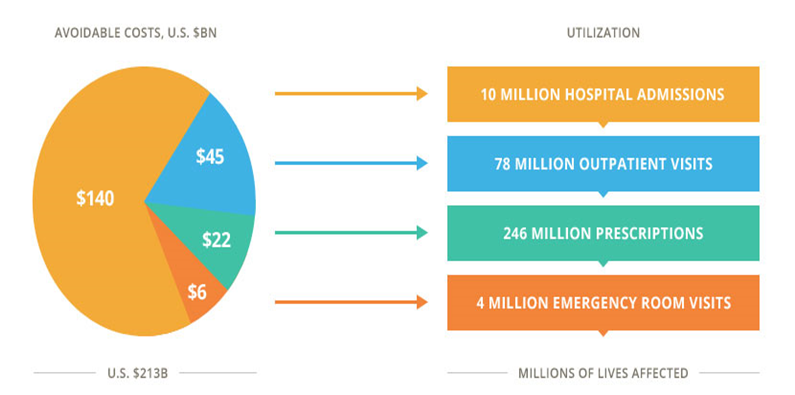
MEDICATION THERAPY MANAGEMENT:

IMPORTANCE OF MEDICATION MANAGEMENT:

## WHAT IS MEDICATION:

Medicines are powerful treatment tools that help prevent and treat illnesses and relieve symptoms.



## WHAT ARE GAPS IN MEDICATION:

# KEY FACTS ON MEDICATION:

* **More than 3.5 billion prescriptions** are written annually in the US2
* **Four out of five patients** who visit a physician leave with at least one prescription3.
* **Medications involve 80% of all treatments** and impact every aspect of a patient’s life.

# COMMON DRUG THERAPY PROBLEMS:

* The **two most common drug therapy problems** experienced by patients receiving comprehensive medication management are:
  + (1) ***the patient requires additional drug therapy*** ***for prevention, synergistic or palliative care, or***
  + (2) ***the existing drug dosages need to be titrated to achieve therapeutic levels that reach the intended goals of therapy.4***
* ***World Health Organization,***findings shows that adherence to therapy for chronic diseases in **developed countries averages 50%,** and the consequences of poor adherence to drug therapy leads to poor health outcomes and increased health care costs.”5

# WHY MEDICATION MANAGEMENT IS CRITICAL

DRUGS: There are now 10,000 prescription drugs and 300,000 over-the-counter medicines in the market. It is not possible for a human being to manage such a huge repository and thus it requires reliance on technology.

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| ***Eight out of 10 adults self-medicate using over-the-counter (OTC) medicines*** |

***50% of people have difficulty in understanding the prescription****.*

**BY LAW** when a physician prescribes drugs for a patient, the physician is required to ensure that the patient is fully informed of the drugs risks, benefits and correct way of consuming drugs. Statistics show that this **occurs in less than 20%** of the patient population.

***Either doctors are short of time or patients are not in a position to understand what physician is hurriedly explaining to them.***

***Or to make the matter still worse they don’t know what questions to be asked to ensure correct and effective consumption of medicine****.*

**Unfortunately, many people don’t consult their doctor, nurse or pharmacist, or take the time to learn about how to safely use OTC and prescription medicines.** We are hurt each year by preventable medicine errors.

Result – 30-50% of prescriptions are not taken as they should be.

# What we do about Medication in these 30% – 50% of the cases:

1. We forget to take medicine.
2. Forget to carry them with us while going out/to work.
3. Non availability of prescribed medicine in market
4. Discontinue the medicine before course completion
5. Reduce the dose to avoid side-effects or reduce cost
6. Consume medicines which should not be consumed together
7. Consume medicine with certain food items with which they should not be taken.
8. Consume Medicine in certain health state or diseases in which they should not be taken

# RESULT OF INAPPROPRIATE MEDICATION:

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| 1. May lead to longer sickness or unnecessary progression of disease |
| 1. May prevent you or your loved ones from getting well as fast as you would like. |
| 1. Lower quality of life |
| 1. Premature death |

# COST OF MEDICATION ERRORS:

Drug therapy problems occur every day and cost money in both the developed and developing world.

