Optum

Looking at managing ED use and spend through a different lens

The availability of urgent care centers and other non-emergent care alternatives has become more widespread. This has created a shift toward decreasing the amount of emergency department (ED) visits. Despite that decrease, overall ED spend for health plans has increased — not decreased. The total ED spend per member per year is $321.94.[1]

ED spend continues to be a significant expense for health plans, often accounting for over 7% of annual overall medical expense.[2] To help control ED spend, health plans may reach out to members with the goal of influencing them to use a more appropriate care setting than the ED. Outreach does address and raise awareness to use a more appropriate care setting. Yet it has little impact on addressing the underlying issue. A health plan's current outreach may be too general to meet a member's specific needs, causing too few members to act on the outreach.

Avoidable[3] and preventable[3] ED visits make up over 50% of their annual ED visits. Repeat users represent roughly one-third of total members using the ED and two-thirds of total ED visits.[4]

Many of these ED visits are avoidable or preventable. These visits can be avoided or prevented if the underlying drivers of why a member may repeatedly visit the ED are understood.

Effectively managing and controlling ED spend requires a different approach that gets to the heart of the matter — understanding which members continue to use the ED and why. Here's a way to look at members with recurring ED visits through a different lens.

50%
of ED visits are avoidable

....

2/3
of ED visits are made by one-third of total members using the ED[4]

It's not enough to know the member, you must know the person

In the realm of recurring ED visits, uninformed actions on the part of the health plan can be just as detrimental to ED costs as uninformed decisions on the part of the member. Leveraging claims, clinical and enrollment data is important. But it only forms part of the member's repeated ED visit propensity picture.

In addition to identifying members who are frequent users of the ED, it's important to look at the member's holistic environment. Consider not only what's going on clinically, but also other factors such as social determinants of health (SDOH). For example, insecurities with food, transportation and housing. SDOH play a key role in affecting the overall health and well-being of all of us. For health plan members who may be predisposed to frequently using the ED, SDOH serve as a strong indicator of future frequent visits, as can the community they live in, distance to providers, plan design and other real-world data (RWD).

Ok, so you're ready to create a dataset to form that more complete picture of the member. You know to collect claims and enrollment data and now you are adding clinical analytics, RWD and SDOH data to give you insights. But insights into what? And what's next? How do you harness all that data to help steer members to the proper intervention platform, so they don't return to the ED multiple times each year?
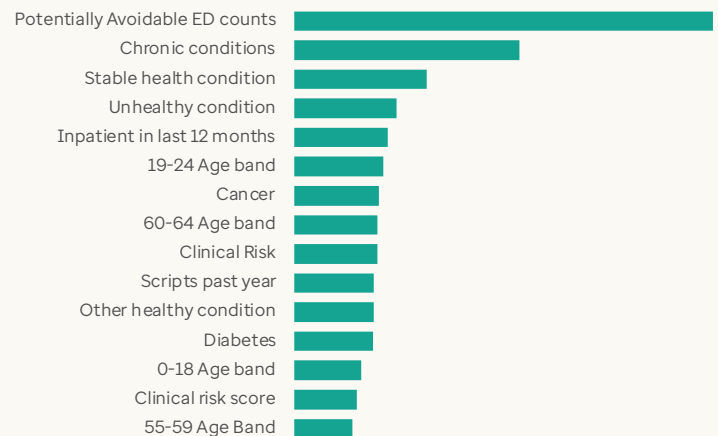
> Most people spend the majority of their time outside of a physician's office. How they spend their time when not in a physician's office is the key to understanding them.

Build a predictive model focused on repeat ED usage

Humans can't process all the data that can be amassed from various sources and inputs into a singular, salient theme or message. This is where data science and actuarial science come in. To truly drive proactive clinical interventions, the power of machine learning (ML) is needed to help make sense of the inputs and variables and produce actionable insights. This innovative approach helps drive down health care costs while also positively impacting health equity, health outcomes and patient experience.

