Executive Summary

Overview

Patients do not receive adequate follow-up information once they leave the hospital. In addition, doctors do not have time to stay completely up to date with current medical research and journals while simultaneously caring for their patients. With HealthNote, patients will be able to receive answers to questions related to their recent health procedures through IBM Watson's cognitive computing API dynamic Question & Answer capabilities. In addition, doctors will be able to keep up to date by focusing on patient-specific research that will better enable them to treat future patients.

The app will invite patients to participate in a community of discharged patients from their hospital who share the same disease or procedure, allowing them to view other individuals' questions related to the disease they are suffering from. HealthNote will make use of a corpus of information that includes doctor's notes from patient registries, medical research reports, and the most current medical journals, giving it the ability to directly respond to patients' questions through the application interface given a very high confidence level (>90% CL) of answers. Lower confidence level responses from Watson will necessitate that the patient contact the doctor directly by phone, which will be routed into that hospital's specific contact system.

Opportunity

HealthNote's target customers are hospitals, large and small, across the world. Our launch partner will be Apollo Hospitals, a major hospital chain based in Chennai, India. Apollo has provided us with initial patient data and reports from patients with heart diseases, which will make up our prototype corpus and allow us to target patients with hypertension as our first disease community. Large hospital chains such as Apollo do not have a detailed system in place for following up with patients besides basic call center systems, and the additional support provided by Health Note will enable them to provide a better overall experience for their customers.

Currently, hospitals are disadvantaged by not having a way to provide individualized care to their patients once they are discharged, especially when the patient base is very large. By not meeting this need effectively, hospitals are losing customers and losing money on unnecessary appointments scheduled for follow-up questions with a patient. With HealthNote, patients will be able to have their questions answered more efficiently, remain loyal to the hospital to which their app is linked, and become a part of a community in which they will be able to see the needs of those with similar health problems.

In addition, doctors today tend to practice medicine for decades after they graduate from medical school and face extremely busy schedules. They often do not have enough time to stay up-to-date with the most recent scientific breakthroughs and medical research reports,

which may enable them to treat their patients more effectively. With Watson's ability to consolidate unstructured data of medical research reports and journals, along with common patient Q&A interactions, HealthNote will enable doctors to remain informed about how best to care for their patients and maximize interactions with the patient while they are admitted.

Solution

Our product is the first individual-specific, knowledge-based application in the marketplace that will allow hospitals to connect with their patients and provide answers to questions through IBM's Watson component. Current medical Q&A applications do not support extensive medical knowledge that is continually updated. Applications that provide similar services to HealthNote include WebMD, Force Packs, Knee Decide, PatientReach Mobile, and Hello Health, but do not equal HealthNote in terms of capabilities and service. HealthNote's ability to find and sift through data for individualized responses will give patients better care and more accurate answers while simultaneously providing continuously updated patient data and medical research sources to doctors.

The need for high quality and frequently updated information is increasing because of exponential increases in unstructured data. Our application fulfills this need by providing the user with frequently updated and specific information from quality sources.

Technology

HealthNote's value comes from the technology of the IBM Watson Deep Question & Answer API and ecosystem, allowing the ability for hypothesis generation through evidence-based learning. Watson is able to generate and evaluate it's own hypotheses to iteratively improve on it's search queries.

The key problem that Watson can solve is allowing access to the 35 zettabytes of unstructured data that is expected to be available by 2020. citation The world is heading towards big data, yet it is impossible for humans to organize, parse, and understand it manually. Deep cross-analytics with Watson will help doctors learn new insights from all sources of data, as Watson is able to navigate the complexities of natural language, unlike traditional keyword-based searches today.

Traditional databases and search methods, such as MySQL and key-value search queries, do not take into account semantics and surrounding contextual linguistic information. The human brain processes syntax and semantics in entirely different stages of cognition in the brain, and current technologies do not account for the latter due to the difficulties of natural language. Key features such as adaptive learning, pattern recognition, and the meta-cognition of self-monitoring loops in the brain prove to be difficult technical challenges to replicate. Watson's dynamic learning capabilities target these aspects of Artificial Intelligence in its technology.

Watson will also allow HealthNote the ability for holistic evaluation of informational. Relational detection in modeling and decoding algorithms such as syntactic parsing, dependency parsing, morphological analysis, and semantic domains all factor into this multi-systematic analysis of sentences in unstructured data. Hypothesis evaluation and confidence scoring technologies leverage the data from all inputted unstructured medical data to provide the best accuracy from the widest range of sources. HealthNote's client-side interface makes API calls to the back-end Watson server, and we are able to leverage the power of deep learning in a way that makes it accessible to everyone.

Business Model

Our business model is a simple subscription-based plan in which the HealthNote platform is purchased by hospitals for differing numbers of disease groupings, patients, and data entry.

HealthNote will create value by informing doctors, allowing patients access to medical expertise, and building trust between doctors and patients. See HealthNote's full business plan for a detailed look into its value creation components.

Market

In addition to Apollo Hospitals, our initial clients to be targeted will be specialty hospitals or relatively smaller hospitals (6-199 beds) with a need for internal process improvement or providing managed care for patients with chronic or long-term diseases. After launch, our strategy will be to expand to larger specialty hospitals and general hospitals (200+ beds) that are comprised of a variety of different health departments (cardiology, neurology, etc.), both in the US and India.

