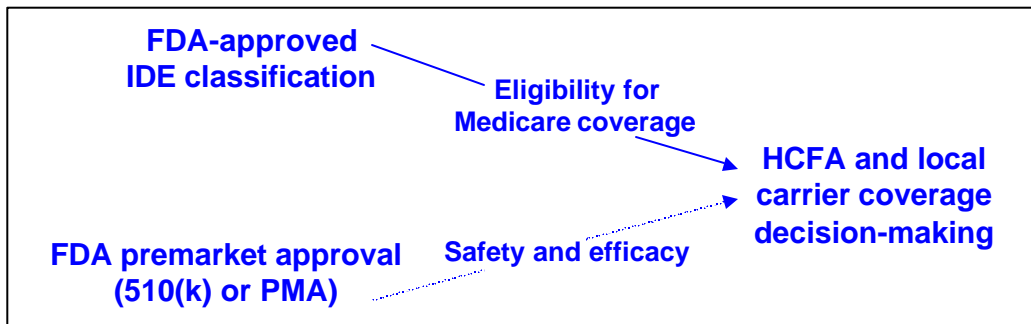
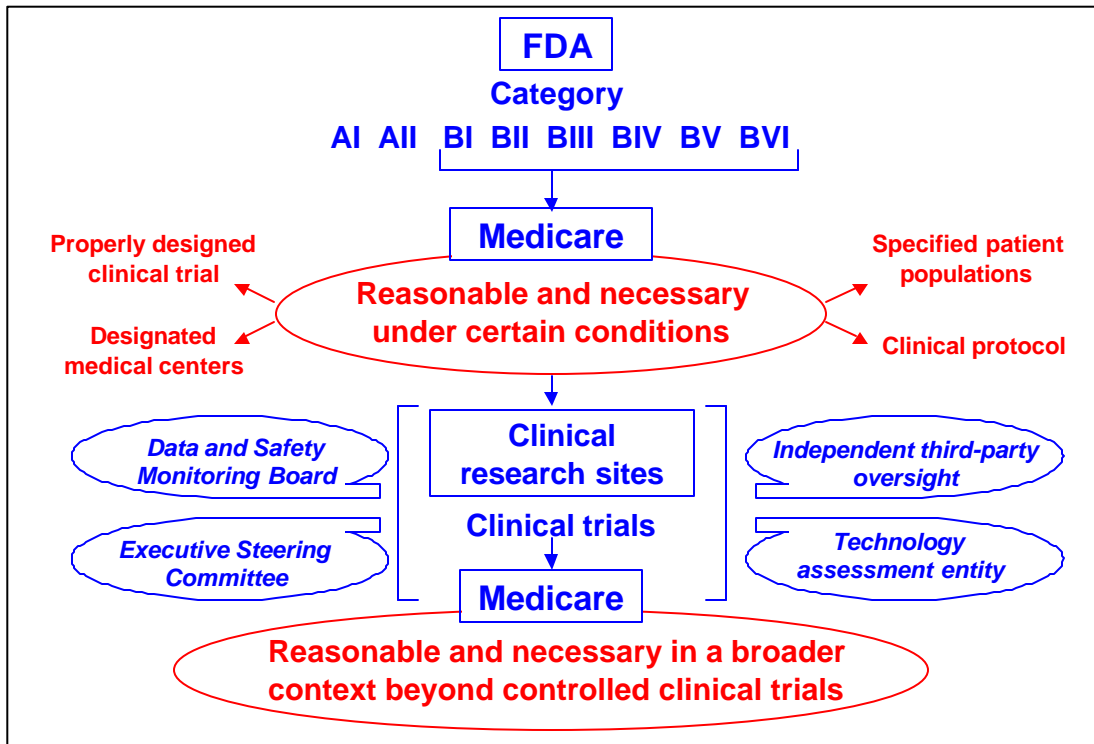


Exhibit 14 illustrates the role of the Interagency Agreement in the broader context of a conditional coverage program. FDA assignment of an IDE to Category A or B (and to the appropriate subcategory) may serve as a basis for a Medicare coverage decision. If HCFA and/or local carriers decide(s) that more data is needed to structure a coverage policy, it/they may choose to provide coverage under such conditions that data will be collected to support a definitive coverage decision. Academic medical centers and other sites and organizations could conduct and provide oversight for the clinical trials. Once data have been collected for determining the clinical and/or economic value of the technology within the conditions of the clinical trials, HCFA and/or local carriers can consider expanding coverage beyond the context of clinical trials (i.e., extending coverage beyond the conditions of conditional coverage).

Exhibit 14: Role of Interagency Agreement in conditional coverage



V. EVIDENCE COLLECTION

Medical evidence generated by clinical investigation of new technologies informs coverage decisions. Two main challenges in meeting evidence requirements are: 1) determining what types of evidence should be collected (based on requirements for clinical and coverage decision-making), and 2) deciding on a sound and appropriate methodology for evidence collection.

A. Alternative and appropriate methods for evidence collection: an example

With the shifting interest in evidence-based methods for coverage decisions, clinical trials must be designed in such a way that relevant outcomes are generated to meet evidence requirements. Safety and efficacy must be demonstrated for pharmaceuticals to receive FDA approval for marketing. The evidence threshold for coverage decisions, however, also may include cost-effectiveness or other economic impacts. Efficacy might not be considered sufficient evidence for payers if clinical trial results are not considered applicable in clinical practice for their respective patient populations. Alternative models of evidence collection may generate effectiveness, or “real-world” data, as well as speed and lower the costs of evidence collection. One alternative approach discussed at the summit meeting is the Clinical Practice Improvement (CPI) model. The feasibility and comparative advantages of the CPI may need to be tested further against more conventional approaches such as RCTs to determine its legitimacy and competitive edge as a tool for scientific validation of new technologies.

1. *Limitations in the RCT*

Data derived from RCTs (and meta-analyses of those trials) may have practical limitations, e.g., for the following main reasons.

- 1) RCTs typically focus on evaluating the independent effect of a particular intervention while controlling for any other variables (co-medications, treatment patterns, etc.) that may confound the effect of that intervention on the endpoints or outcomes of interest. As such, RCTs evaluate efficacy in controlled environments that may not account for how factors other than the focal intervention, which may be present in real delivery settings, affect health outcomes.
- 2) Patient populations within RCTs generally are not representative of the patients seen in real clinical practice. Patient groups enrolled in RCTs usually are narrowly defined in order to screen out patients whose disease severity, co-morbidities, and other factors might confound the results. To the extent that any patient differences that might affect outcomes do exist among the patients meeting trial inclusion criteria, randomization is intended to distribute such differences equally among the intervention and control groups. As such, RCTs are less able to evaluate the effects of an intervention on various patient subgroups, limiting the generalizability (or external validity) of the trial results to these other populations who might receive the intervention in actual clinical practice.

The results of RCTs often show that patient outcomes in the control groups are better than what is experienced by patients given the standard or control intervention in real clinical practice. Aside from placebo effects, this is due, at least in part, to the more intense care that patients in the control and intervention groups typically receive in RCTs. This care may include more time

with nurses and other clinicians, more laboratory tests, and otherwise more careful patient monitoring. This effect of RCT participation can confound the effect of the investigational technology on clinical outcomes.

Methodologists and clinicians concur that there is a need to go beyond the controlled environments of RCTs and evaluate the effects of the intervention in actual clinical practice, inclusive of the broader range of patients to whom the technology may apply. The CPI approach presented at the summit is an example of an alternative methodology intended to render results that are based on and applicable to everyday clinical practice.

