

Patient-Centered Design: Designing Across the Care Continuum

When designing digital solutions, particularly in virtual healthcare delivery, it is important to understand that every individual has a care experience continuum they move through. By this we mean that individuals can move from a healthy state to one requiring more care and back again depending on certain events or conditions.

At Catalyst UX we have identified four major spheres on this patient care continuum that patients may move between: lifestyle and wellness, as needed therapies, event specific, and chronic conditions. These elements of the virtual care continuum make up the largest part of spending for healthcare in the US.



But more importantly, these spheres represent different abilities and requirements you need to consider when building a virtual care offering. Below we outline each point on the continuum. If you have a project or initiative you are working on, reach out to us and we will help you run a Patient Care Workshop to identify inflection points and product needs.

LIFESTYLE AND WELLNESS

Lifestyle and wellness is the first sphere of the continuum. This sphere is primarily based on individual desires and habits to monitor everything from diet to sleep. Below we've outlined four main areas people focus on and samples of digital tools which support these key activities.



Diet

Unhealthy diet and lack of physical activity are [leading global risks to health](#). Applications such as Noom or Weight Watchers help users keep track of not only what they eat but the psychology around food consumption.



Sleep

Sleep tracking devices commonly monitor [sleep duration, quality, and phases](#), which can tell users information about their sleep habits. Sleep tracking applications monitor movement, heart rate, sound, and environmental changes to help users get the best sleep possible.



Exercise

[One in five](#) Americans use fitness trackers. Now with built in abilities in the iPhone as well as the traditional trackers such as Fitbit and Garmin, more and more people are able to track their exercise routine.



Stress Management

Meditation has been proven to help decrease stress, reduce anxiety, improve sleep, and aid in managing challenging situations [overall](#). Leading stress apps include Calm, Headspace and more.



So why is it important to understand these baseline tools. In part, because it's important to know what baseline tools people are using before they move through the continuum so that you might build in integrations or understand data and insights that can be utilized to deliver optimum care.

AS NEEDED THERAPIES

As needed therapies refer to the time in someone's life when they need extra attention and care around a certain area. Typically, as needed therapies are temporary and enable the individual to return to their normal lifestyle and wellness activities after a short period of treatment. As needed therapies can include but are not limited to:



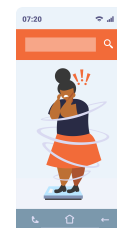
Mental Health Counseling

Mental health issues are a major issue -- in America alone, serious mental illness costs \$193.2million per year. And [one in five adults](#) in the US experience mental illness in a given year. While online applications won't solve everything, they can help reach people who may not have otherwise sought help due to anxiety or lack of mobility.



Weight Management

Above we covered diet. But sometimes weight gain can become more serious and have impacts on longer term health. Weight loss apps can help change [long-term behavior](#) that contribute to weight gain.



Substance Management

Substance abuse refers to the consumption of drugs, alcohol, and smoking which, when not taken care of, can have impacts on future health. According to the National Institute on Drug Abuse, the abuse of tobacco, alcohol, and illicit drugs is costly to our Nation, exacting more than \$740 billion annually in costs related to crime, lost work productivity and health care (see below and [here](#)). The top are: tobacco, alcohol, illicit drugs, and prescription.



Sleep Therapy

In the United States, [50-70 million](#) adults have a sleep disorder. Insomnia is the most common sleep disorder with short term issues reported by about 30% of adults. Obstructive sleep apnea follows and affects millions of US adults.



EVENT SPECIFIC

These categories require the individuals and their caregivers to seek medical attention around a specific event. Individuals typically seek medical attention and then are able to return to their daily lifestyle and wellness activities. This could include:



Illness

Short-term illnesses include cold, flu, migraine, stomach issues and could then move into more chronic conditions which we outline in the following section on chronic diseases.



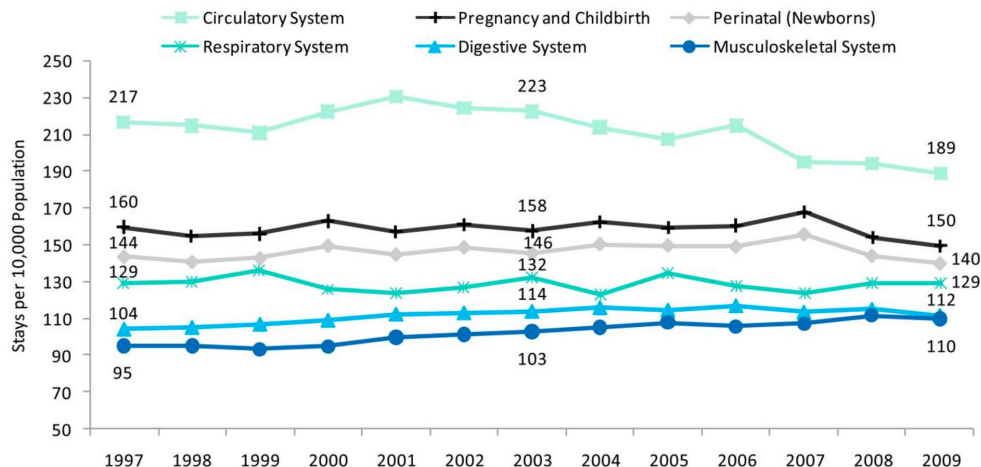
Physician Visits

According to the CDC, 54.5% of visits were made to primary care physicians in 2016. Common causes include chronic conditions (see the “chronic conditions” section below), preventative care, injuries, pre- or post- surgery care. More specifically, some of the top conditions and diseases addressed by primary care physicians are nervous system and sense organ issues (such as ear infections and migraines), genitourinary issues (such as urinary tract infections and menstruation issues), skin diseases, and infectious or parasitic diseases, according to PIH Health.



