Perhaps the most important way for an MBP to support its financial health and sustainability is to monitor beneficiaries and providers’ use and costs of services and medicines against targets and standards.

Monitoring utilization and performance is obviously much easier when automated information systems are in place. However, MBPs need to start from their existing systems and use whatever data is available to assess the effectiveness of plan designs, provider networks, and formulary adherence in delivering cost-effective and clinically relevant medicines to beneficiaries. The ability and the commitment to collect and analyze available data and take specific corrective actions based upon that analysis is crucial to an MBP’s sustainability.

Equally important, MBP sponsors and program managers must monitor the MBP’s own performance against targets for financial operations and for providing beneficiaries’ access to services and medicines.

An article by Wagner, Quick, and Ross-Degnan proposed examples of indicators to monitor the impact of medicines policies and programs in UHC systems. They include indicators in four areas—

- Availability of quality generic and innovative medicines
- Equitable access
- Appropriate use
- Affordable costs

In addition, MDS-3 describes proven indicator-based approaches for monitoring and evaluating the use of medicines that can be readily applied even in paper-based systems.

Annex 3 offers examples of monitoring and evaluation indicators and the potential source of data for the indicators.

See chapter on Investigating Medicine Use in MDS-3.


**IV.A. EXTRACTING DATA FROM CLAIMS AND DISPENSING RECORDS**

When claims processing and adjudication systems are fully automated, claims data can be extracted and stored in a data warehouse to generate reports, assuming standard coding systems exist and are used by all providers submitting claims and that medicines are itemized in claims (see also Section III.B).

When the processing systems are partially or completely based on submitting and processing paper claims, more time and staff will be needed to compile data for performance reports. Claims can be scanned and converted into standard database files (again assuming standard coding is enforced and the relevant technology is accessible). Or the information from claims can be manually entered into computer programs to facilitate analysis. Although an MBP in technologically advanced countries can develop or purchase custom database programs to manage retrospective drug utilization reviews, it is possible to use a spreadsheet to carry out most of the essential analyses, such as therapeutic class analyses or ABC analyses sorted by prescriber, dispenser, beneficiary, and medicine. The spreadsheet approach is presented in detail in MDS-3.

Even if entering individual claims into a computer program for analysis is logistically or financially unmanageable, the MBP can still monitor payments to individual providers and then target high-use, high-cost providers for field audits (discussed in the next section on fraud). MBPs that have claims data available or that provide medicines through in-house facilities can also conduct DURs in the field to follow up on potential problems detected in the prospective or retrospective review of claims.

These DUR visits can be coupled with on-site education for prescribers and dispensers, so that providers do not see them only as “police” activities. This is not the ideal method for carrying out large-scale DURs, and it can be expensive given the need for clinically qualified on-site reviewers, but wealthy countries have used the method for many years, and it was the primary DUR method before systems were automated. In situations where compiling claims data for analysis is not realistic, it may be the most feasible option for a DUR.

MBPs with advanced electronic information systems can extract data from their claim adjudication data sources, reformat the data into a reporting-friendly data structure, and file it in their data warehouse. When the data is available, management, operations, and clinical personnel can assess it for decision making. This process is illustrated in the diagram at left.
database design of a data warehouse is often optimized for ad hoc queries and standard reporting, while the database design for the adjudication system is optimized for claims processing.

An MBP without a fully automated system must still monitor utilization of medicines and services by providers and beneficiaries and take all possible measures to detect and correct instances of inappropriate utilization and potential or actual fraud.

**See chapter on Analyzing and Controlling Pharmaceutical Expenditures in MDS-3.**

**IV.B. STANDARD MEASUREMENTS AND REPORTS OF PERFORMANCE**

Each MBP should establish indicators to help management monitor plan performance and identify areas for corrective action. Annex 3 includes a list of sample indicators with their associated data sources. MBPs normally have a package of standard reports that they source from data uploaded to the data warehouse. These reports quantify basic claim entities and data elements that show an overall picture of use that can be distributed regularly to account managers, operational staff, and business sponsors. Standard reporting packages can be developed with a variety of reporting tools.

Examples of a simple standard reporting package include—

- Average plan cost per beneficiary (by eligible beneficiaries, by utilizing beneficiaries) Top 200 products (by value and by volume of claims)
- Top 100 utilizing beneficiaries (by value, by claims)
- Top 100 providers (by value, by claims)
- Top 100 prescribers (by value, by claims)

A simple standard report example that identifies top products by number of prescriptions is illustrated below. These reports can focus administrative and clinical actions on areas most likely to yield the greatest benefit. Over time, trends as well as cross-sectional analyses become crucial management tools.

