



ORAL HEALTH IS HEALTH

An integrated virtual health and wellness platform designed to support behavior change and provide community, connection, and care for older adults with diabetes

UX UNICORNS & PHILIPS

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UNIVERSITY OF WASHINGTON
HCDE CAPSTONE 2020

BACK GROUND

Oral health is an important and frequently overlooked part of overall health that significantly impacts quality of life. **Older adults with diabetes are especially susceptible to the burden of oral disease** due to their increased risk for cavities, gum disease, and other infections. Studies also show that periodontal therapy can improve glycemic control in diabetic patients. While oral health is essential to systemic health for everyone, for older diabetics in particular, improved oral health has a greater potential to impact disease prevention.

Older adults experience challenges in accessing oral healthcare. Medicare, the national health insurance program for 60 million Americans, does not cover routine dental care, and many older adults go without dental insurance. Older adults may also face limitations in: access to dental health providers, transportation, or health literacy. These barriers to dental care can subsequently lead to high out-of-pocket costs when urgent care is needed.

The COVID-19 pandemic has accelerated and expanded the need for virtual care options, particularly for populations who are at greater risk, such as seniors and individuals with diabetes.

Telehealth has the potential to help address these and other health disparities through reducing barriers to provider access and lowering costs.

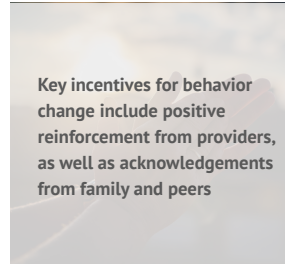
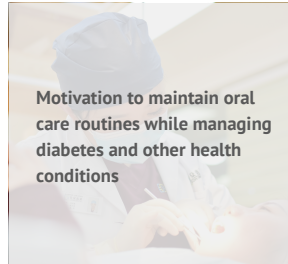
Through this capstone project, we employed mixed methods research including a comprehensive literature review, experience sampling, competitive analysis (see Appendix), semi-structured interviews with older adults with diabetes, as well as dental and insurance providers who are the subject-matter experts in this space. This research helped us to understand the healthcare landscape and existing routines for our target audience of older adults who are at-risk for diabetes, and to identify opportunities for potential design solutions.

PROBLEM STATEMENT

How might we bridge the gaps in the healthcare ecosystem for older adults with diabetes, in order to support behavior change and enhance their oral healthcare and diabetes management goals?

DESIGN RATIONALE

Our solution was developed based on research insights, highlighting the unique challenges that older adults face in addressing health issues, accessing care, and navigating dental and medical insurance marketplaces. Our user research also identified opportunities for design solutions that support:



One of the key findings from our research showed that participants considered smart medical technology to be innovative and helpful. Additionally, social distancing for this group due to the COVID-19 pandemic meant that some participants have had more exposure to telehealth systems. Yet, their **attitude toward virtual specialty services, such as teledentistry, remains somewhat skeptical**. These findings presented the opportunity to showcase the potentials for a telehealth application specifically geared for oral care.

"I prefer telehealth, and a lot of my friends have been saying that. I was surprised how easy it was." -P5

"I've never heard of telemedicine for dental care." - P1

IDEATION



These insights led us to ideate on a 'system' that would support users' health goals and provide trusted oral care and systemic health related information, and the idea of a teledentistry system emerged: **How can we build a product that capitalizes on the increased need for and helps users engage in teledentistry?**

After a few brainstorming sessions, our team proposed using elements of **empathy** within the teledentistry system to engage with our users. These elements include, but are not limited to:

- Encouraging peers to attain their health goals and celebrating their accomplishments
- Sharing wellness tips and stories with the community
- Leveraging behavior change theories to increase motivation and ability through points-based incentives
- Creating more coherence between oral and systemic health through integrated goals and health information
- Interacting with dental care experts easily for advice and additional support

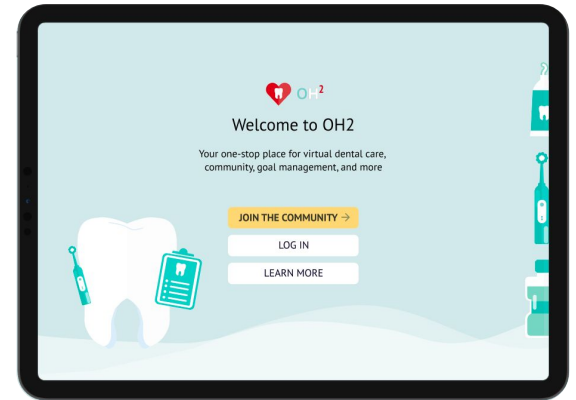
DESIGN OVERVIEW

Oral Health is Health (OH2) is a telehealth and wellness platform designed to support behavior change and connect the dots between users' dental and medical goals.