In US drug related morbidity and mortality costs this country almost $200 billion annually, exceeding the amount of money we spend on the medications themselves.6-8

## For example:

In Chronic disease it is imperative to have a medication management plan.

**WHY PERSONS WITH CHRONIC DISEASE ARE AT HIGH RISK:**

* Persons with multiple chronic illnesses see an average of 13 different physicians;
* Fill 50 different prescriptions per year;
* Account for 76% of all hospital admissions;
* Are 100 times more likely to have a preventable hospitalization than someone with no chronic conditions.9

***The Institute of Medicine*** noted that while only 10% of total healthcare costs are spent on medications, their ability to control disease and impact overall cost, morbidity, and productivity–when appropriately utilized–is enormous.10

*“****Pharmaceuticals are the most common medical intervention, and their potential for both help and harm is enormous. Ensuring that the American people get the most benefit from advances in pharmacology is a critical component of improving the national health care system.”*** *Institute of Medicine.11*

# BELIEVE IT OR NOT:

**67% of hospitalization for people 65 years and older tied to four medications: Warfarin, Insulin; Antiplatelet, Oral Hypoglycemic.**

**28% of Hospitalization among seniors are due to adverse reactions.**

**The elderly account for 12.9% of the US Population, but consume approximately 34% of total prescriptions.**

**2/3 of adverse events post discharge are medication related.**

**$1.1 billion spent on hospitalizations due to Polypharmacy mismanagement.**

# ACTIVE WELLNESS COMPREHENSIVE MEDICATION THERAPY MANAGEMENT:

**FEATURE:**

**The drug module has a Rich Library of generic drugs and branded drugs that precisely addresses in brief A to Z of the medicine.**

**These help consumers follow the 7 R’s of the medicine**

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| The **right** medicine |
| For the **right** ailment  By the **right** person |
| In the **right** amount |
| At the **right** time |
| In the **right** way (swallow, chew, apply to the skin, etc  With the **right**  diet |

**Smart Medication is answers to questions like – why doctor has given this medicine, how much should be taken, when should it be taken, what food items cannot be consumed with this medicine, what other medicines cannot be taken with the prescribed medicine, what are the probable side effects, how to manage the side effects, in what health states the medicine is prohibited and thus can have negative impact on health.**

**We forget to take medicine** – **Communication is essential.**  Our cloud based intelligent platform will inform you five minutes before it’s time to take the medicine. In the absence of medication compliance, with your standing instructions we will let your “Health Care Team” of Kin and physicians know about the non-compliance as you listen to your dear ones more than you listen to us. Or they care of you more than you do yourself. Our application alerts patient when it’s time to take medicine with option to have an Alert escalation system.

**Discontinue the medicine before course completion:** Our alert system will remind you when it is time to take the medicine or order the medicine. Medicines can be provided on doorstep once the order is placed.

**Consume medicines which should not be consumed together:** **Educate before you medicate.** You can view the XX number of drugs combinations that should not be taken together in just two clicks. And If you keep us informed about the medicines you are planning to take/or have taken then we will provide you with real time alerts letting you know if it is ok to consume these medicines together or not. **Did you know**:

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| 1. Alcohol consumed with sleep medicines (for example, Ambien or Ambien CR) or anti-psychotics (for example, Seroquel) can lead to serious complications. |
| 1. Antibiotics decrease the effectiveness of birth control pills. |
| 1. Selective Serontonin Re-uptake Inhibitor (SSRI) Antidepressants (for example, sertraline/Zoloft ®) taken with St. Johns Wort increases the risk of drowsiness and not being able to think clearly. |
|  |

1. Combining pain relievers, prescriptions or multi-symptom medicines that have the same active pain relief ingredient could result in your taking too much of that ingredient, and too much of any one ingredient can lead to serious health problems

**Consume medicine with certain food items with which they should not be taken**:

Our application has an Interaction checker that warns of combinations of medicines and food items which should not be consumed together as their chemicals interact either to reduce or increase the medicine efficiency/ impact or have additional unwanted reactions.