**Ad Hoc Analysis and Reporting**

Operations managers and clinical experts can use ad hoc query tools to access the MBP’s data warehouse and review claims data. Graphical query tools allow staff to develop, execute, and refine complicated

<table>
<thead>
<tr>
<th>TOP PRODUCTS BY NUMBER OF CLAIMS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product Name</strong></td>
</tr>
<tr>
<td>Amoxicillin cap 250 mg</td>
</tr>
<tr>
<td>Lopermide 2 mg</td>
</tr>
<tr>
<td>Diovan tab 320 mg</td>
</tr>
<tr>
<td>Naproxen tab 250 mg</td>
</tr>
<tr>
<td>Zocor tab 10 mg</td>
</tr>
</tbody>
</table>
database queries. By using standard drag-and-drop techniques, MBP personnel can develop queries without knowledge of the data warehouse database design or the support of a technical resource person.

Many database query tools are available. The screenshot is from FlySpeed SQL Query from ActiveDBSoft (www.active dbsoft.com). The available data model entities are shown on the left side of the window, and the user drags the desired entities into the query window and applies the search criteria.

See section on Information Management in MDS-3.

**Screenshot from FlySpeed SQL Query**

![FlySpeed SQL Query Screenshot](image)

**IV.C. DRUG UTILIZATION REVIEW**

As mentioned, DUR is the analysis of available data to understand, interpret, evaluate, and improve the prescribing and use of medications. DUR is important to avoid problems and detect potential problems with inappropriate medication therapy and to identify patterns of potentially inappropriate use, misuse, and fraud by providers and beneficiaries. The results of DURs are used to promote more efficient use of scarce health care resources and to improve evidence-based pharmacotherapy.

The MBP may manage the utilization review process internally or choose to contract with a PBM (if available), an academic institution, or a professional association to manage DUR programs. As discussed in the section on plan governance, the MBP should have a department or committee that determines DUR requirements and standards and reviews the results and takes action, even if it does not directly manage the DUR activities. DUR responsibility could be assigned...
to the PTC or other committee or to a dedicated utilization review committee.

DUR programs do have limitations—many providers and beneficiaries resent any attempt to constrain medicine choices and see these programs as an effort to control costs rather than an effort to improve the overall quality of medicine use. Moreover, data for DUR can be hard to capture and use effectively. Compiling data to analyze is a complex process that requires the evaluation of the data quality and completeness and the validation of the information. This is a bigger challenge in settings with limited automated technology or qualified staff to manage the DUR programs.

Although DUR is costly and difficult to manage, particularly in resource- and technology-limited settings, evidence shows that every MBP should have an effective medicines utilization review program. MBPs that do not rigorously review medicine utilization are almost certainly losing significant resources to wasteful utilization and in too many cases to outright fraud.

The three DUR variations are prospective, concurrent, and retrospective.

### Prospective Review

The dispenser reviews the patient’s drug regimen and history before dispensing the medicine. The dispenser checks for patient and prescriber eligibility, therapeutic duplications or conflicts, contraindications or potential drug interactions, potentially inappropriate duration, dosage, or medication, and any conflicts with the MBP formulary or STG policies. The dispenser may contact the prescriber to discuss a potential problem and request a change in the prescription or contact the MBP and request an exception prior to dispensing.

Where the technology is available, the prospective DUR process uses point-of-sale technology with electronic links between the provider and the MBP. Prospective DUR can also be done with manual or automated patient profiles that the dispenser maintains, if the medicines all come from the same location or from a networked provider, who then calls the prescriber or MBP to clarify issues before dispensing the medicine.

### Concurrent Review

This form of DUR takes place while medical therapy is in process. It is generally applicable in inpatient and long-term care settings, but may be used in other situations involving long-term medical therapy. This is an important component of special purpose medication management and disease management programs. The emphasis again is on reviewing the beneficiary’s medication regimen and patient profile and contacting the prescriber or the MBP to correct any potentially harmful problems with policies.