OH2 was developed with the needs of our target audience of older adults with diabetes in mind. For instance, our prototype focused on the tablet design based on users' expressed desire for a larger screen size. However, we believe the OH2 platform could be appealing to any adults seeking motivation, mutual support, and accountability in achieving their health goals.

We envision future expansion to desktop and mobile devices, as well as further localization as OH2 expands into international markets.

PROTOTYPE



[LINK TO PROTOTYPE](#)

STYLE GUIDE

To ensure consistency and scalability of our design, we outlined and incorporated a cohesive set of colors, typography, and user interface (UI) elements for the OH2 system.

Logo

The Oral Health is Health (OH2) logo was created to provide a unique visual identifier which integrates oral health and holistic health in the use of colors, imagery, and typography, where the '2' eludes to the heart-felt empathic features of the platform.

Color Palette

Primary colors are used to create a sense of minty freshness and calm in the OH2's user interface, yet are devoid of the seriousness that often come from medical-related applications. The *accent colors* are used to highlight the call-to-action buttons, and indicate headings that need users' attention.

Typography

The font family of PT Sans is used to create a sense of modernity; different weight and capitalization are used to distinguish functions within the design.

UI Elements

A set of icons and graphics is used throughout the design to help visually signify their associated functions. Simple cards and containers of various sizes are utilized to display information or graphics in an organized and digestible manner.