**Mixing drugs or drugs with certain foods could be dangerous.** Grapefruit juice can prevent the body from breaking down some medicines, which means the medicine may stay in your system longer.

**Consuming the medications in certain health state or diseases in which they should not be taken. Data required….**

Active Wellness - Smart Drug Health will give real time alerts through prompt or message to you and you dear one if you are about to consume any medicine which is not intended in certain health states or disease states. This is provided that you are on the system that tracks and monitors your health.

1. Vicks has harmful effects on the foetus/baby of the pregnant ladies. Please validate and add examples.

**Other Brand Names:**

**T**he Active Wellness - Smart Drug App will let you know about the medicines which have the same chemical combinations and thus the effects, however manufactured by different manufacturers. If permitted by physicians expensive drugs can be substituted with cheaper ones. Data required.

# You are not alone:

Smart Drug app will help you to connect with other folks who are also using/have used the drugs in past. You can discuss and share your experience about the drug with others.

# FAQs

# 1. What is e-prescribing and why is it safer than a paper prescription?

# A. Many physicians, nurse practitioners, and physician assistants are starting to make the switch from using the standard prescription pad and pen to electronic prescribing?

# B. Which patients benefit most from comprehensive medication management?

# C. How does medication management help to engage the patient and address drug related morbidity and mortality?

# Why would a primary care provider consider the need for additional medication management services from a pharmacist in clinical care?

# Why would a primary care provider consider the need for additional medication management services from a pharmacist in clinical care?

# What are the electronic therapeutic record requirements for this practice?

# How is this service requested and delivered?

# What are the implications (business/cultural) for key stakeholders when medication management for complex patients is delivered by a clinical pharmacist?

# What is e-prescribing and why is it safer than a paper prescription?

# A. Many physicians, nurse practitioners, and physician assistants are starting to make the switch from using the standard prescription pad and pen to electronic prescribing?

Instead of writing out your prescription on a piece of paper, your Physician can enter it directly into the PMS from their Computer / Laptops/ Mobiles.

The prescription is secure and available to you on line. You can convert your prescription into Drug Buy orders on the Pharmacy with a Click of your Mobile.

RESULTANTLY in avoidance of medication errors:

* You get an accurate and legible prescription
* The Care team will educate and help you.
* Your drug tracking and monitoring is activated.
* The prescription is checked against the allergies / medications you are taking.
* Proper records are maintained in your PHR.
* Your Pharmacist / Care Team does a COMPREHENSIVE MEDICATION REVIEW.

By a single Click of sending prescription requests directly to the pharmacy, you have a head start in getting your medicines filled.

Your health team can also more easily monitor your medications and even select drugs that cost effective and help you lower costs of medications.

But even more important, e-prescribing can improve the safety and convenience of prescribing medicines.

Electronic prescribing, or e-prescribing, can help prevent some medication errors and gives pharmacists, doctors and nurses access to immediate, more complete information about your medical and medication history and can alert them to potential problems such as drug allergy. So, ACTIVE WELLNESS e-prescribing can lead to safer, more informed prescribing so that patients get the care that best fits their needs. This technology is especially helpful if you, your partner, parent or child have chronic illness or are recovering from surgery and take multiple medicines.

# B. Which patients benefit most from comprehensive medication management?

Significant evidence is accumulating to establish the positive impact that comprehensive medication therapy management has on patient outcomes.18-20

Patients who benefit the most are:

* those who have not reached or are not maintaining the intended goal of therapy,
* those who are experiencing adverse effects from their medications,
* those who have difficulty understanding and following their medication regimen,
* those in need of preventive therapy, and
* those who are frequently readmitted to the hospital..