### Retrospective Review

This DUR process takes place after medicines have been provided. Although retrospective review can identify potential problems with a specific patient’s medication regimen, because this review takes place after the patient has gotten the prescription, it may be useful for that person only to avoid similar issues in the future. The primary aim of retrospective DUR is to compile information from claims or from patient profiles and dispensing records (in the case of in-house dispensing) to monitor and analyze medicine use patterns by beneficiaries, prescribers, and pharmacy providers. Results are then fed into the standard reports described in the section on MBP performance measurement.

Some typical targets of retrospective DUR include—
In Lesotho, four of the five leading causes of death are due to infectious diseases, many of which can be prevented or treated with access to safe and effective medicines. However, irrational prescribing practices—giving a patient too many, too few, or incorrect medicines—often jeopardize patient outcomes, accelerate the occurrence of drug resistance, and limit future treatment options. To assess whether prescribing patterns were in line with national treatment guidelines, the Strengthening Pharmaceutical Systems program, funded by the US Agency for International Development, conducted a DUR by analyzing pharmacy records, health information data, and other quantitative and qualitative indicators at six hospitals in Lesotho. The results indicated that on average, more medicines were prescribed to patients in Lesotho compared to comparable settings (3.8 medicines prescribed per encounter compared to 1.3–2.2 in similar settings), over 20% of medicines prescribed were not on the national essential medicines list, and only 43% of prescriptions aligned with STGs. Results from DURs, like the one conducted in Lesotho, can be used to design interventions, ensure the continued effectiveness of medicines, and improve patient outcomes.

**IV.D. DETECTING POTENTIAL FRAUD AND ABUSE**

Fraud and abuse are two separate issues: Fraud occurs when someone misrepresents facts related to health care services to receive or increase payments from a health plan or the government; abuse occurs when a provider or beneficiary provides or receives services or medicines that are not medically necessary. Every MBP should have a dedicated phone line allowing beneficiaries, providers, and concerned members of the public to report suspected fraud or abuse. This hot line should allow anonymous reporting by phone and by Internet/email, where feasible. In addition to active DUR, this is a critical way to detect and control fraud and abuse.
When suspected fraud or abuse is identified through DUR programs, the MBP needs to investigate further with an audit. One level of audit comes with prospective review, which is most applicable in point-of-sale systems, where potential fraud or abuse alerts can be built into the automatic system, problems can be detected, and dispensing blocked. However, when fraud or abuse is suspected, the MBP should exercise the contractual right to conduct detailed audits of provider records (and beneficiary records if warranted). A detailed audit includes the desk audit and the field audit.

A desk audit is reviewing all claims or prescription records for a particular provider based on suspicious patterns detected in the general utilization review process. If the desk audit identifies potential instances of fraud or abuse, the next step should be a field or on-site audit whereby an auditor (ideally with clinical qualifications) visits the provider’s office or outlet. The auditor reviews prescribing and dispensing records, records documenting receipt of medicines or services by beneficiaries, and where unusually high quantities of medicines have been billed, records of procurement and receipt of medicines from manufacturers and distributors. The auditor may need to contact beneficiaries to verify that they received the services and medicines that were billed. To be most effective, the field audit should not be announced in advance to minimize the opportunity to falsify records. Where the claims data and other records do not allow a detailed desk audit for a provider (or beneficiary), the field audit may be the first step after identifying potential issues.

If fraud or abuse is evident or highly suspected based on audit evidence, the provider can be terminated from the network, or in less clear-cut cases, suspended. Providers or beneficiaries who are identified as having engaged in fraud may be reported to authorities for prosecution or compelled to reimburse the plan for the inappropriate payments.

Annex 4 provides examples of fraud and abuse drawn from the actual experiences of MBPs in the United States and other developed countries; LMICs are equally susceptible to these problems and need to implement effective utilization review programs to prevent them or detect and take action to correct any problems.
IV.E. INTERVENTIONS TO PROMOTE APPROPRIATE USE OF MEDICINES

When inappropriate medicines use by providers or beneficiaries is identified, the MBP needs to intervene to correct the problems and improve future behavior. Programs to improve medicine use by providers and beneficiaries can be grouped into three categories: financial mechanisms, interventions to change behavior, and suspension or termination of eligibility.

The Rx for Change database, mentioned in section III.I as a source of information for evaluating educational alternatives, is also an essential resource for reviewing evidence related to the value of the various interventions mentioned in this section (https://www.cadth.ca/rx-change).

