

A study on providing medical and welfare services
to Korean veterans based on digital transformation

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Ministry of Patriots and Veterans Affairs

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Overseas training overview

1. Training country: USA
2. Name of training institution: University of Kentucky
3. Training field: A study on providing medical and welfare services to Korean veterans based on digital innovation
4. Training period: 8. 3. 2022. ~ 6. 2. 2024.

Training institution overview

1. Training institution: Martin School, University of Kentucky

- Address: 415 Patterson Office tower Lexington, KY, 40502
- Web page address: <https://martin.uky.edu/>
- Contact information for advisors, etc.

Position	Name	Telephone number
Director of Martin School	Ron Zimmer	859-323-5413
Director of Graduate Studies of MPA	Caroline Weber	859-562-3179
Professor	Doo Oak Kim	859-257-8924

2. General introduction to the University of Kentucky

- Flagship university in Kentucky, established in 1865
- Offers 16 colleges, 93 departments, and more than 200 programs
 - 6 colleges and 11 departments are ranked in the top 10 in the United States, and are famous for business administration, public administration, medicine, pharmacy, and agriculture.
- Aims to contribute to individual student development through the following mission:
 - Facilitates learning, informed by scholarship and research.
 - Expands knowledge through research, scholarship and creative activity.

- Serves a global community by disseminating, sharing and applying knowledge.

3. Introduction to Martin School

- Martin School is named after Dr. James W. Martin and opened in 1976.
 - Regular courses include △MPA (Master of Public Administration), △MPP (Master of Public Policy), and △PhD.
 - Currently, doctoral programs related to public administration such as welfare, education, and environmental policy are also operated.
- The field that signed an MOU with the Ministry of Personnel Management is the MPA master's program.
 - Consists of 34 credits (3 semesters) of degree program and 6 credits (1 semester) of job training and capstone.
 - MPA focuses on management and leadership to cultivate public sector leaders, and provides opportunities to develop networks and field skills through the internship process.
 - Based on US News in 2024, Public Finance and Budgeting ranked 3th and Public Affairs Programs ranked 28th.

I . Introduction

1. Research background

The ministry of Patriots and Affairs(MPVA) is a central administrative agency in the Republic of Korea. MPVA is in charge of affairs related to veterans of national merit and their bereaved families, compensation and protection of discharged soldiers, and promotion of veterans¹⁾. Currently, MPVA's administrative target is approximately 830,000 people. MPVA's organization consists of headquarters (2 offices, 10 bureaus, 29 divisions), 11 national cemeteries, 26 local agencies, the Veterans Affairs Entitlement Commission, and the Provisional Government of the Republic of Korea Memorial Hall. The number of employees is 1,450, and the budget is 6,188.6 billion KRW.²⁾

According to MPVA's webpage, their mission is 'To honor and serve those who have dedicated their lives and sacrificed for our country, and to preserve and promote their patriotic spirit.' And their vision is 'To create a society in which patriots and veterans can lead honorable and dignified lives, where the spirit of patriotism is value.'

MPVA has continued to expand various support systems, including compensation, for national meritorious service members and veterans. In particular, MPVA has invested a large amount of budget to expand medical and welfare services, which have

1)< GOVERNMENT ORGANIZATION ACT >Article 35 (Ministry of Patriots and Veterans Affairs) The Minister of Patriots and Veterans Affairs shall administer duties concerning merit rewards to persons of distinguished service to the State and their bereaved family members, compensation and protection of veterans, and commemoration thereof.

2) Source: MPVA webpage

increased explosively due to the aging of Korea's veterans and national meritorious people over the past few years. Nevertheless, MPVA is focused on ex post support such as subsidizing medical expenses and expanding physical infrastructure, and is showing limitations in meeting the expectations of veterans compared to the financial requirements invested.

In this situation, MPVA is going through a politically important period. MPVA is an organization that has remained relatively stable among Korean government organizations that undergo significant reorganization every time there is a presidential change. In particular, in June of 2023, about 60 years after its establishment, the status of the MPVA was elevated from 'an agency under the Prime Minister' to 'an independent official member of the Cabinet of Ministers.' Therefore, now the MPVA It is time to increase the organizational value of veterans by increasing their perceived policy satisfaction.