2. CPI: a multi-dimensional evaluation of a new technology

The CPI model accounts for differences among patients, which are used in subsequent analysis to determine the patient subgroups for which the treatment is associated with the best outcomes. In addition to the focal intervention, the CPI model tracks other aspects of the treatment process such as co-medications, and divides the treatment process into detailed process steps so that subsequent analysis can determine what aspects of the treatment are associated with the best outcomes. When these various dimensions are put together, the CPI is intended to give a comprehensive picture of how the treatment is associated with various types of outcomes, e.g., clinical outcomes, health status outcomes, cost, length of stay (LOS), and encounter outcomes.⁵ Exhibit 15 lists the differences between the CPI model and RCT with respect to patient selection, process, and outcomes. (This report does not endorse any particular model or methodological approach; CPI is presented here as an example of a viable alternative to RCTs for purposes of data collection for conditional coverage.)

Exhibit 15: CPI model compared to RCT

	CPI	RCT
Patient Selection	<ul style="list-style-type: none"> - Any patient characteristics (co-morbidities, level or severity, etc.) that could potentially bias the results are measured - All patients qualify - More heterogeneous patient population 	<ul style="list-style-type: none"> - Rigorous screening seeks to minimize effects of patient characteristics on outcomes - Only small percentages of patients screened may qualify for RCTs - More homogenous patient population
Process	<ul style="list-style-type: none"> - Measures additional elements of care to determine what effect their interaction with the intervention may have on outcomes - Measures simultaneous elements of the process of care, and feedback is used to develop a dynamic protocol 	<ul style="list-style-type: none"> - Specifies explicitly every important element of the process of care for both the treatment and control arms (standard, enforced protocol) - Protocol variations may result in excluding patients or data from evaluation
Outcome	<ul style="list-style-type: none"> - Effectiveness - Results are broadly applicable because studies are based on everyday clinical practice 	<ul style="list-style-type: none"> - Efficacy - Results may not be broadly applicable because studies are based on controlled circumstances

⁵ Horn SD. The Clinical Practice Improvement (CPI) Model and How It Is Used to Examine the Availability of Pharmaceuticals and the Utilization of Ambulatory Healthcare Services in HMOs: Results from the Managed Care Outcomes Project (MCOP). *Pharmacoeconomics* 10 (Supplement 2, 1996):50-55.

The CPI model differs from the RCT in that it assesses and adjusts for differences among patients (to determine which patients are associated with the best outcomes), and for the detailed steps in the treatment process (to determine which one is associated with the best outcomes). The CPI assembles a three-dimensional framework consisting of patient variables, process variables, and outcome variables, and renders results that are broadly applicable because the studies are based on everyday clinical practice instead of on controlled circumstances.

The CPI model often involves massive data collection, but since it is performed in actual clinical practice, the costs of doing such studies can be much lower than the costs of traditional RCTs, where the rigorous screening process and additional procedures (for data collection and patient monitoring) add significantly to research costs.

B. Partners Healthcare initiative: fast-tracking the evaluation process

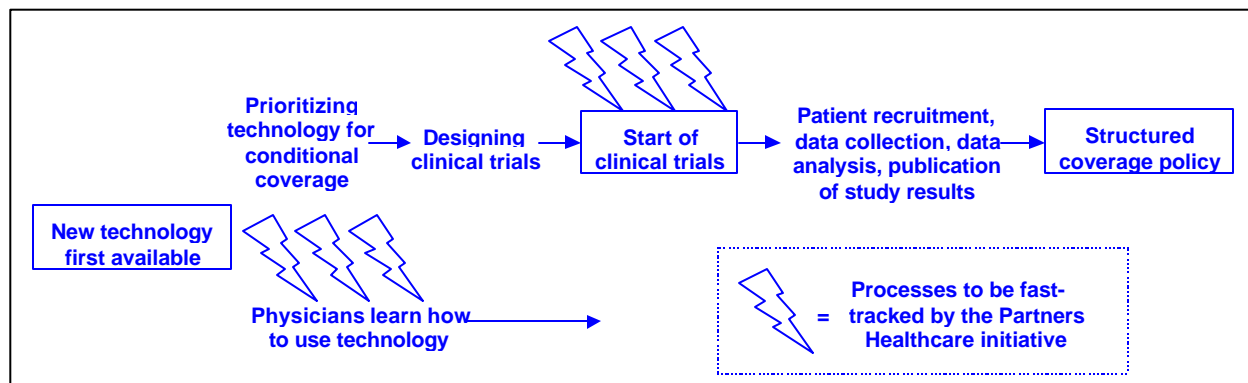
From the perspectives of clinicians, patients, and technology sponsors, there is concern about the lag time from the availability of a new technology for clinical use and the time that it can be reimbursed. Initiatives that would hasten consideration and appropriate evaluation of a technology would allow earlier decisions to dispense with or adopt technologies for improving patient health and/or cost-effectiveness. LVRS serves as an example; it did not undergo a prospective randomized study until three years after it was first available, and the study will take another several years to complete. Altogether, conclusions about the technology's clinical and/or economic value may not be available for seven-to-eight years or more after the technology was first available.

A current example of how time lags complicate making definitive clinical and coverage policies involves autologous bone marrow transplantation (ABMT, or stem-cell rescue) and high-dose chemotherapy (HDC). As RCT results emerged in 1999 indicating that ABMT/HDC for metastatic breast cancer is ineffective or only marginally beneficial, some advocates of the procedure are claiming that the procedure and the patient populations have changed enough since the start of these trials to supersede the relevance of these findings.

Partners Healthcare is currently developing a program that would teach physicians in certain technology-driven specialties – orthopedics, neurology, cardiology, and laparoscopic general surgery – to acclimate to new technologies more quickly and to evaluate them using a prospective, methodologically sound approach, independent of industry sponsorship. The system proposes to decrease the learning curve associated with new technologies using educational and discussion-oriented mechanisms such as expert panels, preceptor/preceptee arrangements, report cards, and most importantly, the establishment of a panel of expert institutions (centers of excellence). Working with HCFA, NIH, and various professional societies, Partners Healthcare will design and implement the program with the goal of reducing the time required to validate new technologies. Some stakeholders observe, however, that the time lag typically involved in evaluation processes may render study results clinically insignificant by the time they are released. Implementing the educational system in the designated specialty areas is intended to help fast-track the process and secure the timeliness and clinical relevance of study results.

Exhibit 16 shows the potential time lapses in the clinical investigation of new technology (spanning the point from which the technology is first available to the point at which a coverage policy has been determined and implemented). The Partners Healthcare initiative is specifically aimed at reducing the time lags in starting clinical trials and in physician acclimation to new technology. Some time lags are unavoidable, but others can be minimized by approaches similar to the Partners Healthcare initiative. Certain delays in the evaluation process are additive, i.e., in that a delay in an earlier stage results ripples through subsequent stages. If a clinical trial starts promptly after a technology first becomes available for clinical use, diffusion of the technology can be better mediated (i.e., by restricting access to participation in clinical trials), and controlled diffusion of new technology may expedite patient recruitment and the clinical trials.

Exhibit 16: Potential time lapses in the technology evaluation process



The ultimate goal of the Partners Healthcare initiative is to establish: 1) a sound methodology for teaching physicians how to use new technologies; 2) panels of excellence that can consistently serve as research sites for the evaluation of new technologies. Partners Healthcare hopes to involve payers and manufacturers in the process, as they would be integral to making new technologies accessible and promulgating educational programs concerning the new technologies.

As described in Exhibit 17, the CPI model and the Partners Healthcare initiative share certain common themes that may represent some broader trends in the consideration and evaluation of new technologies for the purposes of making more timely coverage decisions.