ORAL HEALTH IS HEALTH

1. Color Palette



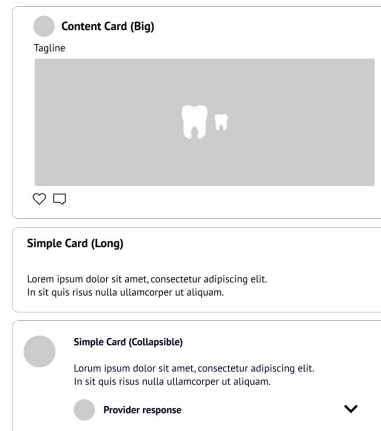
2. Typography



3. UI Elements



Cards

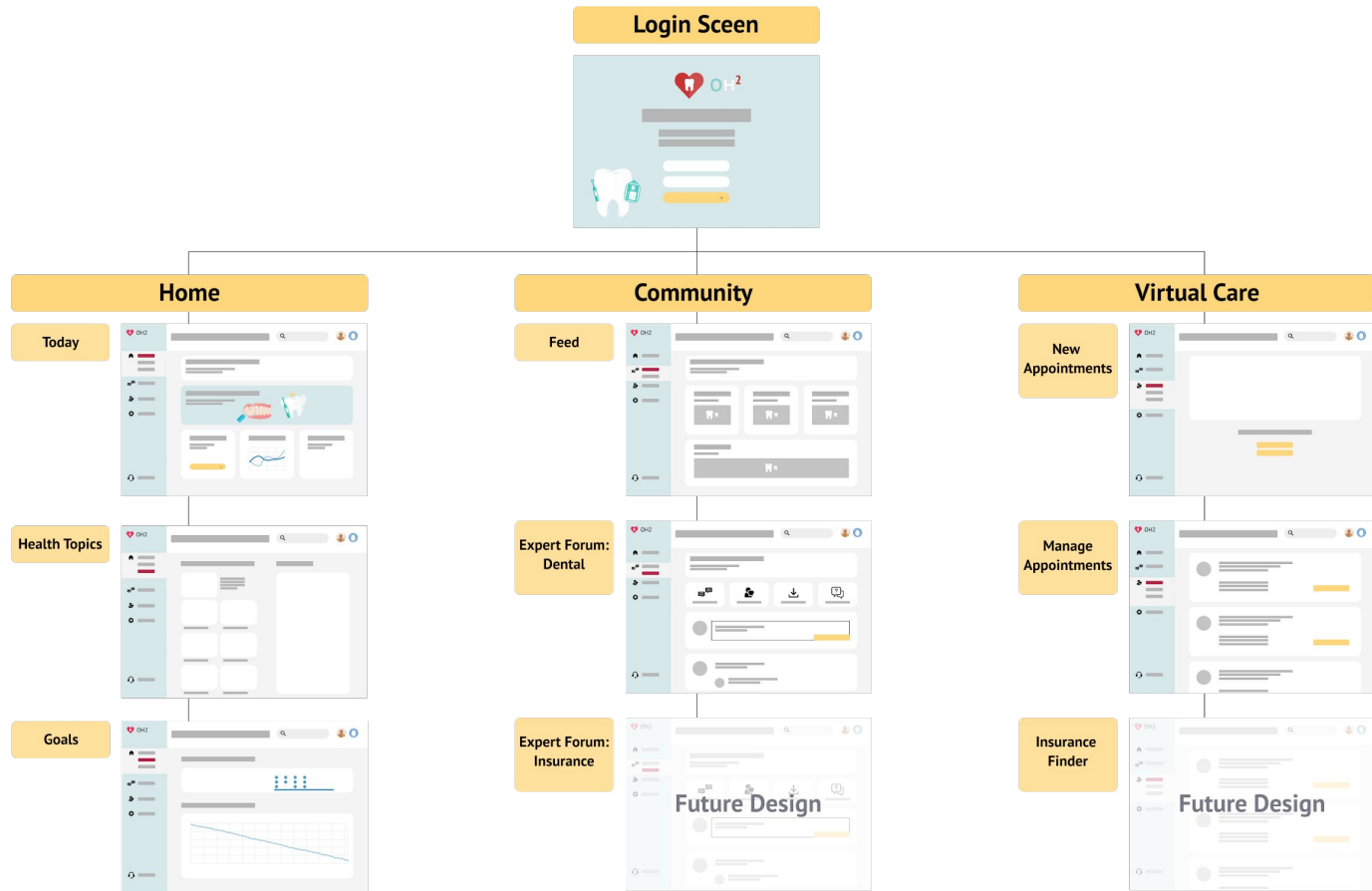


Containers

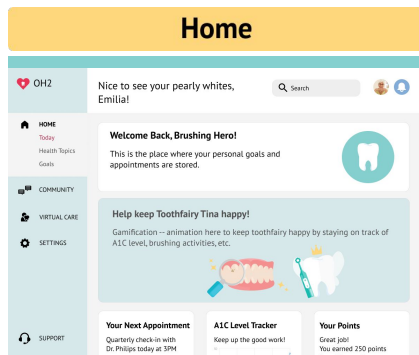


Graphics





OH2 OVERVIEW

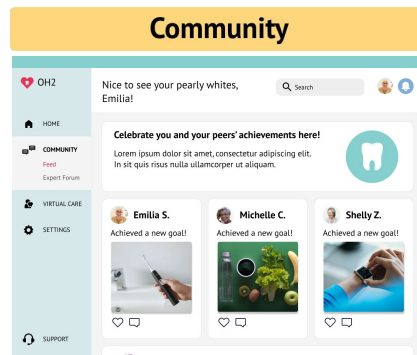


Functionality

A dashboard that enables users to interact with their favorite features, provide reminders for upcoming appointments, and track their health data (i.e. brushing, A1C levels), as they progress toward their goals.

Design Thinking

To support users' needs in managing their health goals and feeling incentivized for doing so. Employing gamification (Tooth Fairy Tina) to engage users with the system in a playful and inviting way.

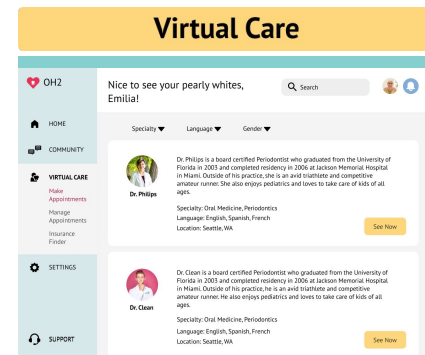


Functionality

A community for users to interact with their peers and their oral care team, celebrate accomplishments, seek information, and share wellness tips.

Design Thinking

To support our users' desire to connect with and feel acknowledged by their friends and family. By sharing relatable contents and lived experiences, we hope to help facilitate more empathy amongst users and connection across a networks of supporters.



Functionality

A provider access portal to facilitate virtual visits with a directory of dental care professionals to help save costs and minimize barriers to in-person care.

Design Thinking

To support our users' needs for regular dental care within reach, and ensure that oral health care access is not compromised by their risk for the coronavirus disease or other issues related to traveling to the dentist.