Taking hospital size into consideration, we estimate our market based on number of possible disease groupings that may constitute a subscription to HealthNote. Our market size estimation focuses on the potential number of hospital departments in both the US and India across various hospitals, assuming an average of 29 departments in a general, relatively large hospital. This leads to an estimation of 165,967 disease groups in the US and approximately 446,397 disease groupings in the Indian market.

Financial Projections

HealthNote will be sold based on a tiered pricing model, which takes into account the size of the patient group, the type and size of the institution, the type of disease platform, the level of collaboration between HealthNote and the health institution (corpus update), and the potential for future collaboration. This model allows clinics with few users to pay a lower subscription price for a common disease such as diabetes than a large hospital with thousands of potential users. For example, a subscription for the Congestive Heart Failure (CHF) platform in a large public hospital would be $25,000 per year. A small rural clinic, however, would pay $5,000, making the service more accessible for low-income or rural healthcare centers.

Company Status and Business Structure

Today, HealthNote presents a working user interface, which displays the way in which patients will be able to ask questions and connect to their doctor through the app. The Watson corpus currently contains patient data from Apollo Hospitals' cardiology patients, and will be presented as a freemium for Apollo in the coming months.

HealthNote is working on a fully-functioning prototype that will be connected to the Watson Q&A API which is expected to become available in early 2015.

Market

End Users

Our targeted end-users are discharged hospital patients who have been treated under a specific disease within the subscribing hospital, as well as doctors and other medical professionals within the subscribing hospital who need to stay up-to-date with current medical research. The patients' unmet need is the ability to access adequate follow-up information once they leave the hospital. In addition, doctors need to have a better way to stay informed with current medical research and journals while simultaneously caring for their patients.

We require that these patients have access to a smartphone device for usage of our application, and assume that they will have less general and more individualized questions in regards to their current health situation post-discharge from the hospital. The dependencies that we have identified for success include patient access to smartphone devices, frequent access to a corpus of high-quality and updated information in the medical field, increased hospital involvement in compliance, and an increased level of technological acceptance by the patients. In order to move forward with operation, we believe that a functional organization structure is necessary because of the diverse expertise of our team. Given our product scales, we hope to recruit additional engineers to continually build onto the features of our application.

Economic Buyers

HealthNote will be receiving revenue from hospitals of all sizes, both large and small. After an initial approach of granting access to our platform for free for the first year, we will charge a subscription fee to the hospitals based on size of patient base, number of disease groupings required within HealthNote, and amount of data entry and update that will be required for the Watson corpus.

Distribution

Market Size

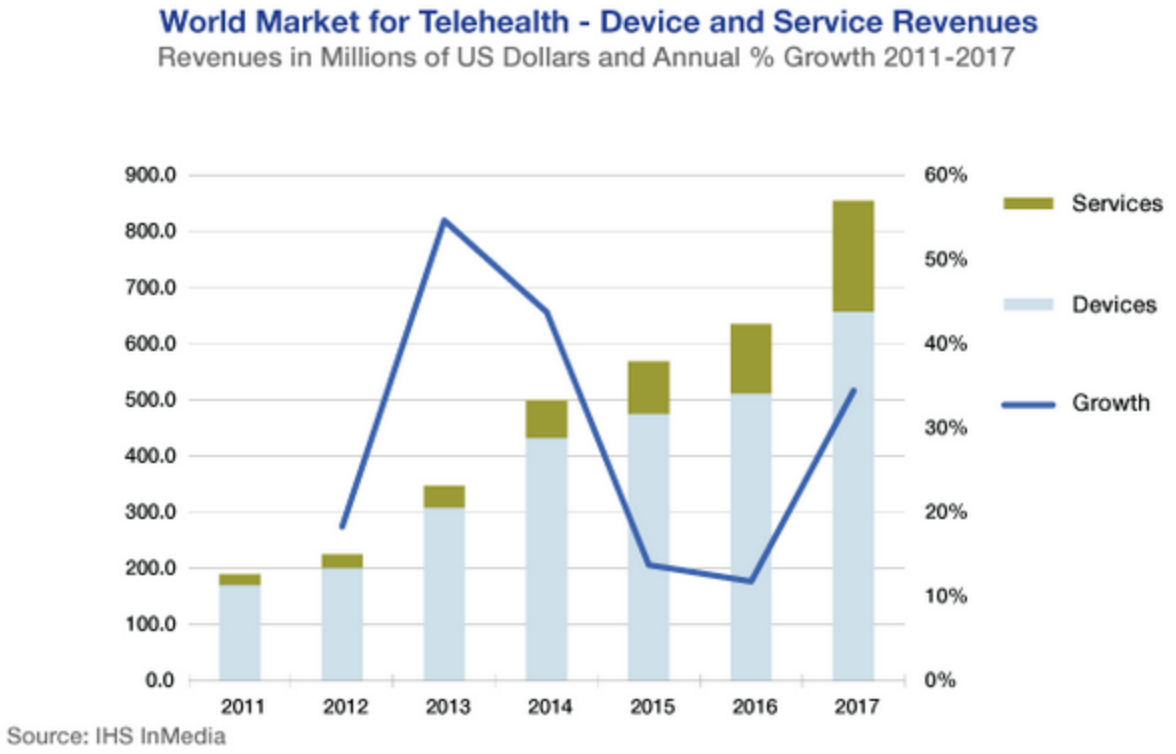
					Assume growth	3%			
Application target user base									
				Potential Users					
	US Market			2014	2015	2016	2017	2018	2019
	Patient size		Average number of patients per post-treatment group						
	Specialty Hospitals	398	Total						
	Orthopedic facilities		4,914,120.00	3,194,178.00	3290003.34	3388703.44	3490364.543	3595075.48	3702927.744
	Cardiac facilities		4,095,100.00	2,661,815.00	2741669.45	2823919.534	2908637.12	2995896.233	3085773.12
	Women's facilities		2,457,060.00	1,597,089.00	1645001.67	1694351.72	1745182.272	1797537.74	1851463.872
	Long-term acute care		31,941,780.00	20,762,157.00	21385021.71	22026572.36	22687369.53	23367990.62	24069030.34
	Inpatient rehabilitation facilities		24,161,090.00	15,704,708.50	16175849.76	16661125.25	17160959.01	17675787.78	18206061.41
	Other		3,276,080.00	2,129,452.00	2193335.56	2259135.627	2326909.696	2396716.986	2468618.496
	Proportion of smartphone usage		0.65						
	Market of hospital departments								
	Average number of departments	29							
	Hospitals	5723							
	Total potential departments	165,967.00							
	India Market			2014	2015	2016	2017	2018	2019
	Patient size		Average number of patients per post-treatment group						
	Hospitals	15393							
	Oncology		1,229,968.00	81,177.89	83613.22464	86121.62138	88705.27002	91366.42812	94107.42096
	Cardiac facilities		4,095,100.00	270,276.60	278384.898	286736.4449	295338.5383	304198.6944	313324.6553
	Diabetes		47,000,000.00	3,102,000.00	3195060	3290911.8	3389639.154	3491328.329	3596068.178
	Hypertension		31,941,780.00	2,108,157.48	2171402.204	2236544.271	2303640.599	2372749.817	2443932.311
	Opthamology		1,750,000.00	115,500.00	118965	122533.95	126209.9685	129996.2676	133896.1556
	Infectious Diseases		2,620,000.00	172,920.00	178107.6	183450.828	188954.3528	194622.9834	200461.6729
	Proportion of smartphone usage	0.22							
	Insured patients	30%							
	Patient growth rate	3%							
	Market of hospital departments								
	Average number of departments	29							
	Hospitals	15393							
	Total potential departments	446,397.00							
	References								
	http://www.statista.com/statistics/201182/forecast-of-smartphone-users-in-the-us/								
	http://clients1.ibisworld.com/reports/us/industry/ataglance.aspx?entid=1587								
	http://clients1.ibisworld.com/reports/us/industry/majorcompanies.aspx?entid=1591								
	http://www.ita.doc.gov/td/health/india_indicators05.pdf								

