# Business and Marketing Analysis Research
# in
# Healthcare Technology for Remote Patient Monitoring Services

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**deliverable checklist**
1. **Voice of customer/ stakeholder: interviews**
2. **Voice of customer/ stakeholder: online survey**
3. Market/ market size/ market trends analysis

## Executive Summary

Chirp, a key player in the Remote Patient Monitoring (RPM) services market, is poised to capture a $100M serviceable obtainable market share, approximately 2% of the market, within five years, catering to an estimated 170,000 subscribers. The total addressable market in the U.S. is assessed at $9B. Through extensive stakeholder engagement, including interviews with hospitals, nursing agencies, and aging homes, Chirp aims to solidify its position by aligning with industry experts who resonate with its innovative approach.

Our research includes a blend of stakeholder interviews and a detailed online survey, targeting healthcare professionals to gauge industry trends and acceptance of new technologies. Despite challenges in engagement and data collection, significant insights were gathered. The survey revealed a moderate favorability towards innovations but noted a strong preference for traditional practices, underscoring the need for a balanced approach in technology adoption.

The analysis identified several critical areas: the need for balance between technological enhancements and personal care, the impact of new technologies on patient-caregiver relationships, and the overarching requirements for data security and operational adaptability in diverse healthcare settings. These findings underline the importance of strategic integration of RPM technologies to enhance operational efficiency, client satisfaction, and overall treatment outcomes, ensuring that investments in new technologies are both effective and aligned with long-term care objectives.

## Progress Report

***Sponsor's current position:***

In the current healthcare domain and especially in aging care and nursing home with Remote Patient Monitoring (RPM) services, Chirp was estimated to acquire an serviceable obtainable market share of $100M in the domain by approximately 2% market share in 5 years, account for a total 170K population of subscribers. The total addressable market within the US was estimated as $9B.

***Voice of customer/ stakeholder: interviews (6)***

As consultant groups, in order to help with Chirp to build up the future landscape, we focused on potential stakeholders' interviews to find out the point of view from industry experts whose visions resonate with Chirp's innovative direction, and we reached out to key industry figures, such as

- **We conducted online and offline interviews with over 40 different hospitals, nursing agencies and nursing and aging homes through email, phone calls, and walk-in appointments to look for any viable opportunities.**
- Interim UW CIPE Director
- Co-Coordinator of the UW IPE Healthy Aging Initiative
- Outreach Specialist for the School of Nursing's Center for Aging Research and Education (CARE),
- Clinical Nurse
- Orthopedic surgery specialist
- General surgical oncologist

to enrich our market knowledge. And until now, there are still many emails waiting for replies, and we have also encountered situations where the interviewers did not show up after the appointment time. The longest time we waited in the UWhealth lounge area was 3 hours.

***Voice of customer/ stakeholder: online survey (83 valid data out of 170)***
We also conducted a detailed survey of healthcare professionals to understand the overall perspective of the industry and understand the industry trends of the adoption of new technologies in the healthcare market.

Firstly, the survey covered questions that took more than 15 minutes to read. After we distributed it, we encountered great obstacles and received a lot of feedback indicating that it was difficult to read. So we modified the questions to *5 quick questions* and asked in the last question whether they were willing to leave contact information for a more in-depth interview.

After the questions were sent out, we put the survey on a large number of social media

- linkedin, discord, facebook, WhatsApp, instagram, all medical-related groups, and sought professors to forward it
- ask the interviewer to forward the survey to their social network after every interview

but after a lot of effort, the results were not satisfactory. Because our target group is medical experts, many people who do not meet the background did not answer after opening the survey, and some people only answered part of the questions, so the valid data we finally collected was *83 out of 170*.

## Overview by Healthcare Sector

There are many different types of falls, such as flat falls, being knocked down by car, neurological falls, pathological falls, and pharmacological falls.

*Before go to hospital / nursing home:*

Hospitals and nursing homes have many risk assessments such as: the _Morse fall scale_ to evaluate the risk of falls at admission. Rank people by several different risk levels and with different care.