Medical conditions specially Chronic Disease which are most costly and are associated with multiple medications used (diabetes, cardiovascular disease, COPD, asthma (in children), cancer chemotherapy, depression, pain and hypothyroidism) are great candidates with which to begin the service and drive the maximum benefits. 21-23

# C. How does medication management help to engage the patient and address drug related morbidity and mortality?

The patient and his/her medication experience is the starting place for managing medications. An active process of identifying medication-related problems occurs so that interventions can be designed that are specific and effective. Measurement of actual outcomes allows one to determine what is and is not effective in practice. Personalized assessments of need are done and focused solutions are provided. Comprehensive medication management in the Primacy Care Medical Home is based on this principle.

The services (of medication management) represent added value that will make the Primary Home Care / Medical home better able to meet the patient care goals and control health care costs. To control costs and improve patient outcomes in the medical home, each medication management encounter will include:

1. A description of the patient’s medication experience. This information includes a description of how a patient makes his/her decisions about the medications he/she takes in a cultural and holistic context. This information provides a complete medication history and current medication record, complete with how the patient is actually taking the medication(s). A complete medication record is provided to both the patient and the prescribing providers so everyone is aware of all medications and how they are actually being taken.

2) A list of medication-related problems which need to be addressed. These problems interfere with the achievement of the patient’s goals of therapy. Without a clear definition of the issues a patient is experiencing or might be at risk to experience, it is not possible to individualize the interventions in a manner that will optimize the desired outcomes. When no medication-related problems are determined to be present, then the medical team can be assured that all of the patient’s medications are appropriate, effective, safe, and being taken as intended.

3) The care plan goals of therapy are individualized to the specific patient being cared for – even though most care plans begin with goals from national guidelines, if not individualized based on patient specific information (risk factors, co-morbidities, other concurrent medications, etc.), they may not be appropriate or achievable.

4) Measurable outcome parameters which are personalized are determined for each patient so he/she is able to participate in the care plan in a patient-centered approach. Appropriate parameters for both effectiveness and safety are determined, such as laboratory values, quality metrics, symptom alleviation, improvement or prevention, activities of daily living or any other parameter deemed by the patient or health care team to be representative of improvement..

5) Interventions which are personalized for each patient (education, tools, etc.). A major explanation for why patients are not compliant (after the medication has been determined to be appropriate, effective, and safe) is because the patient is not able to understand the instructions or able to physically accomplish the delivery of the drug product. This can be overcome when the patient participates in determining how the goals will be met.

6) Follow-up evaluation of actual outcomes related to medication use occurs routinely, however, specific follow-up is necessary to determine if appropriate progress is being made toward the goal of therapy, if any safety issues have arisen, and if the patient has any concerns about taking the medication as intended. The follow-up evaluation also adds new data to the use of medications in practice. The level of information collected in medication management is critical to post-marketing surveillance of new products and continued evaluation of medications in practice.

# Why would a primary care provider consider the need for additional medication management services from a pharmacist in clinical care?

Most physicians and providers have the training and experience to manage medications effectively within their area of general or specialist knowledge, but may seek additional consultation in managing medications outside of their usual scope of care or when patients do not reach clinical goals of therapy. Primary care providers frequently refer patients to a specialist for medication adjustments, although the diagnosis is well established. Common examples include referral to a pulmonologist for worsening asthma or COPD, or a cardiologist for poorly controlled hypertension. In the absence of newly suspected disease or interventions, the drug therapy problems could be effectively resolved with comprehensive medication management services delivered by a pharmacist.