Assuming the price point of $25,000 per annum for a single hospital's disease group and an estimated market side of 165,967 hospital disease group/departments in just the US, an estimated $4.15 billion of revenue could potentially be generated assuming 100% market penetration in the first year. To provide a conservative estimate of the first year revenues, assuming even a 1% market penetration success rate, there would still be approximately 1,659 hospitals in partnership, generating revenues of $41.49 million in the first year. Therefore this estimate would be on the upper bound, but with significant upside considering the gradual growth in adoption of our application as well as minimally increasing number of hospitals in the US. Additionally, considering the Indian market is another potential market, these estimations would be on the lower end.

Considering that our target market consists of various hospital departments, our market size estimation focuses on the potential number of hospital departments in both the US and India across various hospitals, assuming an average of 29 departments in a general, relatively large hospital. This leads to an estimation of 165,967 disease groups in the US and approximately 446,397 disease groups in the Indian market, with these estimates obtained from market research firm IBISworld. These figures are conservative, lower bound estimations as one factor not incorporated is the possibility of comorbidities, in which there may be

“double counting” as patients with more than one disease may be included in multiple disease groups, for which hospitals must pay a proportionally increasing price.
http://clients1.ibisworld.com/reports/us/industry/ataglance.aspx?entid=1587

In addition to traditional, multi-service hospitals, we are looking toward specialty hospitals as a mode of market entry. These hospitals focus on one specific disease or treatment, and would serve as a perfect community of patients for HealthNote’s functionalities. The market of the specialty hospital industry in the United States is more on the fragmented side, as four main competitors comprise 25% of the market share (Select Medical Corp., Kindred Healthcare Inc., Healthsouth Corp., Memorial Sloan-Kettering). Since specialty hospitals generally address a niche group and are heavily affected by geographic factors such as proximity to patients, the market is fragmented and generally not dominated by larger players.



http://www.3caravelle.com/key-figures.html

With regards to the market for healthcare applications and telemedicine in general, it is still in the growth phase as new technologies and applications are being developed. However, as we can see from the graph, the application of mobile technologies to the healthcare realm is growing steadily, and we foresee this gradual but steady growth to continue even despite the industry’s reputation for being highly focused on tradition and concerns over compliance with patient health information. Thus growth is to be expected, especially in the realm of

technology as a service. That being said, barriers to entry into the healthcare application market exist and may pose substantial roadblocks as we move forward.