OH²

DESIGN FEATURES

ONBOARDING



ONBOARDING

HOME

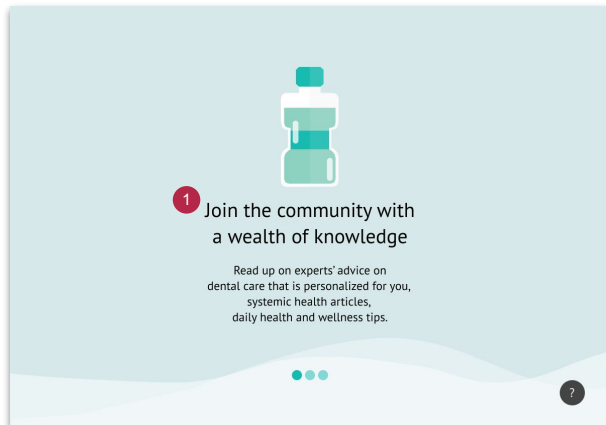
- Today
- Health Topics
- Goals

COMMUNITY

- Feed
- Expert Forum

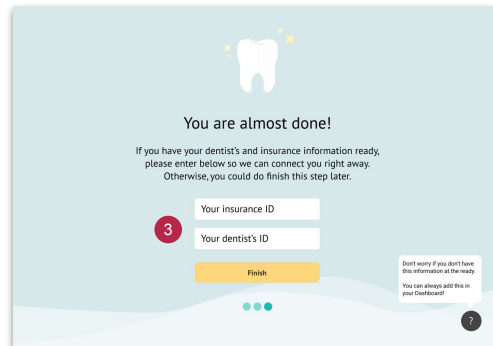
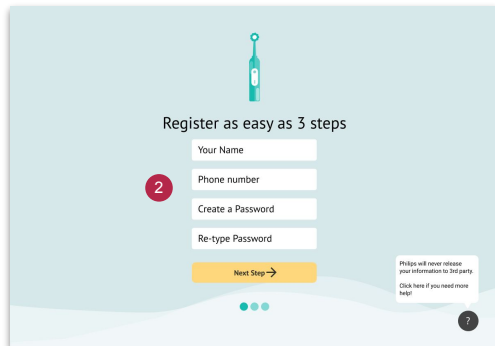
VIRTUAL CARE

- New Appointments
- Manage Appointments



OH2's onboarding experience is **short** and **informative** for an easy and quick onboarding process, at the same time highlighting the key benefits of OH2.

- 1 Users are given a quick overview of what OH2 can bring to their oral and systemic health management through a quick walkthrough of the features provided.
- 2 Minimal information input allows users to quickly onboard to the OH2's experience.
- 3 Users have an option to input their insurance and provider information during setup, but this step can be skipped and revisited in the future.



TODAY



ONBOARDING

HOME

Today

Health Topics

Goals

COMMUNITY

Feed

Expert Forum

VIRTUAL CARE

New Appointments

Manage Appointments

The screenshot shows the OH2 'Today' dashboard. At the top, a personalized message (1) greets the user. Below it is a 'Welcome Back, Brushing Hero!' card (2) with a tooth icon. A gamification animation (3) encourages brushing. Three cards follow: 'Your Next Appointment' (4) with a 'JOIN NOW' button, 'A1C Level Tracker' (5) with a line graph, and 'Your Points' (6) showing progress. A 'Popular goals' section (7) features a 'Brushing Enhancement' goal with a 'Join' button and an 'Invite Others to Join' button.

'Today' is a dashboard that allows users to review their progress. Users can check their current goals related to **oral and systemic health** and upcoming **teledentistry appointment** at a glance.

- 1 Personalized messages are displayed to greet users in a friendly and personable manner.
- 2 Users are rewarded with different badges for their brushing activity and achievements, creating a sense of positive reinforcement.
- 3 A playful gamification animation is utilized here to encourage more user-engagement with OH2.
- 4 A current or upcoming teledentistry appointment is displayed in the card to remind users of their appointment and also to provide access to quickly join the appointment from the dashboard.
- 5 A quick overview card displaying users' current goals and their progress towards achievement.
- 6 Users are awarded points when they achieve goals, post, celebrate others' achievements, and ask questions on the forum. The collected points can potentially be used toward earning incentive rewards such as diabetes test strips or brush heads.
- 7 System-suggested goals that are related to users' usage data.

HEALTH TOPICS



ONBOARDING

HOME

Today

[Health Topics](#)

Goals

COMMUNITY

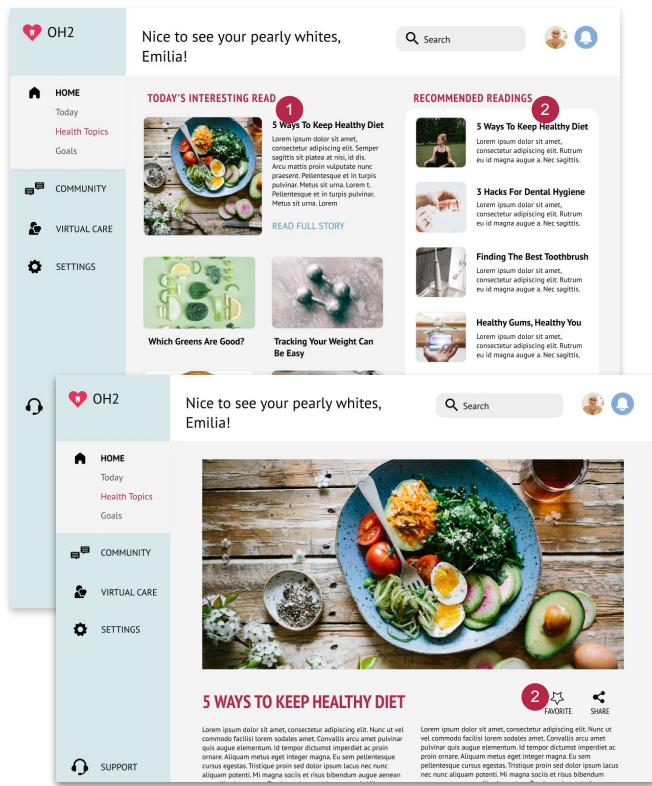
Feed

Expert Forum

VIRTUAL CARE

New Appointments

Manage Appointments



'Health Topics' supports education on the oral and systemic health connection. The goal of 'Health Topics' is to **increase users' awareness, understanding, and knowledge about oral and systemic health connection**, eventually encouraging users to **choose, adopt, and sustain healthier lifestyle behaviors**.