Exhibit 17: Shared goals of Partners Healthcare initiative and CPI

Goals of the Partners Healthcare initiative	How CPI model (or other alternative methods) might help to achieve those goals
Fast-tracking the evidence collection process	CPI can allow data collection more quickly than in an RCT. Instead of going through an extensive screening process to eliminate variability in the patient population (and enforcing control mechanisms to eliminate variability in the treatment process), the CPI measures and adjusts for the variables for which RCTs attempts to control. As a result, the variables (e.g., differences among patients) can be extracted from trial data as it is collected, requiring less additional time than RCTs.
Establishing panels of excellence to teach physicians how to use new technologies	CPI would generate a panel of experts who could teach the appropriate and optimal use of new technology. In the CPI, data are collected to show which components of the treatment pathway are associated with the best outcomes. Once that component has been identified, then providers can be guided or advised to ensure that beneficial process steps are performed in all cases, thus associating the entire treatment procedure with the best outcomes.

C. Evidence types

Higher evidence thresholds increase the premium on collecting and presenting evidence to inform coverage decisions. As noted above, the appropriate tools for scientific validation may be different among drugs, devices, and medical procedures. The clinical research design selected for evaluating a new technology should be appropriate for the type of technology and its intended indications. Communication among the relevant stakeholders may be integral to the selection of appropriate evidence types, as payers, clinicians, employers, and other stakeholders may have specific expectations and requirements regarding the nature of evidence for influencing decisions about delivery and payment of care.

1. Value of evidence types depends on perspective

Multiple types of evidence can influence coverage and clinical decision-making, and stakeholders can have different requirements. The relevance of certain types of evidence may depend on the perspective from which the evidence will be viewed and evaluated. For instance, the impact of a technology on patients' ability to work (i.e., indirect costs measured as productivity losses) may be of greater interest to employers than to health plan administrators.

2. Evidence types should be appropriate for heightened evidence requirements

Heightened evidence thresholds apply to all categories of technology (drugs, devices, and procedures), though the evidence collection process may not be the same among the different types of technology. A challenge to creating a systematic approach to conditional coverage, then, is to develop technology-specific paradigms in which evidence collection methodologies are tailored to the attributes of the technology. For example, specific challenges that medical devices may face in reaching the evidence threshold are listed below.

- For devices that are generational advances, a challenge is to generate evidence of the incremental clinical and/or economic value of the device relative to its predicate.

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- For devices that are used as part of a larger operation, a challenge is to isolate the impact of the device independent of the impact of the entire operation.
 - For devices that may add only marginal clinical value at a high cost, a challenge is to generate evidence of cost-effectiveness.

3. Some evidence types may affect the duration of clinical trials

Included in heightened evidence requirements for coverage decisions are those for health outcomes, i.e., mortality, morbidity, and quality of life. Depending on the health problem and the course of a disease episode, data on relevant outcomes may not be available until months or years after a medical intervention. Of great importance to clinical trial design are tradeoffs involving the need to generate data on health outcomes of interest, which may be long-term outcomes, versus time and resource constraints and other pressures to render coverage decisions. Conditional coverage can allow some patient access and collection of data on acceptable shorter-term surrogate outcomes that can be used to support clinical and payer decision-making.

VI. FUNDING RESPONSIBILITIES AND ARRANGEMENTS

A key aspect of partnerships in conditional coverage programs is commitment of resources. A major challenge in assigning financial responsibilities to the various stakeholders is to determine cost types and their respective levels. Costs involved in clinical research conducted as part of conditional coverage can be divided the following main categories:

- 1) Standard or routine patient care costs
- 2) Costs of providing the investigational technology
- 3) Costs of conducting clinical trials (site management, patient recruitment, data collection, etc.)
- 4) Cost of data analysis.

In a conditional coverage program, payers may be concerned about additional patient care costs that are associated with the investigational treatment, and that are otherwise not associated with routine care.

A. Coverage for patient care costs: HealthPartners' Promising Therapies Outcomes Recognition program

In the Promising Therapies Program launched by HealthPartners of Minnesota, a subset of promising therapies is provided in specific centers of excellence under a research protocol that qualifies for an “outcomes recognition” contract. This contract pays a percent of the costs based on the status of the research and the outcome of the patient. It was designed to provide an opportunity for patients to receive new therapies as a covered benefit with the cost of that therapy shared by the health plan and the research institution. These therapies are classified as either “more proven” or “less proven” based on the attributes listed in the first column of the grid shown in Exhibit 18. The information about the investigational status of the therapy is then discussed with the medical directors' committee at HealthPartners and with the physicians at the center of excellence providing the therapy.

Exhibit 18: HealthPartners' Promising Therapies Outcomes Recognition Program

	<u>Experimental</u>	<u>Less Proven</u>	<u>More Proven</u>	<u>Standard of Care</u>
Number of patients				
Single vs. multicenter				
Timeframe				
Methodology				
Measured outcome				
Source of literature				
Phase of trial				

The payment contract is written before any patient request for the therapy. The payment is a percentage of the contracted rate - a lower percent for “less proven” and a higher percent for “more proven.” In addition, the payment is paid over a 12-month period with an initial percent

paid for completion of the therapy and additional payment for achievement of preset outcomes. Payment is never 0% or 100%, but is typically in a range from 30% to 80% based on the status of the therapy and the outcome of the patient. The clinical protocol and the specific costs related to this therapy are outlined in the payment contract, and updated as needed.

A conditional coverage program must clearly define “routine” patient care costs. For example, a program should define whether the cost of hospitalization that is required when a patient is given a new drug, device, or procedure constitutes a routine or investigational cost. A program also should define whether the cost of treating an adverse event (e.g., toxicity) associated with a new technology constitutes a routine or investigational cost. In clinical trials sponsored by the National Cancer Institute (NCI), Medicare may cover patient care costs for adverse events.

B. Funding of clinical research: the National Cancer Institute

While payers such as HealthPartners may take financial responsibility for covering the patient care costs involved in investigational treatment, research institutions may take financial responsibility of funding clinical research. The National Cancer Institute has a large clinical trials program that, until recently, has been focused predominantly on drug development. At present, the NCI is expanding its focus to include devices and medical procedures. The NCI is working on developing a large imaging program, and is funding, through a cooperative agreement, the American College of Surgeons to perform cancer clinical trials of surgical procedures.

In determining funding responsibilities for the clinical trials, the NCI divides the costs of clinical trials into research costs and standard patient care costs. Costs are determined on an aggregate level (as opposed to take a trial-by-trial perspective) due to the large size of the clinical trials program. (The NCI has 135 Phase III trials in progress, involving 6,000 investigators, 1,600 institutions, and 200 Investigational New Drugs, or INDs). Given the magnitude of NCI’s technology development process for cancer, and since cancer research is more likely to make incremental improvements rather than to yield true leaps in effectiveness, the NCI presents the research costs as a “package” (i.e., the aggregate costs of its clinical trials program) when speaking with payers. In taking that approach, the NCI has been more successful in negotiating coverage policies.

C. Cost of the technology and data analysis costs

While financial responsibility for patient care costs can be assigned to payers and research costs to research institutions, the cost of the technology and data analysis costs may be more difficult to assign to a single stakeholder. It is possible that the cost of the technology and data analysis costs may be included in the research costs, though the arrangement may differ among the various types of technology:

- 1) **Drugs** – The NCI may include data analysis costs under research costs. The NCI uses a drug development model in its clinical trials program, and investigational drugs are expected to be free if the NCI sponsors the trial. If a drug is marketed, then it is not free.

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- 2) *Devices* – The question of whether device costs and data analysis costs should be included with research costs has not been fully resolved.
 - 3) *Surgical procedures* – The costs for surgical procedures may be included under patient care costs or research costs, a decision made on a trial-by-trial basis.