In addition, the world surrounding us today is changing rapidly. In other words, the development of digital technologies such as robots, artificial intelligence, and big data are already being commercialized around us, innovating and changing existing methods. Therefore, the government also needs to actively introduce and innovate digital technology.

In particular, the medical and welfare fields are closely related to daily life, and the introduction of such 4th industrial technology is essential to provide personalized services to aging veterans. In particular, as the world is experiencing a rapid change to a non-face-to-face society due to COVID-19, it is also important in preparing for the era of 'pandemics becoming routine'.

Therefore, it is an urgent task to find ways to provide veteran-tailored medical and welfare services based on digital innovation for a 'country that remembers heroes'.

2. Research method

First, I will look at the current status of medical and welfare services for Korean veterans. Specifically, I will look at the current status of each veteran's hospital, commissioned hospital, and nursing facility.

After that, I will select one of MPVA's medical and welfare policies and draw implications for improving the overall medical and welfare policy through a specific case study. As the subject of analysis, I chose the 'commissioned hospital system', the policy that MPVA has been most focused on in recent years. Using the results of a satisfaction survey of veterans who actually used commissioned hospitals, we will statistically analyze the factors that determine the satisfaction of veterans. Through this, I will find the elements necessary to increase veterans' experience of the policy when MPVA establishes medical and welfare service policies in the future.

Next, I will look at the concept of digital transformation and its necessity. Based on that, I will investigate cases of medical and welfare services using cutting-edge technology being used in the United States. I will look at how such examples are being used in the field of veterans affairs. In particular, I plan to learn about the telehealth program being used by the U.S. Department of Veterans Affairs. Lastly, I will derive policy implications and MPVA's internal strategic plan for successful introduction and settlement in Korea.

II. Status of medical care and welfare for Korean veterans

1. Medical and welfare service contents

(1) Veterans Affairs Hospital

Based on <ACT ON THE HONORABLE TREATMENT OF AND SUPPORT FOR PERSONS OF DISTINGUISHED SERVICE TO THE STATE>, etc³⁾, this is a system that supports part or all of the medical expenses when veterans receive treatment at this veterans hospital.

As shown in Table 1, there are six Veterans Hospitals directly operated by MPVA-affiliated public institutions (Korea Veterans Health Service, KVHS) in major cities in Korea. In the case of the Veterans Affairs Hospital, it is a public hospital at the level of a general hospital established by the government for veterans (in the case of the Seoul Veterans Affairs Hospital, it is at the level of a tertiary general hospital).

3) <ACT ON THE HONORABLE TREATMENT OF PERSONS OF DISTINGUISHED SERVICE TO INDEPENDENCE>, <ACT ON SUPPORT FOR PERSONS ELIGIBLE FOR VETERAN'S COMPENSATION>, <ACT ON HONORABLE TREATMENT OF PERSONS OF DISTINGUISHED SERVICE DURING SPECIAL MISSIONS AND ESTABLISHMENT OF RELATED ORGANIZATIONS>, <Based on ACT ON THE HONORABLE TREATMENT OF PERSONS OF DISTINGUISHED SERVICE TO THE MAY 18 DEMOCRATIZATION MOVEMENT AND ESTABLISHMENT OF RELATED ORGANIZATION>, <ACT ON HONORABLE TREATMENT OF WAR VETERANS AND ESTABLISHMENT OF RELATED ASSOCIATIONS>, <SUPPORT FOR VETERANS ACT>

Table 1: Overview of Veterans Hospitals by region, as of 2021

Region	Seoul	Busan	Gwangju	Daegu	Daejeon	Incheon
Size	141,572m ²	48,234m ²	61,356m ²	37,623m ²	14,164m ²	12,711 m ²
Beds	1,391	445	561	475	383	13
Medical Department	31	21	24	22	20	15
Employees	2,300	778	834	744	623	295
Treatments	2,156,737	1,420,323	886,735	844,029	573,229	462,975
Year of opening	1953	1984	1987	1993	1997	2018

Source: 2021 National Veterans Compensation Annual Report (MVPA) and 2021 Veteran medical statistics (KVHS)

More than 90% of our patients are veterans, and Veterans Hospitals have departments and medical staff suitable for veterans. Disabled veterans receive full support for medical expenses, and veterans without disabilities and bereaved family of veterans receive reduced medical expenses at a rate of 30% to 90%.