*Treatment / housing criterias:*

*Inperson Monitor:*

Patients will have extra care with high risk, such as nurses will _check twice an hour_. Or in some way they will be required not to leave the bed during the treatment.

*Digital Monitor*

Some facilities have _cameras_ in the corridor or main gate, depending on the policies individually, and it's also different within general ward, intensive care unit, emergency room, ICU.

And most of them have _nursing call systems_, and since there will be plenty of people in the facilities, it's rare that a patient falls down but no one is found. They also have _push bottoms_ everywhere in facilities such as the bathroom, restroom and many of them will have wearable devices or in more convenient ways they have mobile phones behind.

| Choose highest applicable score from each category | | Circle all that apply at the time of this fall |
| --- | --- | --- |
| History of falling | No | 0 |
| | Yes | 25 |
| Secondary diagnosis (More than one diagnosis) | No | 0 |
| | Yes | 15 |
| Ambulatory aid | None, on bedrest, uses W/C, or nurse assists | 0 |
| | Crutches, cane(s), walker | 15 |
| | Furniture | 30 |
| IV/Heparin lock or saline PIID | No | 0 |
| | Yes | 20 |
| Gait/transferring | Normal, on bedrest, immobile | 0 |
| | Weak (Uses touch for balance) | 10 |
| | Impaired (Unsteady, difficulty rising to stand) | 20 |
| Mental status | Oriented to own ability | 0 |
| | Forgets limitation | 15 |
| Total Morse Fall Scale score at the time of fall (high risk >50) | | |

*Post Surgery requirement:*

When people take _medicine that may cause dizziness or weakness_ such as: blood pressure medicine, local anesthetic, painkillers, diuretics, or any other different surgery, they will be asked to sit, stand, slow walk, and exercise gradually. And a lot of falls happen after they leave the hospital.

*Business Aspect:*

After many investigations, we contacted an orthopedic surgeon who has been in the industry for more than 50 years and has several hospitals of his own. From a comprehensive understanding, from the perspective of hospitals or nursing homes, if an institution wants to introduce new equipment, the most important thing to consider is how much money they will pay or spend if a patient falls in their own facilities. In comparison, if the introduction of new equipment can make it obsolete or solve the problem from its root, how much money can they save out of it?

_"If the installation of new equipment can make a profit of at least $1, then it is acceptable for hospitals or nursing homes to introduce it. If the profit reaches $10, then they will definitely introduce it."_

Decades ago, the requirement was deemed similar to the introduction of cameras. At that time, the businesses were analyzing aspects of the camera's price, niche of the market they could serve, at what height, and returns on investment. From a consumer perspective, the fundamental principle is nothing else but the profit margins as well as other conditional trade-offs that maximize the fortune out of the investment. The conclusion from the research was deemed highly aligned with our initial hypothesis.

### Key Findings & Learnings

Survey on overall trend: In our survey of health professionals, attitudes towards innovations were moderately favorable, with a noticeable preference for traditional and conservative practices over cutting-edge technologies. Consequently, many professionals find it challenging to adopt technological innovations. However, their primary focus is on enhancing treatment methods and outcomes. This highlights a critical need to balance technological advancements with practical improvements in treatment quality and efficiency in healthcare.



Do you think if a new device could help, your facility would be willing to try it?
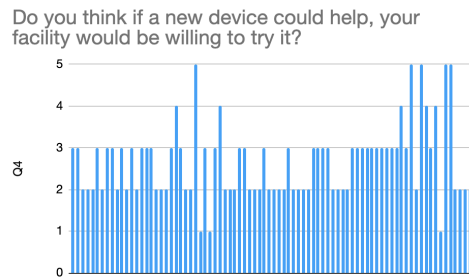
1:Definitely not, 2:Probably not, 3:Might or might not, 4:Probably yes, 5: Definitely yes

Balance in Human Interaction: Our analysis of remote patient monitoring (RPM), along with satisfaction surveys and acceptance interviews, revealed professionals' concerns about new technologies. While these technologies can enhance client security, provide immediate alerts, and speed up assistance, they often displace personal care, which is crucial for most patients. To strike an optimal balance in human interaction, maintaining both technology and caregiver engagement is essential to elevate client satisfaction and deliver compassionate services, which are paramount for client satisfaction.