Manhattan research, a healthcare marketing research firm, estimated that 95 million Americans were using mobile phones for health information or tools in 2013. The number of users increased by 27% compared to the previous year, with the market predicted to be worth $26 billion in the US alone by 2017. This ~25% growth rate could be expected to remain stable considering the amount of opportunities for application of mobile technology, as well as the increasing trend towards greater utilization and integration of mobile applications into a consumer's everyday life.

http://manhattanresearch.com/News-and-Events/Press-Releases/mobile-health-95-million
http://hitconsultant.net/2014/06/23/the-evolving-landscape-of-medical-apps-in-healthcare/

We have segmented the market into types of hospitals-- primarily general hospitals that incorporate various departments of care and also specialty hospitals, in which the institution focuses on one particular disease group and all treatments or procedures relevant to it. The market, on a large scale, will be segmented first into the US and Indian market, as each market possesses significant growth potential but due to different aspects. Both markets have significant potential for success based on different key strengths.

At the onset, we expect HealthNote to launch in the Indian market with Apollo Hospitals. The Indian market possesses significant potential, especially considering the large number of hospitals distributed across the nation and sheer population of the country. Substantial portions of this population is afflicted with chronic disease, such as cardiovascular disease or kidney disease. We expect that in this market, the initial freemium model will entice hospitals to try the app. The direct-to-hospital model of our application provides significant value and feasibility, as some larger hospital systems with multiple hospitals scattered across the geographical area would be able to utilize a mobile healthcare application tool. The fact that Apollo has already engaged in telemedicine practices gives us an advantage, as we will be able to approach a customer that is already knowledgeable and open to change. One challenge may be the consistency of the inpatient pool, as only 15% of patients are covered by health insurance in India and may visit hospitals for outpatient treatment. It may be harder to establish a consistent group of individuals affected by chronic diseases, but it would depend on the hospital itself.
http://www.dnaindia.com/health/report-health-insurance-in-india-still-remains-an-untapped-market-1891509

In contrast, the strengths of the US system lies in the fact that its health insurance system is relatively concentrated. This will provide an opportunity for future partnership agreements with large, market-leading insurance providers, which could potentially provide access to many partner or covered hospital groups. Furthermore, the US government strictly monitors hospital

performance, compliance, and patient satisfaction, which is a strong indicator of the need for internal process improvement tools such as HealthNote.

http://www.the-hospitalist.org/article/patient-satisfaction-critical-to-hospital-value-based-purchasing-program/

Within the US market, there are various hospitals ranging in size that could utilize a patient monitoring tool to gauge quality of services and reduce costs associated with readmissions. Within each hospital, there are various departments that the hospital itself may select to participate in the HealthNote program. Some groups that we aim to target initially in the US include Cystic fibrosis patients, growth hormone deficiency patients, acne patients, ADD/ADHD patients, Hepatitis C patients, migraine patients, Crohn's disease patients, Chronic kidney disease patients, generalized anxiety disorder patients, or bipolar disorder patients, as the research report by Manhattan Research indicates that these online patient audiences are the most likely mobile health application users. Furthermore, our target market may be even more segmented by focusing particularly on private insurance patients as opposed to government insurance patients or uncovered patients.

http://manhattanresearch.com/News-and-Events/Press-Releases/mobile-health-95-million

Our market rationale comes from examination of key market research reports on the healthcare industry, which indicate that there are significant growth opportunities in the healthcare realm and telemedicine. Considering the convoluted and highly inefficient situation of the US healthcare system, this market will be key for HealthNote. Any tools or opportunities to reduce costs while providing incremental health benefits (such as HealthNote) will be highly valued, especially if they are able to be conducted in a long-term, sustainable manner.
http://www.modernhealthcare.com/article/20131214/MAGAZINE/312149983

Solution

Product

HealthNote is a multifunctional smartphone application that will be optimized for both Android and iOS platforms. This product allows recently discharged hospital patients to more effectively take control of their health once they leave the hospital by giving them the opportunity to ask questions more commonly discussed with a doctor right to the app itself. Because the app takes advantage of a large information base using the Watson corpus, it also allows doctors and other hospital staff to remain informed about recent medical research that will improve the way they care for their patients

Value Propositions

1. **Informing Doctors**: HealthNote will keep doctors in the subscribing hospitals up-to-date with a monthly status report that compiles the medical journals used as references for the most frequently asked questions of their specific patients. Watson’s

hypothesis generation will become increasingly accurate with continued use over time due to it's feedback loop and evaluation. New research is available every day, and we will provide the necessary summarizations by feeding this unstructured data into the Watson corpus.

2. **Allowing Patients Access to Medical Expertise**: Patients will have the ability to ask follow-up questions about their health, disease, or recent procedure from home, without the hassle of travelling to a hospital. By taking control of their own health, these patients will not need to schedule follow-up appointments with their doctors to meet their basic needs.
3. **Building Trust Between Doctors and Patients**: Patients and hospitals will remain in touch after a patient's procedure is complete. By linking these patients to the service of an app and community that is specific to their disease and hospital, they will be more likely to return to the hospital for a next visit (if necessary). This will increase revenue for the hospital and build trust between patients and doctors within the hospital by maintaining a valuable customer base.

Competition

Overview

The dependencies that we have identified for success include patient access to smartphone devices, frequent access to a corpus of high quality and updated information in the medical field, increased hospital involvement in compliance, and an increased level of technological interest by the patients. In order to move forward with operation, we believe that a functional organization structure is necessary because of the diverse expertise of our team. Given our product scales, we hope to recruit additional engineers to continually build onto the features of our application. While the marketplace of applications that spread access to high levels of information may be increasing, we believe that our application is one step ahead because of its ability to find and sift through data for individualized responses.