Hospitalization

According to the National Center for Biotechnology, the leading reasons people are hospitalized include: circulatory conditions, pregnancy and childbirth, respiratory systems, digestive systems and musculoskeletal systems.



Source: HCUP Facts and Figures: Statistics on Hospital-Based Care in the United States, 2009

Elective Procedures

An elective surgery does not always mean it is optional. It simply means that the surgery can be scheduled in advance. It may be a surgery you choose to have for a better quality of life, but not for a life-threatening condition. But in some cases it may be for a serious condition such as cancer.

According to [Healthgrades](#), the top ten elective procedures in the US include: cataract removal, c-sections, joint replacement, angioplasty and atherectomy, stent procedure, hysterectomy, gallbladder removal.



Emergency Services

EMS encompasses the initial stages of the emergency care continuum. It includes emergency calls to 9-1-1; dispatch of emergency personnel to the scene of an illness or trauma; and triage, treatment, and transport of patients by ambulance and air medical service. Hundreds of thousands of EMS personnel provide more than 16 million medical transports each year.

Despite the numerous benefits, there are areas of improvement here that could be helped by technology. According to the [National Academies of Sciences Engineering Medicine](#), the areas of opportunity include: coordination, disparities in response time, and disaster preparedness, to name a few.



CHRONIC CONDITIONS

Chronic diseases are among the most prevalent and costly health conditions in the United States today. Nearly half of all Americans suffer from at least one chronic disease, and that number is growing (see table “Top Ten Chronic Conditions”).

In the U.S. alone, chronic diseases account for nearly 75 percent of all healthcare spending and are responsible for 7 out of 10 deaths. The good news is that virtual apps can help patients manage their health. Below are some of the leading chronic diseases and the annual expenditure.



Top 10 Chronic Conditions

Below is healthcare spending and key facts for the top chronic diseases.

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90% of the nation's \$3.5 trillion in annual healthcare costs are related to chronic conditions and mental health



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Chronic Condition	Dollars Spent (Billions)	Population Affected (Millions)	Annual Deaths
Heart Disease & Stroke ¹	\$364 B	122 M	795,000
Alzheimer's ²	\$290 B	5.8 M	500,000
Diabetes ³	\$237 B	34.2 M (with diabetes) 88 M (pre-diabetes)	83,564
Mental Health ⁴	\$225 B	41.6 M	48,344 suicides
Obesity ⁵	\$480.7 B	663 M	2.8 million
Cancer ⁶	\$174 B	1.7 M adults/year	600,000
Arthritis ⁷	\$140 B	92 M	65,640
Kidney Disease ⁸	\$86 B	37 M	10 million
Tooth Decay ⁹	>\$45 B	85 M	N/A
COPD ¹⁰	\$49 B	16.4 M	140,000
Alcohol-Related ¹¹	\$27 B	14.4 M	35,823

Pulling it all together

Now that you know what constitutes the Patient Care Continuum, how do you put it all together. At Catalyst UX we have designed a methodology to define your virtual care offering. Get the guide [here](#).

If you'd like help, we offer a 90-minute workshop. Contact us to learn more.



¹For heart disease, \$364 billion spent in 2017; \$46 billion in 2015 for stroke. Source: American Heart and Stroke Association. Population impacted from American Heart Association: heart disease as of 2019; stroke 795k per year. Source of annual deaths: American Heart Association; heart disease 2019; stroke 2017.

²For Alzheimer, \$290 billion as of 2019. Source: Alzheimer's Association. Population impacted from Alzheimer's Association: as of 2019. Source of annual deaths: Alzheimer's Association data as of 2019.

³For Diabetes, \$237 billion as of 2017. Source: American Diabetes Association. Population impacted from CDC as of 2018 and CDC as of 2017 respectively. Source of annual deaths: American Diabetes Association data as of 2017.

⁴For mental health, \$225 billion as of 2019. Source: Open Minds. Population impacted from SAMHSA: as of 2018. Source of annual deaths: CDC data as of 2018.

⁵For obesity: \$480.7 billion as of 2016. Source: Milken Institute. Population impacted from CDC as of 2017 and from WHO as of 2016. Source of annual deaths: WHO data as of 2019.

⁶For cancer: \$174 billion as of 2020. Source: National Cancer Institute. Population impacted from National Cancer Institute: 1.7 million diagnosed per year. Source of annual deaths: National Cancer Institute data as of 2020.

⁷For arthritis, \$140 billion as of 2013. Source: Wiley Online Library. Population impacted from Arthritis Foundation: as of 2017. Source of annual deaths: Arthritis Foundation data as of 2019.

⁸For kidney disease, \$86 billion as of 2019. Source: University of Michigan Medicine. Population impacted from CDC: as of 2019. Source of annual deaths: WHO data between 2005 and 2015 on average.

⁹For tooth decay, over \$45 billion as of 2018. Source: National Library of Medicine. Population impacted from National Institute of Dental and Craniofacial Research: as of 2016.

¹⁰For COPD \$49 billion projected for 2020. Source: Chest Journal. Population impacted from American Lung Association: as of 2020. Source of annual deaths: CDC data as of 2019.

¹¹For alcohol related, \$27 billion as of 2010. Source: National Institute on Drug Abuse. Population impacted from SAMHSA: as of 2018. Source of annual deaths: CDC -- 35,823 alcohol induced deaths excluding accidents and homicides data as of 2017.