Financial Mechanisms

Financial mechanisms are crucial in promoting appropriate use of medicines, both as incentives and penalties. Incentives or penalties that can be used in plans delivering medicines through contracted service providers have been covered in earlier sections.*

Interventions to Change Provider and Beneficiary Behavior

When inappropriate use is detected during the course of a DUR, educational or behavior change interventions to correct behavior by providers or beneficiaries may be an option, assuming there is no intentional fraud involved.

The educational intervention should include contacting the provider or beneficiary, explaining how their use of medicines deviates from plan policies or preferred practices, the reason the policy or preferred practice is mandated by the plan, and requesting change in future prescribing or use. It can help to compare the wrong behavior against that of peers; for example, if a prescriber is writing far more prescriptions per encounter than his or her peers, the comparison can be offered without naming the peers.

The communication regarding medicine use can be through mail, email, or phone. Some benefit plans have incorporated face-to-face interventions, whereby a clinical pharmacist or other clinically qualified practitioner visits the targeted providers or beneficiaries and combines education on best practices with personal requests to change to conform to MBP policies and guidelines. This approach is also known as counter-detailing. It is clearly more expensive than sending out messages or making calls, but evidence shows that this method is more effective in changing provider practices.67

Combined approaches to changing behavior involving education, financial incentives, and feedback on utilization are most likely to be effective. However, when these interventions fail, further action must follow. If policies and guidelines for medicine use are not enforced, then monitoring use is pointless. In benefit plans that deliver medicines to beneficiaries through in-house facilities, staff performance ratings, salary increases, and continued employment can be tied directly to appropriate use of medicines and compliance with MBP policies.

*See Section III.F Managing Distribution of Medicines to Beneficiaries (particularly the subsections on payment to providers) and Section III.G Medicine Selection: Formularies, Treatment Guidelines, and Substitutions).
For contract providers, a contract provision should allow for suspension or termination if the provider fails to comply with MBP policies. In most cases, the next step after an educational intervention fails would be suspension, followed by termination for a repeat offense. Immediate termination might be justifiable as a next step after education for egregious or unrepentant offenders.

As discussed, if fraud is suspected, it would be justifiable to immediately suspend the provider or beneficiary, and if fraud is confirmed, terminate the offender and report them to legal authorities or in the case of providers, to the appropriate regulatory agency.

See chapter on Promoting Rational Prescribing in MDS-3.

Monitoring and Encouraging Adherence to Treatment and Appropriate Medicines Use

WHO has defined patient adherence (formerly known as compliance) as “the extent to which a person’s behavior—taking medications, following a diet and/or executing lifestyle changes—corresponds with agreed recommendations from a health care provider.” Failure to adhere to prescribed instructions for medicine use is a widespread phenomenon in all health care settings. Some beneficiaries do not fill their prescriptions, some do not take the medicine in the dose and frequency prescribed, and some stop when they feel better.

Poor adherence is not just a health problem for the individual—it can contribute to problems such as antimicrobial resistance and wasted money. There are many reasons for non-adherence; for example, prescribers and dispensers may not explain how to use the medicine in language that the beneficiary understands; the beneficiary may not be able to afford even the cost share and neglect to fill some or all of the prescriptions; the beneficiary may not have easy access to a dispenser. In addition, patients, particularly older and sicker people, may be unable to remember exactly how and when to take medicines, especially with complex regimens comprising multiple medicines that need to be taken at different times. The medicine may have unpleasant side effects, which seem worse than the disease. And the beneficiary may not really understand the need for the medicine, particularly when a disease does not have clear symptoms, such as high blood pressure.

Clearly, educational outreach to improve the beneficiary’s understanding of the need to take medicines as prescribed and programs to improve prescriber and dispenser communication are important strategies, but they may not be sufficient.

The MBP needs to develop strategies for monitoring and improving treatment adherence when problems are detected. Monitoring individual patient adherence using methods such as pill counting can be difficult and time-consuming and those relying on patient recall have questionable accuracy. One proxy approach to monitoring adherence to antiretroviral therapy at the health-facility level was developed and validated by the International Network for the Rational Use of Drugs Initiative on Adherence to Antiretrovirals (INRUD-IAA), as the box below describes.

Vogenberg suggests potential strategies that MBPs can use to improve beneficiary adherence to treatment—

- Ensuring that all patients have reasonable access to prescribers and to dispensing outlets that have a steady medicine supply.
- Reducing economic burden through reduced or exempted cost-sharing and co-payments.
- Prescribing regimens that are less complex, such as one combination
product rather than two separate medicines or medicines that require only one daily dose as opposed to multiple doses. The MBP must weigh tradeoffs if the medicine that is easier to take is more expensive than alternatives.