D. Profit-sharing

A potential concern shared among stakeholders is the issue of profit-making by technology sponsors. Stakeholders would want to share financial responsibility for clinical research only to the extent that it lessens the financial burden on technology sponsors. One source of stakeholder resistance may be the possibility that technology sponsors reap the highest financial gain from a program to which multiple stakeholders contribute.

Providers may also reap profits from a conditional coverage program, raising questions regarding the appropriate conditions of profiting from clinical research. Payers and providers may have to consider whether costs of a hospital day should be the same for a patient receiving conventional care as for a patient participating in a clinical trial. If a hospital is generating profits from the cost for a hospital day for conventional care, should the cost of a hospital day for a clinical trial be the same? The issue of profit-making has particular relevance to conditional coverage, since profit can be made from technologies considered for conditional coverage.

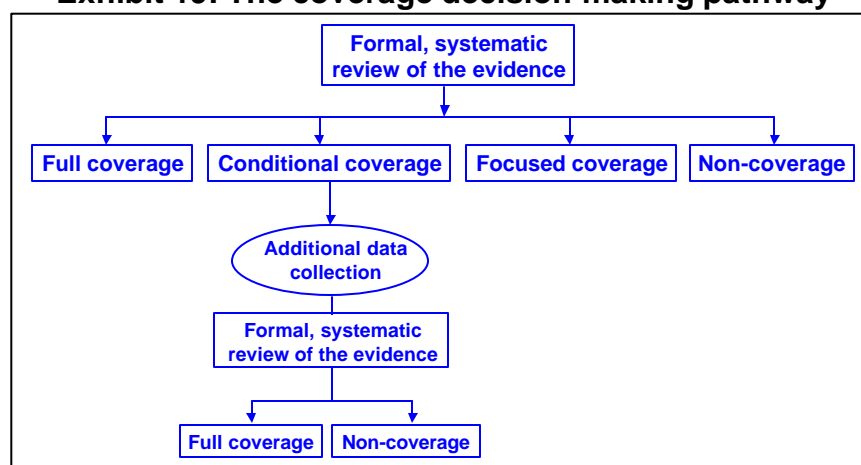
Some of the summit panelists contend that a significant portion of clinical trial costs is being reimbursed already by managed care organizations. As noted by some panelists, for some payers that do allow payment for investigational technologies, the de facto policy regarding payment for clinical trials is “Don’t ask, don’t tell.” Efforts to formalize conditional coverage programs and rendering their implementation more transparent pose the risk of diminishing the actual scope of payment for investigational technologies.

VII. TRANSLATING EVIDENCE INTO COVERAGE POLICIES

Conditional coverage serves as an interim coverage decision that provides an opportunity to gain new data to inform a definitive coverage decision on a new medical technology. A definitive coverage decision should be based on the aggregate evidence accumulated through clinical investigation of a new technology. Conditional coverage is also a strategy for improving the quality of clinical trials, in that it can provide explicit financial support for prospective clinical trials. Conditional coverage can mediate diffusion of a new technology and ensure that data are collected while the technology is used within the context of a properly designed clinical trial. Based on the evidence collected through the clinical trial, payers can determine if a new technology is reasonable and necessary in a broader context beyond the strict conditions of the clinical trial.

Exhibit 19 places a definitive coverage decision within the pathway for coverage decision-making. When a new technology is considered for coverage, a formal, systematic review of the available evidence may be performed. The technology can be evaluated against a set of criteria, the technology can be subjected to the conditions set forth by contractual language (or an exception to the contractual language can be made), or a risk-benefit analysis can be performed. Based on the available evidence, the technology can fall into one of the following coverage categories: full coverage, conditional coverage, focused coverage⁶ (coverage for a specific indication), or non-coverage. If the technology falls into the category of conditional coverage, then further clinical research may be required to generate additional data. (Data also may be collected following other coverage findings). Clinical trials may restrict access to the technology to control its diffusion (i.e., to limit its use while its clinical and/or economic value is still indefinite), and to ensure that the technology is used in a setting in which data can be collected. When the appropriate data has been collected, a decision may be made to move the device into another coverage category, such as full coverage or non-coverage. The NETT is an example of a clinical trial that restricts access to a technology (LVRS) until conclusive data can be collected to support a definitive coverage decision. (This is addressed further, below).

Exhibit 19: The coverage decision-making pathway



⁶ This term may be used synonymously with full coverage, as very often a technology is covered for only one indication.

While the concept of a lowered bar (or threshold) may apply in a case where a technology is considered for conditional coverage, the same concept does not necessarily apply to a definitive coverage decision. The evidence threshold may be lowered to qualify technologies for conditional coverage because technologies are assumed to have the potential of meeting the criteria for a positive coverage policy. The evidence threshold for definitive coverage decisions, however, remains unchanged.

Within a conditional coverage program, the technology may be given a constrained focus (i.e., access is limited to clinical trials, and to specific patient populations, indications, and providers), and external controls may be in place (e.g., third-party oversight, data and safety monitoring board, etc.). While a conditional coverage decision may be based on the evaluation of a technology against a lowered evidence threshold, a definitive coverage decision may instead be based on the evaluation of a technology against a higher threshold, through within the context of restricted access and external controls.

A. Timing of a coverage decision

An important component of a definitive coverage decision is its timeliness. The decision should not be made so early that there is insufficient evidence to guide appropriate use of the technology. On the other hand, a coverage decision should not be made so late that it restricts or denies access to a beneficial technology.

1. Timing of an evaluation of a technology

The timing of a coverage decision may be shaped in part by the timing of an evaluation (i.e., the point along a technology's diffusion curve at which a study is first conducted). It is important that an evaluation is performed shortly after a technology is made available, otherwise a technology may diffuse without sufficient evidence guiding its use in clinical practice. Evaluation of a technology (in the form of clinical trials) may also serve to control diffusion of a technology by restricting access to designated research sites and/or providers, and to specified patient populations and indications.

As previously described, a decentralized coverage system allows payers to independently evaluate and structure coverage policies for a technology. The timing of an evaluation may vary among payers. While the decentralized coverage system allows iterative coverage decisions to be made as a technology matures, it may preclude a coordinated, national effort that may be more effective in securing the definitive findings in a shorter time span from a sufficiently large multicenter trial.

2. Timing of a coverage decision

The timing of a coverage decision (i.e., the point during or following clinical investigation at which the coverage decision is made) may also vary. As noted above, clinical investigation of new technologies must be sensitive to the potential time lapse (between when the technology is first available and when the study results are available) that may reduce the relevance of study results by the time they are published.

For some technologies, key health outcomes may not be determined until after lengthy follow-up period. (For example, in the case of major joint replacements, the long-term success of the technology may not become apparent for 10 years or more.) This presents the tradeoff of collecting data for a period that is long enough to make a definitive judgment of the long-term effectiveness of a technology and waiting so long that a promising technology is made inaccessible to its target population. In addition, for devices such as total joint replacements, product development cycles are shorter than the long-term follow-up, and do not end with FDA premarket approval (PMA) or Medicare coverage. The iterative process of improving a device and evaluating it for coverage eligibility may continue for a long time, and may have an effect on the technology evaluation and coverage decision-making processes.

B. Criteria for coverage decisions

In the same way in which a set of criteria may be used to qualify new technologies as eligible for conditional coverage, a set of criteria may also be used to qualify new technologies as eligible for positive coverage policies. Technology sponsors should be apprised of the decision criteria at the outset of clinical investigation. While the decision criteria need to be made explicit, a certain amount of uncertainty (and flexibility) should be allowed in setting the conditions of data collection (i.e., trial duration, patient recruitment, and outcomes). While a clinical trial such as the NETT is estimated to take up to five years and enroll a certain number of patients (in order to detect a treatment effect of a certain magnitude), more dramatic differences in health outcomes than were expected could shorten the trial.