Additionally, coordinating medications prescribed by multiple specialists, the ever increasing use of herbals, supplements, and nutriceuticals, and foods that interfere or enhance a drug’s effect in complex patients may result in a request for a more comprehensive medication review. Adverse reactions and interactions are frequently seen with multiple medications and are compounded by the effects of chronic disease on organ systems. For example, the primary care provider may seek guidance from a clinical pharmacist requesting a comprehensive medication review to determine medication interactions and adjustments in a patient undergoing chemotherapy for cancer, or adjustments in anti-seizure medications, or even perhaps in a patient that is on multiple medications to treat a condition such as high blood pressure that is still not at goal. As the team approach in the PCMH evolves, this focus on chronic disease management, as well as an emphasis on preventive therapies with documented evidence of improved outcomes, will result in more comprehensive medication management as a cornerstone of quality care..

# What are the electronic therapeutic record requirements for this practice?

The Health Information Technology document *“Meaningful Connections”* prepared by the PCPCC includes many of the information items that need to be included for medication management. However, there are a number of items that deserve special consideration here because they are items specific to medication management and/or because they are items not routinely included in electronic health records. It should be noted that the comprehensive management of a patient’s medications requires an electronic therapeutic record that supports these functions**.**

The following information items are necessary for comprehensive medication management:

1. **A record of the patient’s medication experience** (Understanding, concerns, preferences, beliefs, behavior)

2) **Medication allergies** (along with a description of the allergy, timeframe and severity) and adverse reactions (separated into dose-related and preventable)

3) **Medication history** (including immunizations) (complete with dates and effectiveness information, record of issues, problems, etc.)

4) **Current medication record** (includes all medications regardless of source, mode of administration or prescriber), indication for use, product, dose, duration and the manner in which the medication is actually being taken

5) **Active drug therapy problem list complete with the cause of the problem** (associated with the medical condition and medications relating to the drug therapy problem)

6) **Therapeutic treatment plans for patient and practitioner** (a patient and prescriber version of the treatment plan needs to be available). The following specific functionality must be available in the electronic therapeutic record to provide medication management services:

1. Connect indication for medication (reason for use) to specific drug product to dose, duration and actual outcomes for each medical condition

B. Identify, resolve and prevent drug therapy problems of:

I. Appropriateness: Eliminate unnecessary medications

Initiate necessary medications not being taken

II. Effectiveness: Identify most effective in specific patient

Increase dosages to effective levels

III. Safety Eliminate toxicities

Identify adverse reactions

IV. Adherence Increase patient’s willingness to adhere to medication regimen

The cause of each of the drug therapy problems described above needs to be documented as well.

C. Record and evaluate actual outcomes from drug therapy. Record personalized goals of therapy and evaluate against outcome measures for each medical condition

Graph laboratory levels against changes in drug therapy and doses

Record outcome changes with changes in medication details

D. Provide post marketing surveillance on appropriateness, effectiveness, safety and adherence variables

E. Record drug therapy problems specific to drug product and medical condition and patient parameters

F. Offer clinical decision support and analysis

G. Support patient participation and decision-making in drug therapy (adherence tools, record keeping, etc.)

H. Provide patients with medication information that is individualized and complements the therapeutic care plan

I. Provide a website for patients to participate in managing their medication

Electronic therapeutic records are currently available that support the functions described above.

# How is this service requested and delivered?

When a prescriber identifies a patient in need of comprehensive medication management, a referral is made to the qualified practitioner. The manner in which the service is delivered is dependent upon the proximity of the practitioner, the specific structure of the medical home as well as the service delivery design of the practitioner providing the service. In many practices, the medication management practitioner is employed by the medical home and resides full time or part time in the clinic or practice. In this scenario the practitioner is available at any time to deliver the service and he/she functions inside the medical home structure.

Other medication management practices are established outside the medical home clinic (associated with a community pharmacy, health plan or hospital entity) where the referral is made to the practitioner and a patient appointment is set. The patient meets with the practitioner delivering medication management services off premises and the medication management practitioner provides the referring physician with written documentation of the assessment and communicates the need for any changes as well as a record of all of the clinical outcomes achieved. The patient is followed until the goals of therapy are met or until the physician determines this level of care is no longer necessary. This structure frequently involves the use of collaborative practice agreements between the physician and the practitioner providing medication management. Such agreements are allowed in 46 states.