- 1 New articles related to health from reputable sources are displayed on OH2's Health Topics page.
- 2 Articles are recommended to users depending on their interests and history of past read and favored articles.
- 3 Users can 'favor' and save articles to read later and share articles in the Community feed or with friends and family via email, social media, links, etc.

GOALS



ONBOARDING

HOME

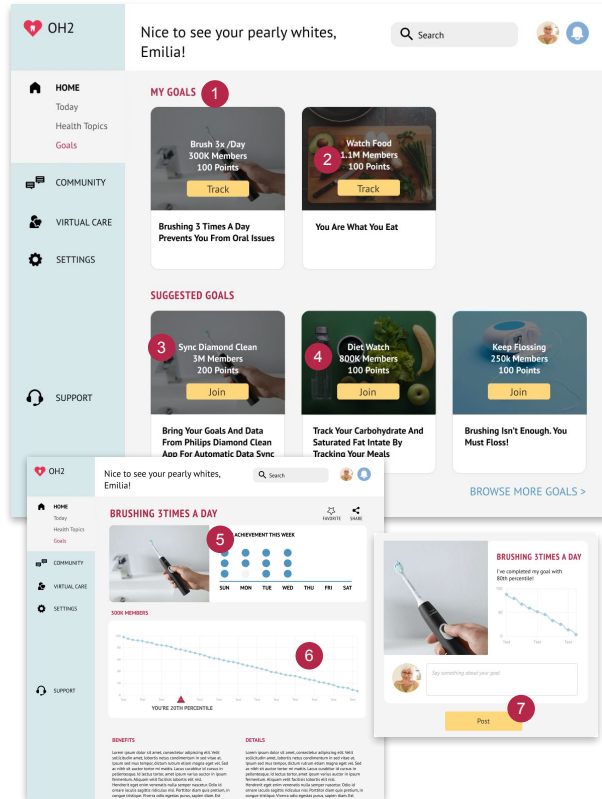
- Today
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COMMUNITY

- Feed
- Expert Forum

VIRTUAL CARE

- New Appointments
- Manage Appointments



'Goals' allows users to see more details about their current goals, monitor progress, see suggested goals that cater to their interests, and browse more goals that **encourage users to improve their oral and systemic health**.

- 1 Users' current goals are displayed at the top of the page as a way to remind them of their progress towards achievement.
- 2 Each goal equals a certain amount of points that users can collect toward physical rewards. These points are based on how extensively each goal requires the user's engagement. Users are able to click into the card to monitor their progress in detail.
- 3 Users can sync their Philips Sonicare app with OH2 to automatically integrate brushing history and goal setups; this helps create a sense of continuity in usage and brushing activity.
- 4 Users are motivated by displays of how many other community members in the OH2 network are completing particular goals. This feature aims to create a sense of building a healthier OH2 community.
- 5 In the details page of the users' current goal, users can either manually input data or automatically sync data if other supported tracking devices are connected with OH2.
- 6 A visual of where the user stands among other community members is displayed to give them a sense of achievement.
- 7 Users can share their progress with others in the community's feed section, where their peers can encourage and celebrate achievements together.

FEED



ONBOARDING

HOME

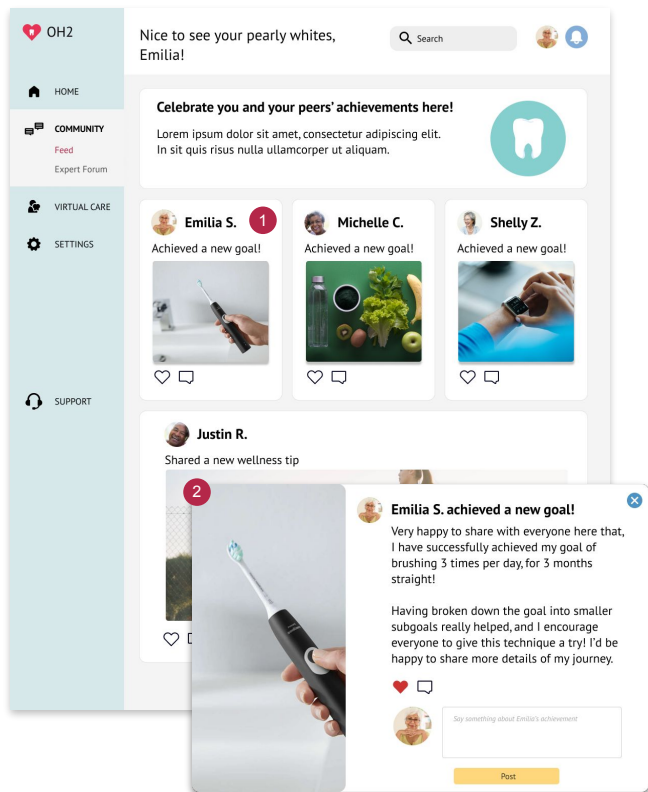
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COMMUNITY