1. Stopping rules

At a certain point within a clinical trial, enough data may have been collected to structure a coverage policy, or the benefit of the technology may have been established and would warrant stopping the trial to put the control arm on the treatment. (Alternatively, the harm of a technology may have been established and would warrant halting the intervention). Subject to pre-determined “stopping rules,” independent data and safety monitoring boards are assigned with the responsibility of determining the point at which sufficient evidence has been collected to warrant the stopping of a trial.

While it may seem appropriate to stop a clinical trial once the data shows a technology to be beneficial, doing so when the data indicate a lack of effectiveness may be regarded differently. Payers have found that reversing a positive coverage decision, or even a conditional coverage effort, can be very difficult and meet with considerable opposition by clinicians and patients who are convinced that the intervention truly works. Payers emphasize that these stakeholders must be prepared to accept reversal of conditional coverage if the data indicate that the technology is not effective (or cost-effective, as appropriate).

2. Decision criteria

HCFA is developing explicit criteria for qualifying new technologies as eligible for Medicare coverage that should help guide technology sponsors and other stakeholders to develop clinical trials that will render data to inform well-founded coverage decisions. Some of the criteria may include:

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- Safety and efficacy (typically though not exclusively from FDA)
 - Long-term efficacy
 - Effectiveness
 - Cost effectiveness
 - Appropriateness
 - For which patients is the technology appropriate?
 - Who are the appropriate providers?
 - What is the proper setting for use of the technology?
 - How is diffusion going to be controlled?

3. *Extending the restrictions enforced in clinical trials in a coverage decision*

If a technology is found to be beneficial within the controlled environment of an RCT, it may seem reasonable for a definitive coverage policy to require similar conditions for providing the technology. It may be difficult, however, for HCFA (as a public payer) to restrict access to a technology to designated sites and providers. Restricting access to technologies may involve considerable administrative overhead, and may be viewed as too restrictive and intrusive by Medicare or other payers. A potential benefit of restricted access (even in definitive coverage policy), however, is that it may help to limit use of the technology to conditions that would ensure the best outcomes.

There may also be an ethical challenge in extending the conditions of conditional coverage. Some stakeholders consider that it is disingenuous to keep coverage conditional indefinitely, and that at some point the conditions must be lifted or the technology denied coverage. Inherent in this view is the assumption that the data will eventually be collected and provide the basis for a coverage or non-coverage policy. Conditional coverage decision-making may not have to adhere to the binary coverage categories (coverage or non-coverage), though definitive coverage decisions may have to select between the two. Conditional coverage programs should make explicit the criteria or conditions for rendering definitive coverage decisions.

C. Independent third-party oversight

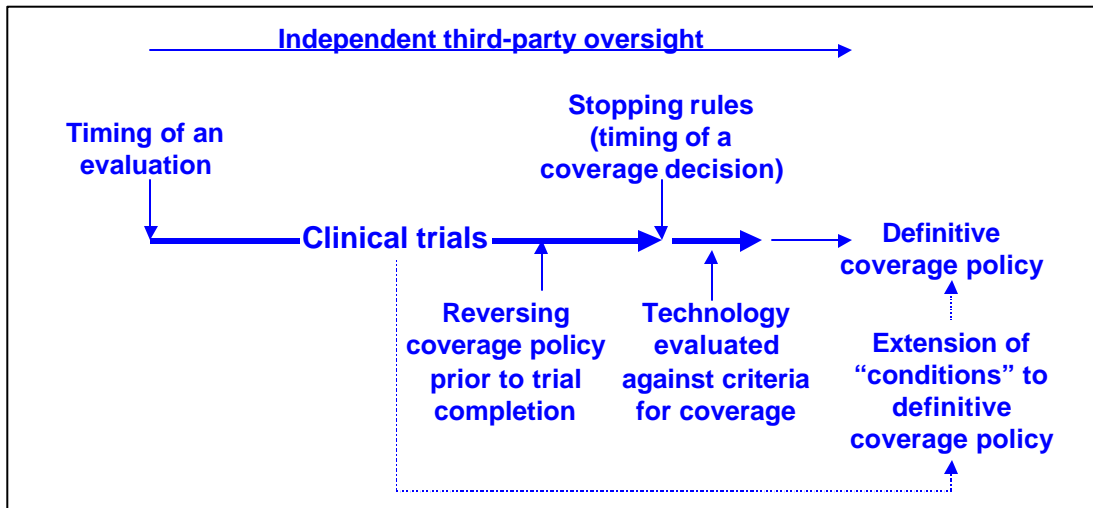
Some summit participants suggested that independent third-party oversight should exist for clinical trials and the coverage decision-making process. The NETT is an example of a clinical trial with such oversight. The trial's data and safety monitoring board reviews trial data quarterly, and reviews the available literature to determine if any information exists outside of the trial that could possibly affect a coverage decision. NHLBI will help in evaluating the clinical trial data (and other available evidence) once it is collected. AHCP, which helped initiate the effort and is performing cost-effectiveness research on LVRS, could also be considered an independent oversight body.

Potential bias arising from technology sponsorship, e.g., by technology companies or by clinicians with proprietary interests in technologies, raises the need to consider ways to balance, if not eliminate, the effects of such interests in conducting conditional coverage efforts. Some summit participants suggested that greater involvement on the part of medical professional organizations could help achieve better balance, aside from improved clinical perspectives. Partnerships can be developed with health professional societies, allowing their representatives

to serve in advisory roles in the evaluation process. They may function in such capacities as determining the outcomes that should be measured and the data types that should be collected. Once the data are collected, professional societies can help in the analysis of the data.

Exhibit 20 portrays the relationship of these issues pertaining to the coverage decision-making process.

Exhibit 20: The coverage decision-making process and associated issues



VIII. IMPLEMENTATION

A. Payer roles and responsibilities

Payers comprise a central stakeholder in conditional coverage programs. Payers are responsible for making (or contributing to) two crucial decisions within a conditional coverage program: the decision that a new technology is eligible for conditional coverage, and the decision (once a sufficient amount of data has been collected) that the technology is eligible for a positive coverage policy. Even with these decision-making responsibilities, payers may have other substantial responsibilities within a conditional coverage program.

Some observers contend that payers should support clinical research to generate data that would improve policy formation (coverage policy for beneficial technologies) and clinical decision-making. Conditional coverage programs may place strict conditions on clinical research (e.g., the amount of data to be collected, the number of patients to be recruited, etc.), which may require a substantial financial commitment from payers if they were to fund clinical research. Payer responsibilities in conditional coverage programs need to be reasonably and explicitly defined so as not to place on them unreasonable burdens of funding clinical research on unproven technologies.

Coverage decisions can have substantial impacts on clinical practice. Beyond making a new technology accessible, payers may have the potential to guide clinical decision-making. Payers may apply the same conditions of conditional coverage to a definitive coverage policy, allowing the health outcomes achieved in actual clinical practice to more closely resemble those achieved in the controlled environment of the clinical trials. (As previously mentioned, however, there is resistance by some stakeholders against the concept of perpetuating the conditions of conditional coverage). Payers can also have quality improvement responsibilities, which would allow them not only to cover a technology but to also guide its appropriate use in clinical practice.

B. Centralized versus decentralized coverage system

As noted above, a crucial issue in developing and implementing a conditional coverage program is determining its scope (national or local level, or at the level of the individual patient). Each structure has its advantages and disadvantages, and the scope of a program may best be determined according to the attributes of a technology.