- Carefully screening for adverse drug reactions, which discourage adherence.
- Involving family or community members to help patients adhere with therapy.
- Handing out weekly medication containers that remind patients when to take medicines.
- Sending voice mail/email/text messages to remind patients when they need new prescriptions or refills.
- Tying automated tracking systems to billing systems that alert the MBP when beneficiaries fail to pick up prescribed medicines, keep appointments, and request refills.

Many countries have introduced dedicated disease management programs, where medication therapy of individual patients is closely managed because nonadherence or suboptimal therapy could lead to costly or potentially life-threatening situations. Examples of those diseases include asthma, chronic obstructive pulmonary disease, coronary artery disease, hepatitis, high blood pressure, and HIV. Because they often involve co-morbidity, some MBPs and international initiatives are moving toward integrating disease management programs, such as tuberculosis and HIV and AIDS.

As reported by Plocher, disease management programs should have the following elements:

### MONITORING AND INCREASING ADHERENCE TO ANTIRETROVIRAL THERAPY IN RESOURCE-LIMITED SETTINGS

INRUD-IAA, in collaboration with national AIDS control programs in Kenya, Rwanda, Tanzania, and Uganda, made major contributions to measuring and understanding antiretroviral adherence and how patient adherence and retention relates to facility-level operations. Specifically, INRUD-IAA—

- Documented inconsistencies in approaches that programs and facilities within a given country and across countries used to measure antiretroviral therapy adherence and retention
- Developed and validated reliable indicators for monitoring adherence that can be measured using routine data available in treatment centers, including indicators based on appointment keeping; the actual indicators are the monthly percentages of patients who attended the clinic—
  1. on or before the day of their next scheduled appointment
  2. within three days of their scheduled appointment
- Developed and field-tested a survey manual and software to measure facility-level adherence and retention
- Documented that adherence rates differ substantially between facilities
- Identified facility-level and system-level determinants of adherence
- Conceptualized and tested practical and scalable health system interventions to improve adherence and retention

Successful interventions were implemented and assessed in Kenya, Rwanda, Tanzania, and Uganda, including developing an appointment register to fix negotiated appointments, monitoring appointment keeping, and reaching out in a timely way to patients who missed appointments. The researchers have advocated for using these methods to monitor other patients with chronic conditions.
▪ Effective measures to identify the target health problem in different population segments
▪ Evidence-based STGs
▪ Collaborative approach to treatment and support involving prescribers, dispensers, and other care providers, including community health workers
▪ Active patient involvement and education to improve self-management of the health problem
▪ Measurable progress and outcome indicators to monitor and adjust the treatment regimen
▪ Proactive educational programs for patients and all involved care providers
▪ Routine communication and reporting involving the patient, physician, other health care providers, and the MBP

Disease management programs may be funded and managed either by the government, donors, NGOs, or directly by the MBP or by a PBM contracting with the MBP. In some places, commercial companies market disease management programs to MBPs and directly to large employers. Some pharmaceutical manufacturers are willing to co-sponsor disease management programs and provide discounted or even free medicines for some patients as well as educational materials for providers and patients.

Disease management programs can incorporate medication therapy management programs provided through pharmacies. In these situations, the pharmacist actively monitors and manages the patient’s medication regimen and even makes adjustments to the regimen once the responsible physician has developed the treatment plan.

### Caps or Limits on Prescriptions

When DUR reveals that excessive numbers of prescriptions per patient encounter are being prescribed, the MBP or PBM can place limits on the number of prescriptions for one patient visit or the number of prescriptions a beneficiary can receive in a month. For example, the policy might state that the MBP will not reimburse more than five prescriptions per month. Such limits can reduce excessive or unnecessary use of medicines by some providers and beneficiaries, but they can harm sicker beneficiaries who need more than the capped number. Total costs may actually increase if these patients must be hospitalized when they could have been treated as outpatients. If the MBP is going to use these types of limits, it should monitor the impact on beneficiary sub-groups who are at or near the limit to ensure they receive necessary care. Most MBPs allow exceptions through the prior approval process when the provider states that a higher number of prescriptions are needed for a specific beneficiary.

»See chapter on Encouraging Appropriate Medicine Use by Consumers in MDS-3.

---

REFERENCES