Competitive Landscape

Health Note has a variety of medical application competitors, including HealthTap, iTriage, WebMD for iPad, and Dosecast. However, none possess all of HealthNote's capabilities.

1) HealthTap excels by providing direct communication between patients and doctors, wherever the patient may be. There are over 60,000 doctors available for conversation for a total of 10 million users. However, the application does not provide the user with an adequate amount of recent and high quality medical content, which may lead to disparities in treatment solutions.
2) iTriage serves over 12 million users and allows them to search through medical data, find facilities, and learn about prescriptions. The application is complex in nature and the user may have a difficult time finding the information they need to escalate their case and learn about their treatment.

3) WebMD also provides users with multitudes of information that can be used at any level. This website/app's functionality includes the ability to type in a medical question, which is similar to HealthNote. However, these queries are based solely on keyword matching, and patients may be lost while sifting through unnecessary information that is irrelevant to their current health issue.
4) Dosecast provides users with insight into their prescriptions and schedules reminders to take required medications. While this app provides specialized requirements based on the individual using the app, it relies only on the original schedule inputed by the user and does not allow comprehensive access to the patient for figuring out their own health requirements.
5) HealthNote is a low-cost solution to providing immediate and personal healthcare information to discharged patients. Our app assists users in finding the answers they need to resolve their inquiries. Given HealthNote's use of the IBM Watson API, it is able to process questions based on natural language and provide drastically more efficient use of medical information in comparison to its competition.

Popular Patient Facing Applications	Individualized information	Patient accessibility	Hospital compatibility	Quality and frequency of new content
HealthTap	***	**	**	**
iTriage	**	***	**	**
WebMD	***	**	**	**
Dosecast	**	**	***	*
Health Note	***	***	***	***

Business Model

<u>Pricing Structure</u>

HealthNote will be sold based on a tiered pricing based, with attributes including:

1. the size of the patient group
2. type and size of the institution

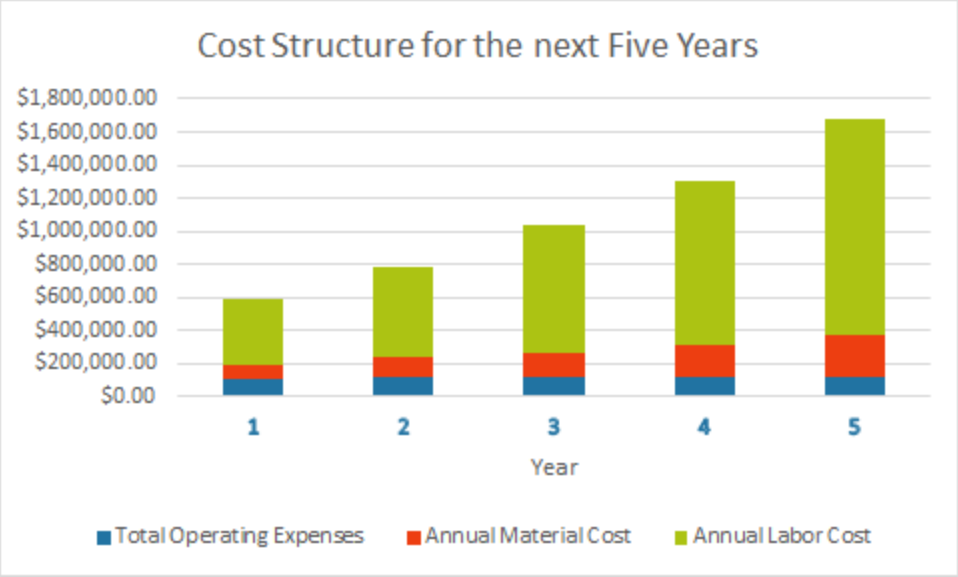
3. type of disease platform
4. level of collaboration between HealthNote and the health institution
5. potential for future collaboration

HealthNote favors tiered pricing because it allows us to meet the demand for accessibility that we face, in particular the fact that there is a huge income gap between the many patient groups that different hospitals/clinics serve. By setting an appropriate prices for the amount of access and type of access required, tiered pricing allows clinics with few users to pay a lower subscription price for a common disease such as diabetes than large hospital with thousands of potential users.

For example: A subscription of the Congestive Heart Failure (CHF) platform for a large public hospital is $25,000 per year. A small rural clinic, however, would pay just $5,000.

Moreover, HealthNote offers great value to large hospitals and small clinics alike. For instance, at the current price of $25,000 per platform, a private hospital like Apollo with an average of 6,500 CHF patients per year can save $460 per patient by reducing the hospital readmission rate through distributing HealthNote at an average cost of merely $3.85 per patient, an astonishing 11800% ROI citation. Additionally, the subscription to the platform allows users access to a HealthNote-Watson knowledge base, composed of the most up-to-date medical journals, books, and doctor reports. We estimate this data to be worth $255,000 today, and is continuously growing.

Cost Structure



Operating Expenses include costs for advertising, rent, utilities, etc. See details in our balance sheet, located in the appendix. Labor Cost include salaries for our engineers, designer, and business analysts. We forsee headcount increases as the business expands.