1. *Structures for conditional coverage programs*

a) *Centralized coverage system*

In a centralized coverage system, all payers would participate in a conditional coverage program. A coordinated effort would restrict access to a technology and ensure that data is collected while the technology is used. If payers were allowed to independently evaluate and structure coverage policies for new technologies (e.g., some payers would provide coverage for a technology while others would attempt to collect data on the technology), then data collection may be compromised. A coordinated effort, however, may coerce patients to participate in clinical trials

by providing coverage only on the condition that patients participate in clinical trials. A coordinated effort may seem reasonable if only a few technologies are considered for conditional coverage each year.

b) Decentralized coverage system

In a decentralized coverage system, payers would evaluate and structure coverage policies for new technologies independently. A decentralized system would make technology evaluation and policy formation an ongoing process, which may be appropriate given that evidence of a technology's value may change over time, as the technology matures. In addition, payers may have different patient populations, fiscal responsibilities, and contractual language, which would make coverage decision-making more appropriate if performed at a payer-specific level. The drawback to a decentralized system, as previously described, is the lack of controlled diffusion of a technology (i.e., some payers may promote diffusion by covering a technology while others may try to limit diffusion by restricting coverage to the context of clinical trials).

c) Coverage decisions based on the individual patient scenario

Conditional coverage can also be implemented at the level of the individual patient, in which case the criteria for eligibility would be based on patient characteristics (i.e., level of severity, co-morbidities, etc.). Technologies would be evaluated on a per-case basis (i.e., is the technology reasonable and necessary for a given patient?) instead of against systematic requirements (i.e., a defined set of criteria). In this instance, payers may be concerned whether there should be limits on an individual patient's eligibility for successive conditional coverage programs. A patient may be eligible to receive a new technology under a conditional coverage program, and if the technology does not improve the patient's conditions, the patient may be eligible for another technology. (Patient eligibility may even increase because of fewer treatment alternatives). There must be rules defining the maximum number of conditional coverage programs for which a single patient may be eligible.

The scope of a conditional coverage program may best be determined on a technology-specific basis, according to the attributes of the technology, its target patient population, etc. Some technologies may be better evaluated within the context of a centralized coverage system (i.e., involving a coordinated, national data collection effort), while others may be better evaluated within the context of a decentralized coverage system (i.e., coverage decisions are independently made by various payers, and iterative coverage decisions can be made as the technology matures). For example, the costs of conducting a multicenter trial of sufficient magnitude to detect true treatment effects of a particular technology versus the standard of care may be too great for individual health plans. Or, a given health problem may be sufficiently rare so that no single or small group of health plans could identify enough patients to enable adequate evaluation of a promising new therapy, therefore requiring a national-level effort.

2. Dividing responsibilities between national and local bodies

There are many tasks and responsibilities within a conditional coverage program that must be assigned to various agencies or bodies. While a coverage system has to be either centralized or

decentralized, the aggregate tasks within a conditional coverage program can fall under both centralized and decentralized control. Some conditional coverage decision-making processes and implementation tasks, for example, can be assigned to a national body, while others are left to the discretion of and independent evaluation by local-level bodies (technology sponsors or payers). The background paper for this report divides implementation tasks into programmatic and technology-specific implementation tasks. Programmatic tasks include those that could be systematized and executed by national-level advisory boards (e.g., a review process for clinical trial protocols, and advisory bodies to provide oversight for clinical trials and coverage decision-making). Technology-specific tasks include those for which decisions are made based on the attributes of the technology (e.g., selecting research sites, establishing patient selection criteria, and developing a clinical protocol).

Another approach to assigning responsibility for the various implementation tasks is to create national standards that can be used to guide the processes within a conditional coverage program (e.g., conducting a formal, systematic review of the evidence), while the implementation (or execution) of the processes would take place at the local level. National standards may provide broad definitions of what is appropriate in a conditional coverage program, and may serve as a point of reference (and defense against litigation) for payers when making decisions. While national standards or guidelines can be used to guide decision-making, the regional bodies should retain the right to make decisions based on more specific circumstances such as a health plan's contractual language, state regulations, or the urgency of the situation (e.g., a patient with a life-threatening illness).

3. Impact of a coverage decision on other coverage decisions

An important question to consider regarding coverage decisions is the extent to which those of one plan should influence those of other health plans, and whether there is any legal obligation for this. The summit did not pursue this question at length. To the extent that a coverage policy of one plan is based on a well-founded assessment of a new technology, it might be expected that other plans committed to the best interests of patient access to proven technology (as well as not paying for patient access to unproven or ineffective technology) and evidence-based health care would adopt a similar coverage policy. However, factors differentiating health plans mitigate against such conformity. In the current decentralized system, each payer makes coverage decisions based on its exclusive contractual language, and enacts its own evaluative process that should be consistent with its contractual language. A protection that health plans have from having to adopt coverage decisions made by others is that each plan has its own enrollee profile (or multiple profiles), and that findings of any technology evaluation may be more or less applicable for that enrollee profile. Further, a given health plan may negotiate different benefits packages with each of multiple employer groups (or representatives of other populations) that may be more or less restrictive about providing access to investigational technologies. Also, plans in competitive markets may offer different levels of access to technology to influence enrollment.

C. Systematizing the stages of a conditional coverage program

One of the main tasks in implementing a conditional coverage program is to systematize each of the four stages (priority setting, evidence collection, funding responsibilities and arrangements, and translating evidence into coverage policy). Exhibit 21 lists the implementation tasks for each stage, in addition to programs or structures that may serve as models in executing the implementation tasks. The following section presents a case study on LVRS and the NETT, showing how a conditional coverage program has been structured for a particular technology, and how the various implementation tasks have been executed.

Exhibit 21: Systematizing four main stages of a conditional coverage program

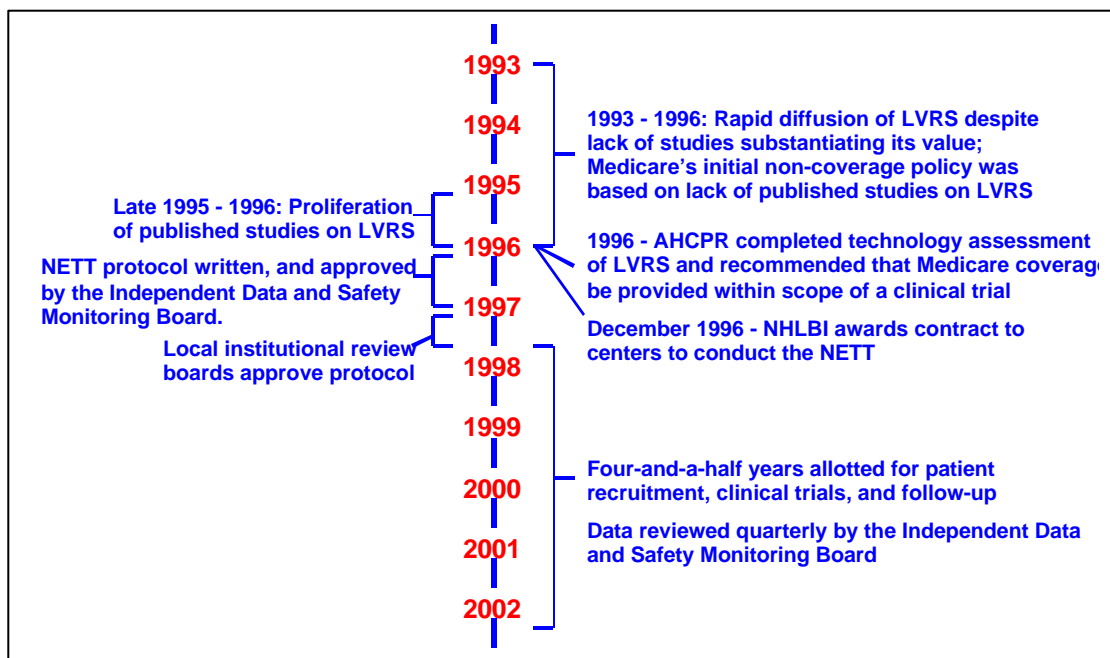
Stage	Implementation tasks	Models
Priority setting	Define a set of criteria for qualifying new technologies for conditional coverage	Aetna’s “promising” category, HealthPartners’ promising therapies methodology
	Determine if exceptions to benefit language may qualify a technology for conditional coverage	
	Assess impact of lowering or raising the threshold on levels of financial responsibility (of various stakeholders) and beneficiary access to new technology	
Evidence collection	Determine a sound methodology for evidence collection	Clinical Practice Improvement (CPI) model
	Set research parameters and the conditions of coverage	
	Minimize time lapses or delays in the evaluation process so trial data are clinically meaningful	Partners Healthcare initiative
Funding responsibilities/ arrangements	Determine cost types and levels and assign stakeholder responsibilities	
	Define a methodology for determining the percentage of patient care costs for which payers should be responsible	HealthPartners’ Promising Therapies Outcomes Recognition program
Translating evidence into coverage policy	Define decision criteria and make the criteria explicit to all stakeholders	HCFA decision criteria, BCBSA criteria
	Determine “stopping rules,” or criteria for stopping a trial before completion of the expected duration	