Yet another structure allows the patient to request the medication management service directly, and an appointment with the practitioner is set. Even in this situation, communication between the medication management practitioner and the primary care physician occurs after each patient encounter. Medication management cannot be done effectively unless all of the patient’s providers are informed and care is coordinated with the team.

Medication management services can also be provided by telephone or through a virtual clinic structure. The medication management practitioner must be in direct communication with the patient (in person, telephonically, or telemedicine/virtual clinic) to deliver the services as described. IT systems necessary to support telephonic or telemedicine/virtual clinic arrangements must include accurate and reliable ways to identify medications and dosages currently being taken by the patient as well as a clear means to determine the response of the patient to the medications. When this service is provided by telephone or through a virtual clinic structure, it should be done by medication management practitioners who have had experience (are skilled in interview techniques) with these media and developed standardized methods to ensure a quality service is delivered.

# What are the implications (business/cultural) for key stakeholders when medication management for complex patients is delivered by a clinical pharmacist?

**Patients:** The practitioner providing medication management addresses the patient’s questions, concerns, preferences, wants, and needs as they relate to medications (their beliefs and concerns play a major role in their behavior – we must understand them). Patients are educated and collaboratively participate in their care plan following individualized goals and personalized interventions to meet their needs.. Fewer adverse reactions and side effects occur while positive clinical outcomes and better health are realized. The patient gains confidence in the medications and the practitioner which leads to increased adherence and persistence.

**Physicians/clinician:** Effective medication management provides the physician/clinician with more time to diagnose and effectively manage patient problems and formulate treatment goals, being reassured that the patient has a better understanding of his/her medication regimen and that he/she is actually taking the medication(s) as prescribed. Physicians/clinicians frequently change or add medications not realizing in some cases that patients are not taking the medication as previously prescribed. Prescribers also are frequently unaware of other prescriptions or diagnoses that involve other physicians and therefore lack a complete picture of the patient’s situation and risk profile when prescribing new medications. With informed/educated patients and a comprehensive medication list coupled with therapeutic recommendations from a medication manager, the physician/clinician can be very effective in moving a patient toward clinical goals of therapy and achieving performance outcomes.

**Health Plans:**  Effective medication management has been linked to lower total healthcare costs. Although medication costs typically rise as appropriate adherence increases, hospital and emergency room services decrease as patients reach clinical goals of therapy. The substitution of less costly medications, elimination of duplicate and unnecessary medications will all decrease medication costs. This service is recognized by patients as effective and positive, and quality indicators such as HEDIS® measures improve with the service.18

**Employers/Payers:**  In addition to lower total healthcare costs, patients experience fewer emergency room visits and hospitalizations, thus fewer workdays lost. Side effects such as drowsiness or decreased mental alertness are minimized, therefore productivity and quality of life improves. This is a healthcare benefit that patients relate to personally and benefit from individually. It is a very popular benefit when it is offered to employees.

**Pharmacists:**  Are able to contribute measurable value directly to the care of patients. This occurs because they are utilizing their expertise in medications to educate patients and to help minimize interactions and side effects, while recommending drug therapy regimens to physicians/clinicians which move patients more quickly toward clinical goals. The health care system benefits from the pharmacist’s expertise and medication management is the structure by which patients and physicians are able to gain from it.

The level of drug-related morbidity and mortality experienced by patients in the health care system has reached the point where something must be done to better manage the way medications are used. The medication management service in the medical home is a rational, comprehensive solution to the problem and benefits everyone.