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VIRTUAL CARE

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- Manage Appointments



'Feed' within the Community is where users connect with their friends and family members or individuals in the OH2 network. The 'Feed' has elements of a social media platform, where users can showcase their goals and achievements, and share oral and systemic health management tips. This feature helps foster the sense of empathy with one another by recognizing each other's goals, sharing lived experiences, and celebrating personal achievements.

- 1 Users' posts are presented in a scrollable card view emphasizing visuals, so that others can 'like' those posts or leave comments.
- 2 When selecting the card, users can see other people's comments on their post, post a comment themselves to celebrate achievement, or thank them for sharing a helpful tip.

EXPERT FORUM



ONBOARDING

HOME

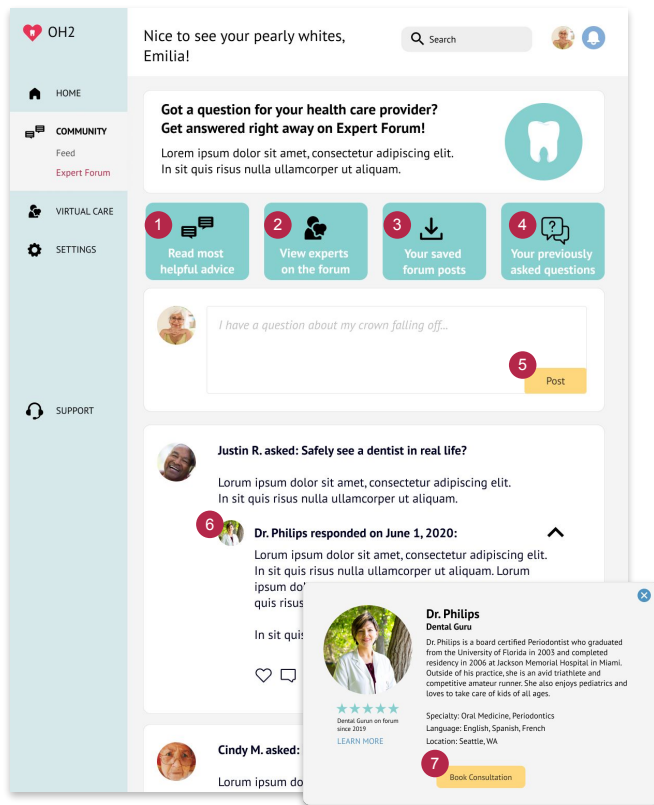
- Today
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- Goals

COMMUNITY

- Feed
- [Expert Forum](#)

VIRTUAL CARE

- New Appointments
- Manage Appointments



'Expert Forum' is a **Q&A portal** where OH2 users can connect with dentists on OH2's Virtual Care network. Often, it is difficult to find an answer to health questions amid a large sea of information. Through this forum, users can get their questions answered by knowledgeable providers in the OH2's network, while providers benefit by connecting with potential future patients.

- 1 Users can refer to a depository of past recommendation that were most helpful to others.
- 2 Users can view a ranked list of experts who are most active on the Expert Forum.
- 3 Users can bookmark helpful posts and find them under this menu.
- 4 Users can refer back to the posts that they've created at a glance.
- 5 Quick and easy access for posting a question is available on the main page.
- 6 Selecting the picture of the expert allows users to see the expert's profile and credentials.
- 7 If users decide to have a more in-depth conversation, they can quickly book a future appointment with the provider.

NEW APPOINTMENT



ONBOARDING

HOME

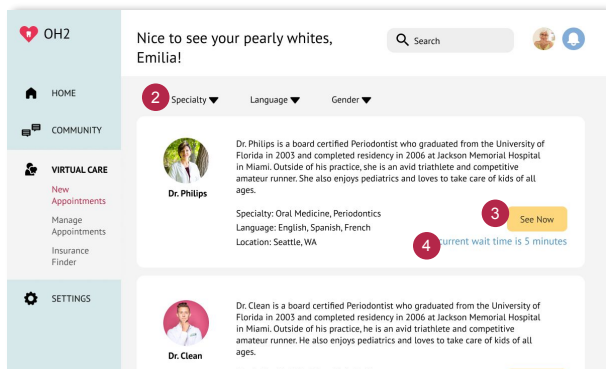
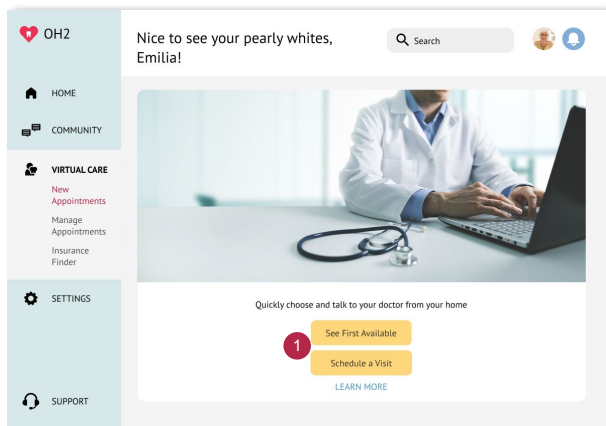
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VIRTUAL CARE