You may be thinking ML is a black box that you can't see, therefore you can't trust its output. It's quite the opposite. Just because you can't see it, doesn't mean you can't trust it. ML helps connect data points into more meaningful insights that all the numerous, unwieldy spreadsheets cannot do. Meaningful and thoughtful model configuration and analysis come into play to reduce the risk of any biases through responsible ML, something that spreadsheets and other manual methods cannot do. In addition, attribution models within ML allow inferences as to what is happening within the "black box" so that addressable drivers can be determined.

Most important model variables

Variable	
Potentially Avoidable ED counts	████████████████
Chronic conditions	████████████
Stable health condition	████████
Unhealthy condition	███████
Inpatient in last 12 months	██████
19-24 Age band	██████
Cancer	██████
60-64 Age band	█████
Clinical Risk	█████
Scripts past year	█████
Other healthy condition	█████
Diabetes	█████
0-18 Age band	████
Clinical risk score	████
55-59 Age Band	████

Apply meaningful rules

Today, many health plans that are using ML modeling find their results yield limited accuracy and are unsatisfactory. As mentioned earlier, if only backward-looking standard health claims data is used, you can't understand your member in their entirely.

There are several reasons that contribute to the challenges of successfully identifying factors that lead to ED use where a patient could be treated in an alternative care setting. Within a health plan, contributing factors will vary by different lines of business and geographies. Getting down to the appropriate level of detail drives more meaningful insights. For example, urban versus rural, distance to the nearest ED versus urgent care center, food insecurity.

Many social determinants are actionable. However, in many cases health plans don't use RWD or SDOH output effectively. You can improve model accuracy by incorporating data sets that include clinical risk engine output as well as RWD and SDOH. These data sets help you figure out why identified members use the ED so frequently. By adding RWD, SDOH and clinical risk engine metrics, you can improve model accuracy on average by 15%. Once you have output from the model, you can begin to change member behavior through targeted interventions focused on specific outreach and education programs.

At Optum, we use data science responsibly to make a meaningful difference in the lives of those we serve to better support positive outcomes. We aggregate the data, make connection points, create actionable insights, then implement care plans that can create an ED savings opportunity of 20% to 30% over time.
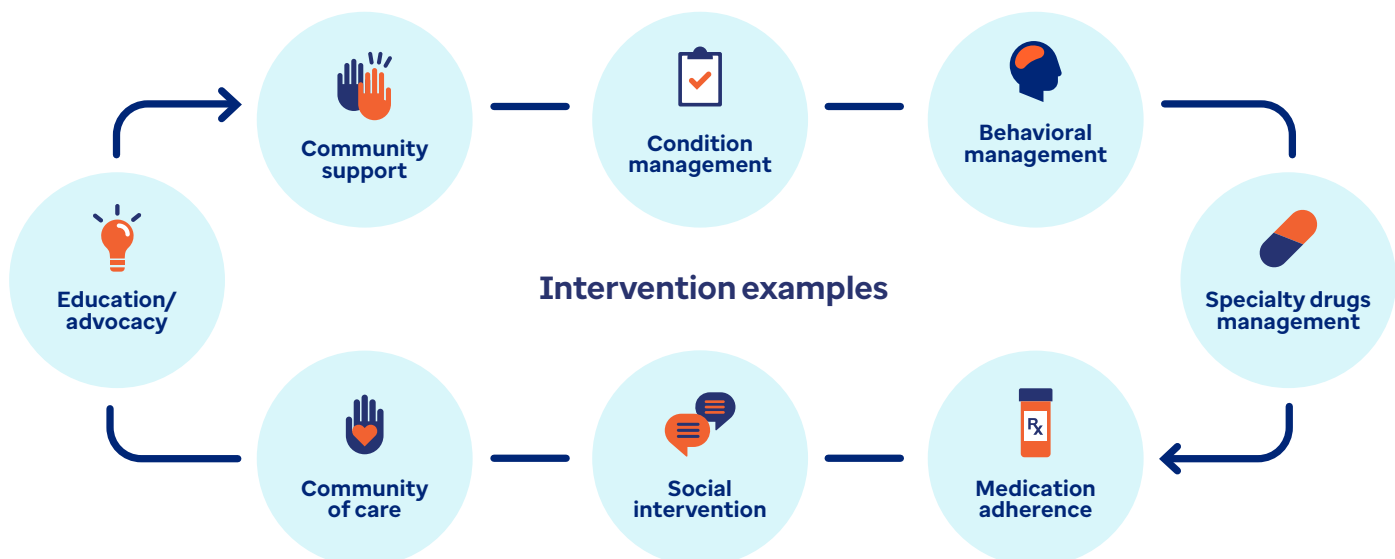
Patients' decisions and behaviors drive nearly 75% of their health care cost.[5]