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| **Management Principle** | **Description Of Principle** | **Contribution Of Medication** |
| **Personal Relationship with Physician or Other Licensed Practitioner** | Each person has an ongoing relationship with a personal physician or other licensed healthcare practitioner | The therapeutic relationship is established and the patient’s medication experience is revealed and used to improve care |
| **Team Approach**  **A Comprehensive Care Team** | The personal physician leads a team at the practice level who collectively take responsibility for the ongoing care of patients, including disease and/or case management | The rational decision-making process for drug therapy is utilized and the assessment, care plan and follow-up of drug therapy is integrated with the team’s efforts |
| **Comprehensive/**  **Whole Person Approach** | The personal physician or other licensed healthcare practitioner is responsible for providing for all the patient’s health care needs or taking responsibility for appropriately arranging the same | The patient is engaged and empowered in their use and understanding of the medications prescribed in their therapy. All of a patient’s medications (regardless of source) are coordinated, evaluated, appropriate, effective, safe and convenient- linked to clinical outcomes and improved health. |
| **Coordination and Integration of Care** | Care is coordinated and integrated across all domains of the health care system, | The intended therapeutic goals, which are made measurable and individualized to the patient, serve to coordinate and integrate the patient’s care with other team members. |
| **Quality and safety are hallmarks** | Quality and Safety are hallmarks of the medical home. | Drug therapy problems are identified, resolved and prevented in a systematic and comprehensive manner so everyone is working most effectively to realize appropriate, effective, safe and convenient drug therapy for the patient. |
| **Expanded Access to Care** | Enhanced access to care | Physicians are extended, made more efficient, and more effective through the optimal management of a patient’s medications. |
| **Added Value Recognized** | Payment of physician practices that appropriately recognizes the [added value](http://en.wikipedia.org/wiki/Added_value) | Clinical outcomes are improved, return-on-investment is positive, acceptance by patients is high, and physicians support the practice. |

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| **MEDICATION THERAPY MANAGEMENT SERVICES:**  **Resource-based Relative Value Scale** | | | | | |
| **Level of**  **Service Provided** | **Level #1** | **Level #2** | **Level #3** | **Level #4** | **Level #5** |
| **Assessment of Drug-related Needs** | **Problem-focused**  **1 Medication** | **Expanded Problem**  **2 Medications** | **Detailed**  **3-5 Medications** | **Expanded Detailed**  **6-8 Medications** | **Comprehen-sive**  **≥9 Medications** |
| **Identification Drug Therapy Problems** | **Problem-focused**  **0 Drug Therapy Problems** | **Expanded Problem**  **1 Drug Therapy Problem** | **Detailed**  **2 Drug Therapy**  **Problems** | **Expanded Detailed**  **3 Drug Therapy Problems** | **Comprehen-sive**  **≥4 Drug Therapy Problems** |
| **Complexity of Care Planning & Follow-up Evaluation** | **Straight -forward**  **1 Medical Condition** | **Straight- forward**  **1 Medical Condition** | **Low Complexity**  **2 Medical Conditions** | **Moderate Complexity**  **3 Medical Conditions** | **High Complexity**  **≥4 Medical Conditions** |
| **Review Time** | **15 minutes** | **16-30 minutes** | **31-45 minutes** | **46-60 minutes** | **>60 minutes** |
| **Care Manager Frequency** | **Bi-Monthly** | **Monthly** | **Monthly** | **Monthly** | **Monthly** |
|  |  |  |  |  |  |
| **Payment Amount** | $ | $$ | $$$ | $$$$ | $$$$$ |

BRING THE BEST OF BOTH WORLDS:

**C-RateRx:**

**How consumers assess the effectiveness of medications for specific indications**

The consumers get a chance to write on how effective the medicine is for the condition that they are taking it for. They get to answer and respond on their experience on the medications being taken. They are asked to respond upon the Effectiveness, Side Effects, Drug Reactions that they had, and did they complete the course of the medicine if not why did they leave it.

Their responses are aggregated and get to share their ratings of clinical effectiveness of medication treatments that are prescribed by doctors. This is an invaluable source of the safety and effectiveness as perceived by the Consumer taking the medication.