- [New Appointments](#)
- Manage Appointments



Users can **schedule a telehealth appointment** with their provider or connect quickly to a skilled dentist in the OH2 network to triage acute issues, and to track problem areas between visits.

- 1 Depending their needs, users can choose to see a dentist who is available at the moment or schedule a future consultation that fits better with their schedule.
- 2 Users can quickly apply filters to narrow down the list of dentists who might fit their needs.
- 3 With a click of a button, users are taken immediately to talk to their dentist.
- 4 Real-time wait time is displayed.

MANAGE APPOINTMENTS



ONBOARDING

HOME

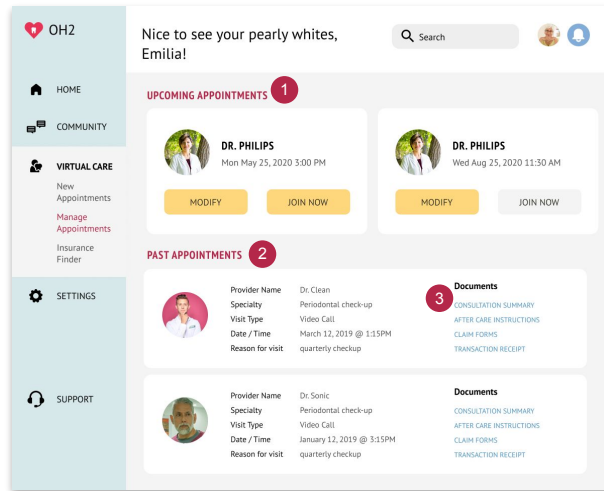
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COMMUNITY

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VIRTUAL CARE

- New Appointments
- [Manage Appointments](#)



Users can find and **manage** the record of their upcoming and past appointments.

- 1 Users can see the list of upcoming appointment here. The options to cancel or modify their appointments are provided here.
- 2 Users can find details about their past appointments.
- 3 Users can download the documentation and consultation summaries, as well as claim forms and transaction receipts.

DESIGN LIMITATIONS

Based on the limited scope of our capstone project, our design prototype focuses on the community and empathy-building components of the OH2 platform. Additional work is needed to expand the platform further to include the following functions:

- User and privacy settings
- Telehealth audio and visual platform functionality
- Provider view and electronic health record (EHR) integration
- Insurance expert forum and insurance finder/private pay options
- Desktop and mobile optimization
- Accessibility review

RESEARCH RECOMMENDATIONS

We identified the OH2 platform as a possible solution to address users' needs based on evaluative research. We recommend additional research be conducted to help achieve the following:

- Validate solution and potentially co-design elements with target users
- Assess usability and potential for longitudinal engagement
- Identify entry points to promote awareness and buy-in from dental and insurance providers
- Ensure systemic health education materials are credible



OH²

APPENDIX

VIDEO



ORAL HEALTH IS HEALTH

BY UNICOORIS X PHILIPS
HCE CAPSTONE 2020








OH²

COMPETITIVE DESIGN REVIEW

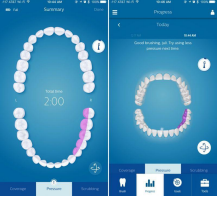

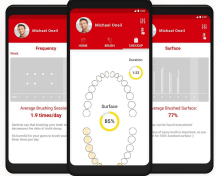
COMPETITIVE LANDSCAPE

Before going into designing a telehealth platform, we evaluated various oral care and telehealth applications that are currently in the market to review different design approaches for how information are presented to the end users.