IX. CASE STUDY: LUNG VOLUME REDUCTION SURGERY AND THE NATIONAL EMPHYSEMA TREATMENT TRIAL

Lung volume reduction surgery is a relatively new procedure intended to improve lung function and relieve debilitating symptoms for emphysema patients who are severely impaired, despite optimal medical management, and who are usually not candidates for lung transplantation. In the procedure, a portion of the diseased lung is removed, and typically, the lung is resealed using a surgical stapling device. The purpose is to reduce the fixed hyperinflation of the chest and establish a more normal breathing pattern.

Beginning in 1993, LVRS began to diffuse rapidly despite many unanswered questions about risk, appropriate selection of patients for surgery, differences in surgical techniques, and qualifications for physicians performing the surgery. In 1996, AHCPR completed a technology assessment of LVRS and concluded that there was not sufficient evidence to make a scientific judgment about its effectiveness. AHCPR recommended that Medicare coverage be provided within the scope of a clinical trial. That same year, NHLBI and HCFA launched a multicenter study, the National Emphysema Treatment Trial, comparing patients randomly selected to undergo either medical therapy and lung volume reduction or medical therapy without lung volume reduction. The trial is expected to run for up to five years. Exhibit 22 illustrates a timeline of the history of LVRS and the projected timeframe for the NETT.

Exhibit 22: Timeline for LVRS and the NETT



The contract awards for the NETT were made in December 1996. It took about a year for the protocol to be written and approved by the Data and Safety Monitoring Board. Another six months were required to secure approval from local institutional review boards. The protocol calls for a maximum of four-and-a-half years for patient recruitment and follow-up, with the data reviewed quarterly by the Data and Safety Monitoring Board. If the data shows a reason to modify the protocol (e.g., an unusual risk or benefit to a certain patient group or to all patients), then the protocol can be modified anytime within the four-and-a-half-year study duration. The results should be available by about 2002-03.

A. Priority Setting

1. *Public payer perspective: Health Care Financing Administration*

HCFA's original non-coverage decision on LVRS was due to the fact that there was only one report available on the procedure, involving 20 patients. In 1996, at the request of HCFA, AHCPR performed a technology assessment on LVRS, and HCFA was asked to reassess LVRS and provide a report to Congress, focusing on the evidence that would justify implementing a conditional coverage policy for the NETT. HCFA reviewed the literature used in the AHCPR technology assessment, posing certain questions to help evaluate the published studies on LVRS:

- What are the health outcomes?
- What was the study design?
- What was the follow-up period and what endpoints were measured?
- What were the criteria for patient selection?

Through a systematic evaluation of the literature, HCFA found that LVRS led to improvements (as shown by clinical indicators) in some patients that could not be attributed to any other intervention. There was, however, very little data concerning the technology's impact on quality of life (QOL) and morbidity and mortality following surgery. HCFA determined that LVRS was very promising in that it clearly led to clinical improvements in some patients, but without the crucial data on morbidity and mortality and long-term outcomes, it would be difficult to structure a national coverage decision.

2. *Private payer perspective: Aetna*

As described above, Aetna developed a new category of coverage, "promising," in 1991, which would allow Aetna to cover investigational technologies with the potential to become standard care. Aetna began receiving requests for coverage of LVRS in late 1993 and 1994, at which time HCFA had a non-coverage policy for LVRS. Having looked at the available data and concluded that there was not enough evidence of the value of the technology, Aetna's initial position also was to deny coverage. As a result, Aetna was continuously threatened with lawsuits, given that its non-coverage policy was based on investigational exclusion.

When Aetna began a formal technology assessment of LVRS in 1994 to reconsider its coverage decision, Dr. Joel Cooper, lead developer of LVRS, was contacted at Washington University. A review of the data that Dr. Cooper was about to submit for publication formed the basis of Aetna's new positive coverage policy. The grounds for the decision centered on the fact that a significant number of patients had reached a positive intermediate outcome and, more importantly, a positive health outcome directly related to QOL. In addition, a significant number of patients had been able to sustain lung function independent of oxygen support for a period of six months to a year, both in terms of exercise and at-rest functions.

B. Evidence collection

1. NHLBI participation

NHLBI partnered with HCFA to design and conduct the NETT. Independent of HCFA, NHLBI organized a workshop, held in September 1995, because of concern in the medical community that the invasive procedure had been performed on patients without proper process and review, and doubts about its efficacy. Participants (including experts in clinical trial design, pulmonologists, physiologists, statisticians, ethicists, thoracic surgeons, and Dr. Cooper) unanimously agreed that LVRS needed to be evaluated systematically. However, there was not unanimous agreement on how the systematic evaluation should be performed. The majority opinion was that a randomized study with a controlled, non-surgical arm was the optimal study design.

2. Decision to randomize

Patients are selected for LVRS through a rigorous screening process (Dr. Cooper selected only 10-20% of the patients referred to him for surgery, and there are data available on how these patients would have fared without the surgery). An RCT provides the best method for evaluating the clinical and economics benefits of LVRS. The control group allows for the determination of whether the procedure provides a benefit (in terms of QOL and survival) beyond what is expected for medically treated patients.

There are many concerns that patients would be unwilling to be randomized if there is already a perception that a new technology works. A significant number of patients may have decided against participating in the NETT for this reason. Patients enrolling in the trial do so with the understanding that they will be randomized.