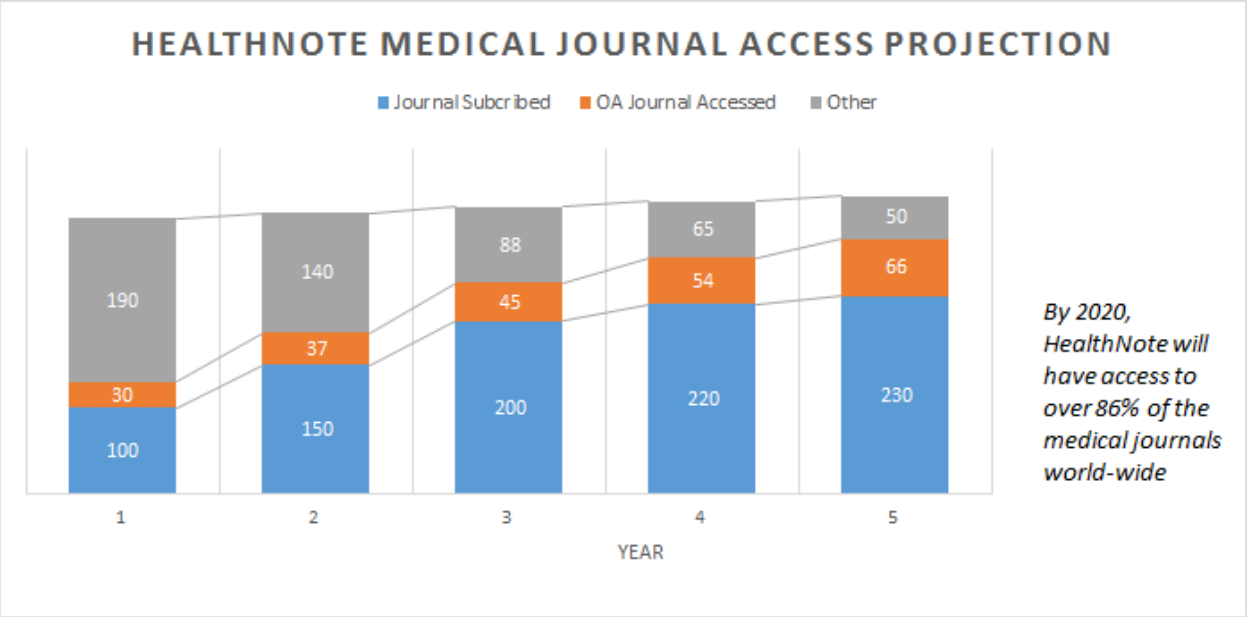
Material Cost

At HealthNote, one of our missions is to provide doctors and patients alike with the most thorough and up-to-date medical knowledge. Understanding that this is not achievable without leveraging Watson's ability to navigate through unstructured data, HealthNote strives to infuse a Watson corpus with the most recent medical knowledge by actively seeking partnership with publisher and subscription to medical journals worldwide.

In the US, the price of a health science journal subscription is $796.16, according to the research conducted by Allen Press in 2012, suggesting an annual subscription to a publisher with 10 journals will cost approximately $7000. With an initial content investment of $75,000, HealthNote will have access to approximately 100 leading world-class medical journals in its launch, covering over 30% of the 320 medical journals in the world. http://en.wikipedia.org/wiki/List_of_medical_journals

Noticing that the subscription to medical journals will be an ongoing investment to keep HealthNote bright and up-to-date, to our delight, we also anticipate several significant cost reduction opportunities in the near future.

1. **The Big Deal**: While many major publishers offer their journals on a per-journal subscription basis, many provide significant cost saving opportunities for large universities and other institutions through a bundle model often referred to as "The Big Deal." Publishers offer electronic access to all the titles in the bundle at a price reflecting the subscriber's existing subscriptions (which are typically retained) plus a top-up fee for electronic-only access to the non-subscribed titles. http://allenpress.com/system/files/pdfs/library/2012_AP_JPS.pdf
2. **Open access movement**: Open access refers to making content available (especially, though not exclusively, journal research articles) through online digital copies and increasingly free access to most copyright and licensing restrictions. The best-known OA publishing model is the "author-side payment" model, where the author (or usually his/her research funder or institution) pays a publication charge. There are around 8115 fully open access journals listed on the Directory of Open Access Journals, this represents an increase of 3750 over the 3 years, or about 3.5 per day, suggesting a promising future for HealthNote with a greater access to medical journals at lower to even no cost. http://allenpress.com/system/files/pdfs/library/2012_AP_JPS.pdf
3. **Economies of scale**: Lastly, we believe that as we reach out to more health institutions with similar demand for medical platforms, the content cost per institution will lower significantly, from 38K per institution in year one to $4,000 in year five.



reference:
http://allenpress.com/system/files/pdfs/library/2012_AP_JPS.pdf
http://en.wikipedia.org/wiki/List_of_medical_journals

Value Propositions

4. **Informing Doctors**: HealthNote will keep doctors in the subscribing hospitals up to date with the a monthly status report that compiles the medical journals used as references for the most frequently asked questions of their specific patients. Watson's hypothesis generation will become more and more accurate with continued use over time due to it's feedback loop and evaluation. New research is available every day, and we will provide the necessary summarizations by feeding this unstructured data into the Watson corpus.
5. **Allowing Patients Access to Medical Expertise**: Patients will have the ability to ask follow-up questions about their health, disease, or recent procedure from home, without the hassle of travelling to a hospital. My taking control of their own health, these patients will not have to schedule follow-up appointments with their doctors to get their basic needs met.
6. **Building Trust Between Doctors and Patients**: Patients and hospitals will remain in touch after a procedure is complete. By linking these patients to the service of an app and community that is specific to their disease and hospital, they will be more likely to return to the hospital for a next visit (if necessary). This will increase revenue for the hospital and build trust between patients and doctors within the hospital by maintaining a valuable customer base.