APPLICATION	DETAILS
Oral Care Application	
 <p>PHILIPS Philips</p>	Philips Sonicare application provides personalized guidance and tips to improve brushing habits.
 <p>Oral-B</p>	Oral-B is brand of oral hygiene products, including toothpastes, toothbrushes, electric toothbrushes, and mouthwashes. It has an application that pairs with their SmartSeries toothbrush, which guides their customers through brushing activities. It is a digital coach that helps people brush like dental professionals recommend.
 <p>Colgate</p>	Colgate Connect app connects to E1 toothbrush via Bluetooth to give precise, personalized brushing experience. The 400 micro-sensors embedded in the toothbrush handle create a comprehensive map of the user's mouth, allowing user to see exactly where user has brushed their teeth, and where they have missed. It provides instant brushing feedback, personalized data, coaching, oral care tips, and games
Telehealth Application	
 <p>Amwell</p>	Amwell connects board-certified, experienced medical providers to their patients. It provides care for the patients 24/7, with on demand service or scheduled appointments with next day availability. Services available are urgent care, therapy, psychiatry, and nutrition.
 <p>MDLIVE</p>	MDLIVE provides virtual doctor visits with board-certified physicians from the comfort and convenience. It also offers behavioral health appointments with licensed therapists and board-certified psychiatrists as well as dermatology services. Ondemand availability are usually within 15 minutes. MDLIVE has two National Committee for Quality Assurance certifications and is accredited by the American Telemedicine Association.

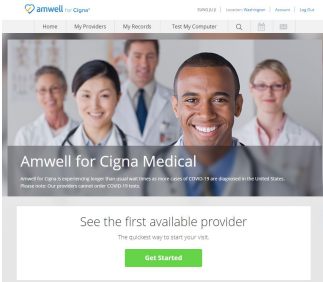

DENTAL CARE APPLICATION

We explored each application by studying its features, strengths and weaknesses.

App	PHILIPS	ORAL B	COLGATE
Image			
Features	<ul style="list-style-type: none"> Real-time brushing guidance Weekly progress report Teledentistry Automatic brush head reordering service 	<ul style="list-style-type: none"> Timer automatically starts when brush head starts spinning Brushing walk-through with real-time feedback with motions and pressure sensor Offers brushing tips, news, weather info, calendar appointments, quotes Oral hygiene tips Personalized advices tailored to individual brushing behavior 	<ul style="list-style-type: none"> Dashboard that shows brushing habits Extensive user tutorial Gamification of brushing teeth Coach mode Mouth map
Incentives	N/A	<ul style="list-style-type: none"> Personal achievement graphs Achievement trophies 	<ul style="list-style-type: none"> Collect points and get discounts on their product
Strengths	<ul style="list-style-type: none"> Dashboard that gives quick overview of brushing progress Goal setting 	<ul style="list-style-type: none"> Walks user through how to pair the toothbrush with the application Quick tutorial on how to brush and what each errors mean Personalized coaching Easy dashboard Position detection technology using camera Scores displayed after completing brushing 	<ul style="list-style-type: none"> Personalized mouth map Makes brushing fun by integrating games Ability to receive discounts by collecting points
Weaknesses	<ul style="list-style-type: none"> Unintuitive toothbrush setup process Walk-through is not provided User is greeted with "solutions" page rather than toothbrush setup page for onboarding Only provides a week summary of brushing history 	<ul style="list-style-type: none"> A lot of options and features users have to learn Extensive 	<ul style="list-style-type: none"> Games might not be suitable for all ages

TELEHEALTH APPLICATION

We explored each application by studying its features, strengths and weaknesses. We also explored different platforms these applications can be used, for example, desktop version and mobile version.

App	AMWELL	MDLIVE
Image	 <p>The screenshot shows the Amwell for Cigna Medical website. At the top, there's a navigation bar with 'Amwell for Cigna' and 'My Records'. Below that, a search bar is visible. The main content area features a large image of a diverse group of healthcare professionals. Text on the page reads 'Amwell for Cigna Medical' and 'See the first available provider'. A green 'Get Started' button is at the bottom.</p>	 <p>The image shows a woman with curly hair smiling at a laptop. The laptop screen displays a telehealth interface with a doctor's video feed. A smartphone in the foreground also shows the telehealth app interface.</p>
Features	<ul style="list-style-type: none"> Thorough depository of medical history and documentations A feature to test computer's connectivity before connecting with doctors via telehealth Ability to enter Waiting Room Displays how many patients are waiting in the waiting room 	<ul style="list-style-type: none"> Ability to choose preferred Pharmacy Ability to see different types of specialists, including therapist, and psychiatrist. Option to see first available or schedule future visit An option to add a dependent Displays live wait time Ability to download consultation summary
Strengths	<ul style="list-style-type: none"> Displays detailed information and a picture of each provider making them feel more personable Easy navigation: Thoughtful UI and information architecture that is easy to follow through 	<ul style="list-style-type: none"> Simple UI navigation Ability to upload photos of symptoms Up front out-of-pocket cost displayed Easy walk-through of explaining the reason for visit Progress bar is displayed on the top when making an appointment, letting users know where they are in the process
Weaknesses	<ul style="list-style-type: none"> It will take longer for patients to find a doctor since filter options to narrow down search is not provided Some of the menu items could be grouped for more concise menu 	<ul style="list-style-type: none"> Inconsistent UI look and feel Double navigation menu that could confuse users Chatbot-like 'reason for visit' that requires a lot of reading Option for choosing a provider is not an option