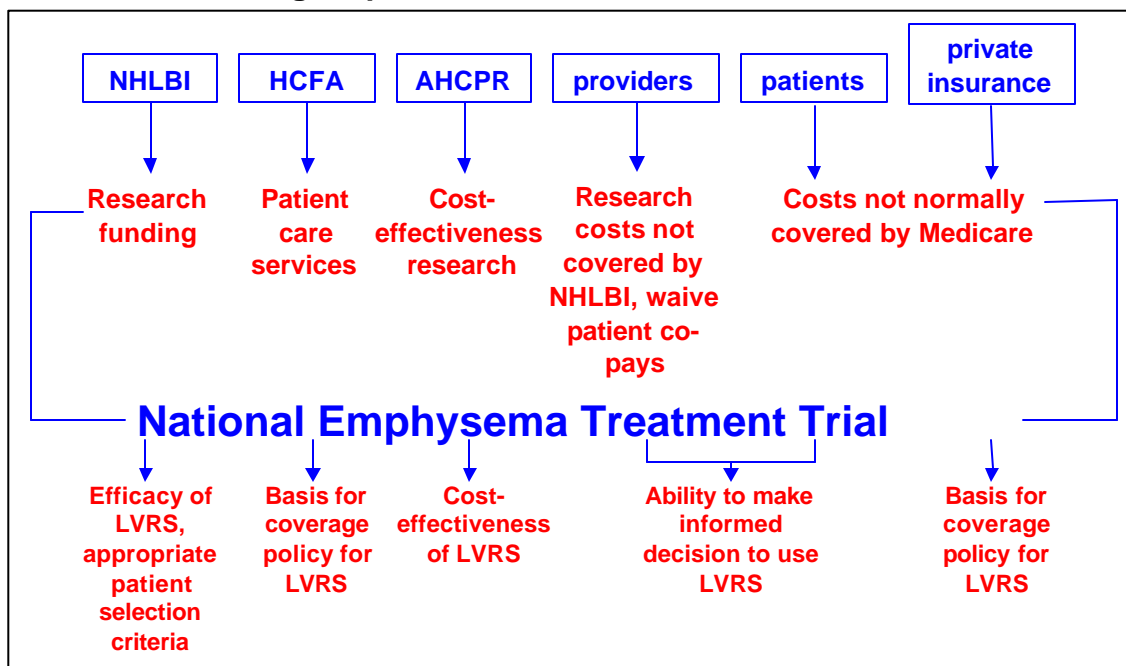
Questions and concerns have been raised concerning the NETT, including compliance issues (integrity of the data is dependent on the compliance of the treatment arm to the treatment regimen), and the possibility that QOL of the surgical arm could increase because the sickest patients die during surgery. Such issues need to be addressed or resolved when the trial data is reviewed or evaluated.

C. Funding responsibilities and arrangements

NETT is a cooperative agreement between NHLBI, HCFA, and AHCPR. Research funding comes from NHLBI, HCFA pays for patient care services, and AHCPR contributes to the cost-effectiveness work. Participating providers are making substantial contributions by covering research costs not covered by NHLBI, and by waiving co-payments for patients. In addition, expenses not normally covered by Medicare, such as the costs of oral medications, are covered by patients or private insurance companies. Each agency, while sharing responsibility for financing the NETT, has its own particular interest in the trial. NHLBI expects the trial to determine the efficacy of LVRS compared to medical therapy and to establish patient selection criteria for using the technology. Such data will help physicians and patients make an informed decision on whether a patient should undergo LVRS. HCFA, which will use the trial data to structure a coverage decision on LVRS, expects the trial to provide a basis for reimbursement.

Exhibit 23 describes the funding responsibilities of each stakeholder in the NETT, and the clinical and/or economic information each stakeholder expects to obtain from the trial.

Exhibit 23: Funding responsibilities and stakeholder interests in the NETT



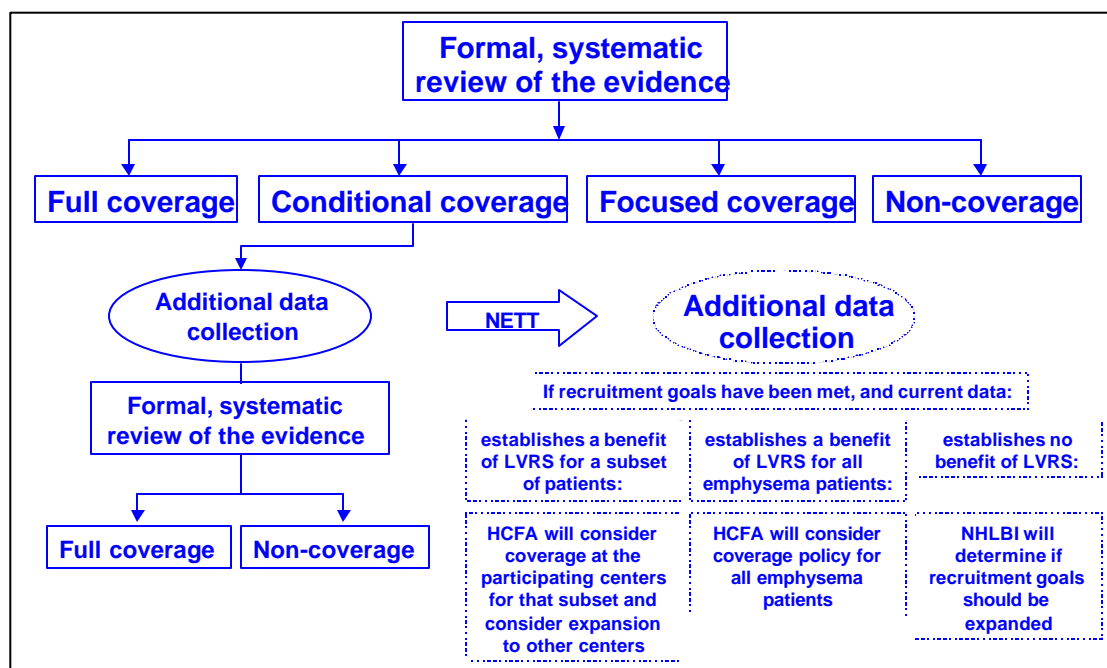
D. Translating evidence into coverage policies

Coverage policy formation for LVRS will follow the same model outlined above regarding the coverage decision-making process. Exhibit 24 shows the model previously described, along with the decision criteria established for the NETT. The decision criteria were described in amendments to the original memorandum of agreement between HCFA and NHLBI.

- If the recruitment goals have been met, and the current data establish a benefit of LVRS for a subset of patients, then HCFA will consider a coverage policy at the participating centers for that subset of patients, and will consider expansion to other centers.
- If the recruitment goals have been met, and the data establish a benefit of LVRS to all emphysema patients, then a national coverage policy will be considered.
- If recruitment goals have been met but the data show no benefit, then HCFA will allow NHLBI to determine whether a benefit can be established, or whether recruitment goals should be expanded, in which case conditional coverage would continue.

HCFA also stated that coverage could be modified anytime during the study, even prior to the recruitment goals being met. If the Data and Safety Monitoring Board were to say that randomization should not continue because the benefit of the technology has been established, and NHLBI concurs, then HCFA would be authorized to begin structuring a coverage process for the technology.

Exhibit 24: Decision criteria for the NETT



E. Implementation

A central requirement for implementation of the NETT was that stakeholders make a commitment on two levels, as follows.

1. **Ongoing commitment of resources.** HCFA developed an entire billing system specific to the NETT to ensure that it would pay for patient expenses that are normally outside of Medicare policy. The billing system was also modified to allow Medicare managed care patients to participate in the trial and be treated as fee-for-service patients. HCFA also worked with the Inspector General to grant waivers to the 17 clinical centers participating in the NETT so that they could waive co-payments for the patients. (Patient co-payments are thought by some stakeholders to be unfair to the patients.) Patients in the NETT are asked to receive more services than normal because a treatment is being evaluated (thus requiring strict adherence to protocol conditions and measurement of relevant outcomes), and under such circumstances, the normal co-payment rules would be unfair if applied.
2. **Commitment to partnership.** Stakeholders must commit to a partnership between all parties involved, including agencies, investigators, and patients. Once a week, several HCFA staff members, the regional office, the appropriate fiscal intermediary (Medicare carrier), one clinical center, and the coordinating center at Johns Hopkins University engage in an one-hour phone conference to work out any problems with the Medicare aspects of this trial.