Various levels of intervention support holistic care

Once the significant barriers to care access for a patient population have been identified, you must create a plan to implement mitigation strategies to help patients overcome them. For example, patients with social isolation and financial insecurity can benefit from annual wellness exams that are provided as in-home or telehealth benefits or through the provision of a non-emergency transportation benefit.

Social workers are an extension of care management There's no shortage of those who can help with the physical care of members, such as getting them connected to primary care providers, providing rides to those appointments, and so on. Health care systems acknowledge this and are addressing these gaps and others, such as social factors and behavioral health. Social workers and other behavioral health professionals are essential to help affect change.

Intervention examples

- Education/ advocacy
- Community support
- Condition management
- Behavioral management
- Specialty drugs management
- Community of care
- Social intervention
- Medication adherence

Five key considerations

Here are five things to keep in mind when building a model or refining an existing one, to help you leverage data in a responsible, meaningful and effective manner:

1. **Begin to shift the paradigm** from retrospective and reactive to more prospective and predictive. Leverage data and technology to predict and prevent individuals from continuing to use the ED where a patient could be treated in an alternative care setting.

2. **Understand the member holistically** to get to know the person. Consider not only what's going on clinically but also other factors around SDOH, which can be a huge barrier to why a member doesn't seek preventive care.

3. **Gather a more complete dataset** that not only includes claims and enrollment data but also clinical analytics, RWD and SDOH to create more meaningful and actionable insights.

4. **Act on insights effectively** and in a timely way to help create positive outcomes. It's not just about analytics gathering insights. It's about acting on those insights to help prevent future avoidable ED visits. Redirect the member to an appropriate level of care and to care that is more timely.

5. **Use an ML model** that is responsibly designed and tests for potential biases. Employ both clinical risk engine metrics and SDOH to ensure you are treating your entire member population with equity.

Learn how you can more precisely predict avoidable and preventable emergency department visits.

Visit: business.optum.com
Click **Get in touch** to send us your information

About the author

Jim Dolstad, ASA, MAAA, FCA
Vice President, Advisory Services, Actuarial

Jim's expertise is total cost reduction, leveraging social determinants, next-generation underwriting, population health management, program evaluation, performance management, Stars, predictive modeling and risk adjustment.

Jim has more than 30 years of industry experience working with payers, providers and employers. Prior to joining Optum, Jim was the chief actuary of a global operations management and analytics company. He also has served as chief actuarial officer.

Jim earned his Bachelor of Science in mathematics and economics from the University of Puget Sound. He is an associate of the Society of Actuaries and a member of the American Academy of Actuaries.

1. NAIC INSDATA downloads of regulatory filings for 2020.
2. 2021 Optum proprietary multi-payer database.
3. Majewski P, Lobick D, Lovell J et al. Appropriate ED utilization leading to better care coordination. *AJMC*. March 18, 2022.
4. Wang B, Mehrotra A, Friedman AB. Urgent care centers deter some emergency department visits but, on net, increase spending. *Health Affairs*. April 2021.
5. Irwin J. Incentives for healthy behavior can change U.S. health care. *GW Today*. Nov. 2, 2015.

Optum