Patient Satisfaction and Risk Assessment: Our findings indicate that the primary challenge of RPM is that replacing traditional care with technological solutions significantly reduces human interaction, adversely affecting many patients' experience and satisfaction. Additionally, adopting new technology involves costs related to training, adapting by patients and staff, and potential risks such as injuries from equipment malfunctions and delayed medical response. The integration of new technology also requires careful consideration of its impact on existing employees, necessitating a thorough cost-benefit analysis and risk management.

Relationship Between Caregivers and Patients: The initial investment in technology plays a crucial role in its adoption. However, reducing face-to-face interactions can negatively affect the caregiver-patient relationship, which remains vital. The shift to technology-driven monitoring may lead to dissatisfaction among those who value personal care.

Data Privacy and Treatment Accuracy: With the adoption of advanced technologies in healthcare, new concerns emerge, such as data privacy and the accuracy of treatments. Issues regarding data collection, usage, and security are particularly sensitive in healthcare. Ensuring data protection and building trust in data management systems are critical.

Functional Diversity and Detailed User Manual: Feedback from healthcare professionals underscores the need for RPM systems to be versatile, catering to various healthcare settings such as hospitals, home care, and travel nursing. It's important that these systems address the specific needs of different patient groups, including those with conditions like dementia, for whom personalized tools have been developed based on extensive experience.

Decision-Making Process: The process of deciding to adopt new RPM technologies is complex, involving budget considerations, stakeholder roles, and risk management. Despite the shift towards more portable devices like smartphones and watches, many patients, especially the elderly, show a preference for traditional devices and are often more open to adopting new technologies that enhance their convenience and safety.

## Conclusion

The survey findings are clear: the deployment and broad adoption of new technologies come with numerous considerations. These include the enhancement of staff efficiency through technological innovation, the need for accompanying nursing training, and the costs associated with adopting and adapting new technologies for both staff and patients. Initial expenses also play a significant role. Moreover, issues such as technology-driven customer satisfaction, workforce displacement, data security, and regulatory compliance must be addressed. Striking a balance among these factors is essential.

**Resources**

1. online survey template
   https://uwmadison.co1.qualtrics.com/jfe/form/SV_4SmA0qpRx9GeVj8
2. survey result
   https://docs.google.com/spreadsheets/d/1bcw7JhhbJGTbt97-MwuZNeA2i9uYEQWzzVQw0_T-WV8/edit#gid=1946312448
3. interview1, Orthopedic surgery specialist
   https://docs.google.com/document/d/1-8FCdz9hr5_Exo7zla1fFvi1K44ymButHAabcSu5qco/edit?usp=sharing
4. interview2, Interim UW CIPE Director
   https://docs.google.com/document/d/1F1bF0x-48eJmACejHinKoP4-MgO-oPsXUe3BPYPuIJA/edit?usp=sharing
5. interview3,Outreach Specialist for the School of Nursing's Center for Aging Research and Education (CARE)
   https://docs.google.com/document/d/1GUteAtFQJxOtGhWuRy8Q8x7cQK19mY55ODm_4RYy8l8/edit?usp=sharing
6. interview4,Clinical Nurse
   https://docs.google.com/document/d/15c8-Rvik-p_ybYid2M_3qcwNwtak2UE17tJ1SqctjGA/edit?usp=sharing
7. interview5, Co-Coordinator of the UW IPE Healthy Aging Initiative
   https://docs.google.com/document/d/1ibky0bUTXjz3yuZCjGuS0sn7xHiVDbwwcDsLxotwqaM/edit?usp=sharing
8. interview6, orthopedic surgeon
   https://docs.google.com/document/d/1Z2vUO09TfVjqJqkGeOt7ULDDO9vZfn7Vxy2cm2CayYw/edit?usp=sharing