Marketing and Sales

Client

During launch (Years 1-5) the initial clients to be targeted will be specialty hospitals or

relatively smaller hospitals (6-199 beds) with a need for internal process improvement or provide managed care for patients with chronic or long-term diseases. Additionally, hospitals that face large time inefficiencies for doctors or unsatisfactory readmission rates will be specifically targeted, as HealthNote's value propositions specifically addresses these operational issues.

After launch, the strategy will be to expand to larger specialty hospitals and general hospitals (200+ beds) that are comprised of a variety of different health departments (cardiology, neurology, etc.). Larger hospitals likely see an even greater need for reducing inefficiencies and improving patient discharge processes considering the larger number of staff to oversee. Hospital administrators will also value HealthNote as a tool that provides them with more accurate performance indicators across departments.

In the long-term, once our services have been established with a substantial number of clients, or even with larger, renowned healthcare provider institutions, another potential client is health insurance providers. Considering health insurance providers are another beneficiary of reduced patient readmissions and patients gaining the ability to self-manage their health, health insurance providers may eventually be integrated into HealthNote's business model as either a source of funding/sibsidy to the hospital or a direct customer to our company for usage of the application platform.
http://www.cdc.gov/nchs/data/hus/2011/116.pdf

Engagement

Client engagement will essentially utilize B2B strategies. Despite the fact that a core component of our application is a direct consumer-facing side, the patient is ultimately a patient of a specific hospital and thus must be provided the application and have their records transferred through the hospital. The hospital is thus the client that must purchase our product in order to access the rights to use our application.

Client engagement will go through a combination of referral and marketing strategies. A pilot program in which our application is used at no cost to the participating institution will provide us with quantitative benefits that could be used to support the value of our application.

Marketing Strategy

Marketing may utilize other marketing research services such as CarePrecise, which possesses a database of all hospitals as well as facility codes for specific departments. citation Considering each hospital's need is highly dependent on the service area demographics such as income, health coverage, and proximity to residences, having a database such as this would be highly valuable. Actual outreach may need to occur through mass mailings to hospital administrators, go through referrals, or even spread the word through individual pitches or demonstrations to hospital administration. Direct outreach to individual physicians may be another channel for outreach, in which the message is personalized and the professionals are provided with enough details to incentivize them to relay the message to administration.

Initially, the marketing strategy must be aggressive in order to gain the critical launch or pilot

partners. This will include advertising our offering for a free trial period to our initial partners. As soon as a partnership with a relatively large and renowned hospital (in addition to Apollo) has been established, marketing may rely more on referrals. Ideally, an increasing number of partnerships provide a variety of data and supportive metrics that becomes a “snowball effect,” in that more and more positive, value-added results lead to more requests for partnership. Other channels for promotion include marketing at healthcare conferences.

Operations

Throughout the past four months, our team has worked to develop a technical proof-of-concept video for HealthNote that shows the app’s UI and functionality. This first milestone was achieved in December 2014 and demonstrated as part of our submission for IBM Watson’s Cognitive Computing competition.

The first functioning prototype of HealthNote is demonstrated in the proof-of-concept video, displaying the application’s interface and user experience. We expect a fully functioning prototype that is connected to the IBM Watson API to be available with complete software development in January 2015. Alpha testing will be complete in April 2015, with a beta testing timeline set for September 2015.

We will begin with a pilot freemium approach that offers the subscription of our product for free for the first year of usage for our initial customers (Apollo and others). We plan to start

distributing this product within the next year (by EOY 2015). Thus we expect that our first paid customer ship for revenue will be EOY 2017.

HealthNote has partnered with Apollo Hospitals as of December 2014 as an initial customer and distributor of the application to its patients. Alliances between HealthNote and Johnson & Johnson are in the works, as the company has expressed interest in the use of HealthNote's corpus of patient registries as customer research data and information.

Once the team has gauged success in the Indian healthcare markets and different types of hospital chains, we aim to expand to the United States market, which will grant us access to a larger customer base of patients with smartphones. We hope that in this future expansions, US insurance companies will help to subsidize the cost of our platform to hospitals as a method to decrease readmission rates and their associated costs.

Management

Summaries of key personnel (Highlight management's qualifications for leading this venture (e.g., previous early-stage business management experience, track record producing strong returns for investors, industry domain knowledge/experience)--Please add to your own summary!

Owen Chen - Engineer

Currently, Owen is a third year double major at UC Berkeley in Computer and Cognitive Neuroscience, along with a minor in Music. His interests lie in cognitive, educational, and music technology, especially relating to data analytics, artificial intelligence, and personalized learning. Having undergone a Techstar's 3 month start-up accelerator batch in London over the summer, he experienced an in-depth understanding of the entrepreneurial lifestyle, and is passionately looking forward to the impact cognitive computing can create in the world in the very near future.

Kenny Yu - Designer

Kenny is a fourth year Business student. Although he has to study accounting and finance at school, he discovered his passion in design as he first took a design course at UC Berkeley. He's interested in how clever designs influence and enhance human experiences. Kenny now works on various projects as a freelance designer.

Gwin Zhou - Engineer

Gwin is a Senior studying Economics and Computer Science at UC Berkeley. Born and raised in China, she has always been interested in social entrepreneurship and technology. She hopes that, moving forward, she could apply knowledge in these fields to social, environmental solutions for the developing world.