All other consumers get to see this as these are compiled from actual user experience and without a bias

P-[RateRx](https://www.healthtap.com/raterx/results" \t "_blank)

**How doctors assess the effectiveness of medications for specific indications**

P-RateRx aggregates and displays the ratings of clinical effectiveness of medication treatments that are prescribed by doctors. All Physicians, in good standing participate in creating this invaluable repository. This is made available to both consumers and to doctors and is a free public resource.

Contributions to this repository are made by validated licensed doctors, who are instructed to give ratings on a scale of 1 to 5 stars for medications. Medications are rated for specific conditions. The conditions are listed with potential drugs that are used for the treatment of this condition. The doctors/ Physicians are instructed only to provide ratings when they have specific, meaningful experience prescribing the medications for the particular indications, and only when they have observed outcomes in a significant number of patients.

In addition to star ratings, doctors also are invited to leave comments regarding usage, effectiveness, or side effects. For each medication, doctors are invited to add and rate new indications, and for each indication, doctors can add and rate new medications as treatments.

A generic medication name is presented (with brand names displayed alongside the generic name for reference). Based on the identical effective ingredient formulations of generic medications, P-RateRx currently does not collect separate effectiveness information for different branded versions of the same generic medications.

All Licensed doctors are invited to participate in creating and contributing to this resource, and participating doctors are validated prior to their contributions being recorded. To participate, doctors must apply, a process that includes establishing that they are licensed to practice medicine and that this licensure is in good standing. Once the doctor’s application is approved, he or she is admitted to the OCN Medical Expert Network.

The ratings and number of medication / indications continues to grow daily. As of early April 2015, more than 120,000 individual ratings of 1,296 medications and 4,892 medication / indications pairs had been entered into the continually growing RateRx database.

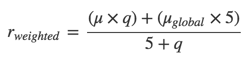
**Users of our Active Wellness can find these doctor ratings on the DRUG MODULE pages, where we show Here we get to see what the consumer is saying and what the Physician is saying.  It’s also easy to find doctor ratings for medications that treat the most common conditions on the** P-RateRx summary page**. Ratings are organized by generic name. Brand names are included for ease of reference.**

**Ranking of alternative medications by Weighted Average Rating**

Doctors give ratings on a scale of 1 to 5 stars for medications that treat a specific condition, but only when they have experience using it to treat that condition. In addition to the star rating, doctors also leave comments regarding usage, effectiveness, or side effects .for the consumer to see.

As new medications and indications are added, new data is presented alongside the larger set of existing ratings for alternative medications. ACTIVE WELLNESS does not release medication / indication ratings until the measurement uncertainty is less than 0.3 stars.

We present the data in a PARETO (rank-ordered list all the medications) that are being rated by consumers and doctors for a condition, even when some medications have as few as 10 ratings, and others have hundreds of ratings. To combine average ratings from fewer doctors with the average ratings from more doctors, we rank order the medications by their Weighted Average Ratings:



r = estimate of average rating, q = number of ratings,  
μ = average of the observed ratings:

The Weighted Average Rating is a Bayesian estimate of the most probable value for the average rating, based on available measurements together with what we already know about medication ratings. We begin with the prior probability that a new medication treatment is “Average” — in RateRx, the average rating given by doctors is 3.3 stars. This formula combines new ratings from doctors with this prior global average to calculate the weighted average rating.

**Significance testing ( Calculating P and T Values) for differences between different ratings is adopted**

To assess the ability of the average star ratings to discriminate small differences in effectiveness, we performed statistical comparison tests between all ratings for each pair of medication / indication. Using initial data for the assessment of 87 alternative medications for high blood pressure, we calculated the probability that the difference between ratings could occur by chance alone. We recorded the p-value for the Mann-Whitney test of the null hypothesis, and displayed the p-value as a color in an 87×87 grid of each medication compared to itself and to every other medication.

**This analysis shows that differences of average ratings of 0.5 stars or more were always significant at p <0.05:**