Jordan Zola - Business Analyst

Jordan is a senior at UC Berkeley studying Business Administration and Psychology. She has grown interested in technology through both classes at UC Berkeley as well as working in the technology industry, and she hopes to be a part of technological projects that will have sustainable impact in the future. Through courses at UC Berkeley such as Social Entrepreneurship, Jordan has had the opportunity to create her own socially responsible business model and structure. This experience with early-stage business development has contributed to the development of HealthNote's business model.

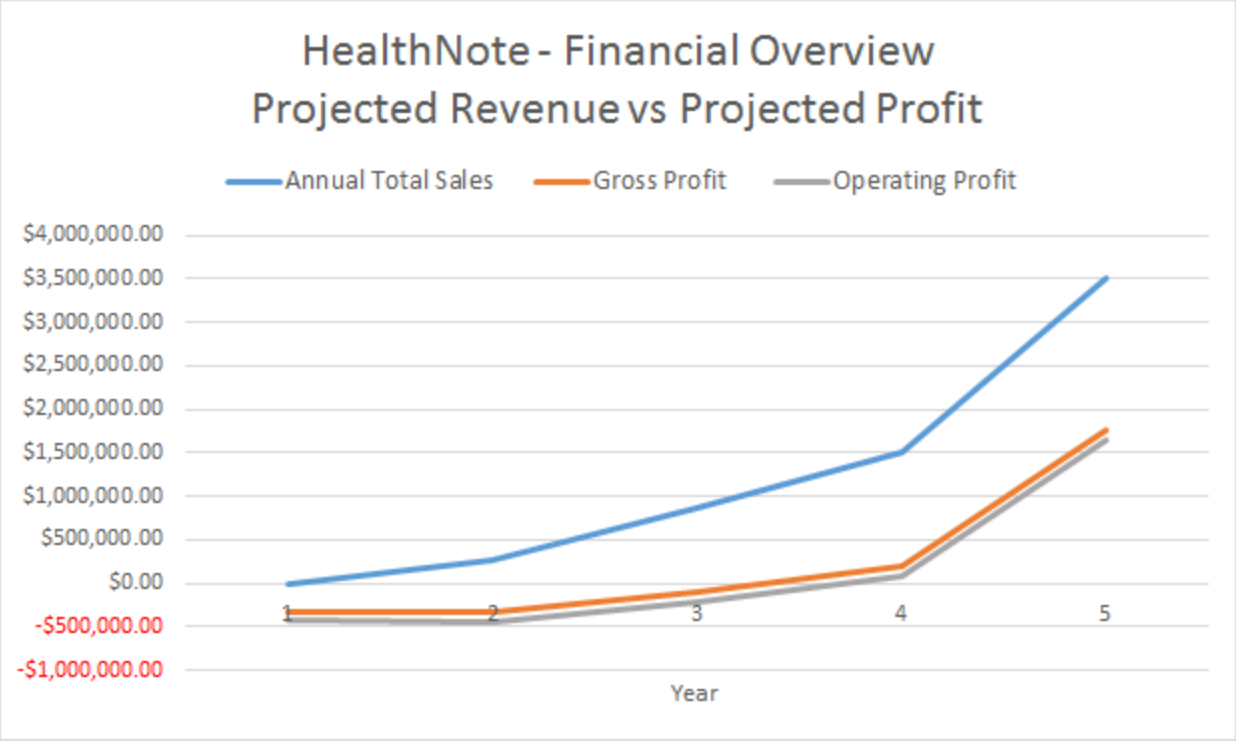
Tommy Shi - Business Analyst

Tommy is a fourth year student studying Business Administration. He would like to go in to healthcare or medicine in the long term. Particularly, he is interested in the business aspect of healthcare (i.e. consulting or management). He hopes to someday apply his business experiences and knowledge to the healthcare sector and make a positive impact.

Sebastian Werz

Sebastian is a transfer student from Santa Monica College pursuing a degree in Business Administration from UC Berkeley with focus on innovation. At Berkeley, Sebastian is looking to collaborate and gear professionally towards making positive changes in health and medicine. He is always excited to meet new people, explore new places and ideas, and make the most out of everyday.

Financial Model



HealthNote sees its first five years comprising of high growth in both revenue and profit. By providing a one year free trial to its clients in the first year, HealthNote aims to build a strong

foundation of service that is both scientifically reliable and customer-oriented. Such foundation would allow us to expand aggressively in the following years- with a CAGR of 89%, we expect to reach an annual revenue of 3.5Million by year 5. Additionally, through various cost-saving strategies discussed in earlier sections, we expect to reach a gross profit of a positive $190,000 dollars by year 4 with continuing growth momentum in the following years.

Key Financial Statistics	
Time to first revenue	**1 Year**
Time to break-even	**5 Years**
Projected Gross Margin by Year 5	**50%**
CAGR of revenue	**89%**
Capital requirements	**$1 Million**
Projected # Health Institutions Served by Year 5	**70**
Projected Headcount by Year 5	**21**

https://docs.google.com/a/berkeley.edu/spreadsheets/d/1Qs9J-sa3NxdwLCyr0pdx2ns3NXEL-w58BmUQkoYWX7s/edit?usp=sharing

Appendices

A. Financial Statements?? (P&L, cash flow, balance sheet)

B. Assumptions