Before 2010, Veterans Hospital focused on treating acute or chronic diseases. However, since 2010, MPVA has been interested in rehabilitation and nursing care and has been operating a rehabilitation center and nursing hospital within Veterans Hospital to provide these services.

Table 2 : Table Status of Veterans Nursing Hospital

Region	Seoul	Busan	Gwangju
Size	13,068m ²	9,426m ²	6,085m ²
Beds	396	180	120
Year of opening	2014	2024	2023

Source: 2021 National Veterans Compensation Annual Report (MVPA) and 2021 Veteran medical statistics (KVHS)

Table 3 : Status of Veterans Hospital Rehabilitation Center

Region	Seoul	Busan	Gwangju	Daegu	Daejeon
Size	7,373m ²	7,466m ²	8,381m ²	4,922m ²	5,329m ²
Year of opening	2014	2022	2021	2024	2023

Source: 2021 National Veterans Compensation Annual Report (MVPA) and 2021 Veteran medical statistics (KVHS)

(2) Commissioned Hospital

On the other hand, a commissioned hospital is a private hospital established by an individual for profit, focusing on treating general patients and providing treatment for veterans on the side. MPVA introduced the commissioned hospital system in 1986 for the convenience of Veterans.

At first, commissioned hospitals were designated mainly in island areas where access to Veterans Hospitals was limited, but after the 1990s, commissioned hospitals were contracted in metropolitan areas where Veterans Hospitals are located, as a way to meet the increasing medical demands. As a result, the number of commissioned hospitals, which were two in 1986, has expanded to 488 by 2021 (See Table 4 and Figure 1, since 2021 data was used in the subsequent statistical analysis, I mention

that 2021 data is also used here.)

Table 4 : Commissioned Hospital Overview (2021)

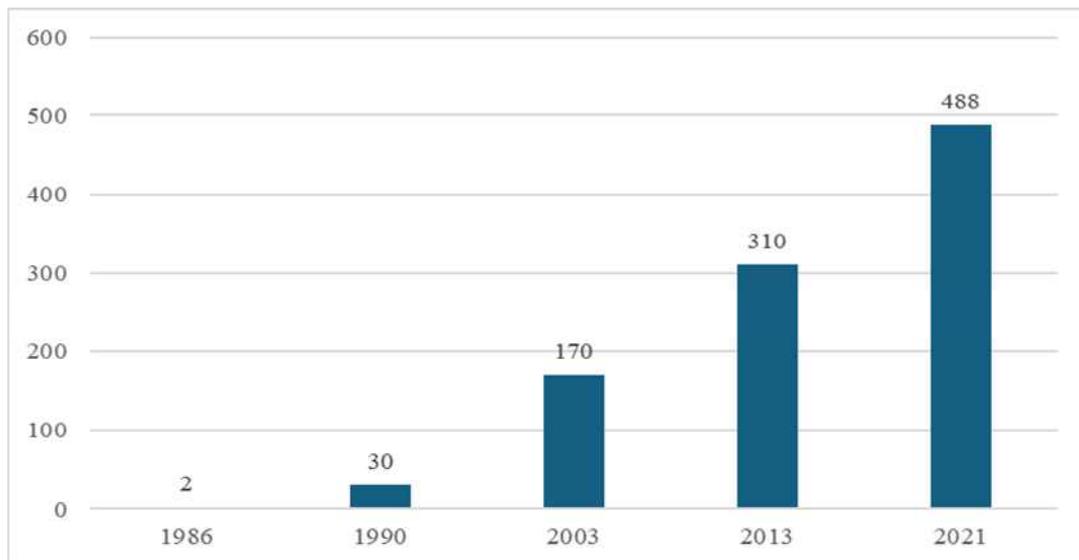
	Total	Seoul area	Busan area	Gwangju area	Daegu area	Daejeon area	Incheon area
Total Hospitals	448	169	82	96	59	61	21
Tertiary Hospital	88	28	14	18	8	12	8
General Hospital	147	47	35	24	19	16	6
Clinic	253	94	33	54	32	33	7
Beds	50,533	15,835	11,717	9,069	5,955	5,903	2,053
Treatments (2019)	4,362,333 (Including Incheon)	1,993,666	1,023,818	557,186	473,823	313,840	-

Source: 2021 National Veterans Compensation Annual Report (MVPA) and 2021 Veteran medical statistics (KVHS)

Commissioned hospitals are selected by comprehensively considering whether there is a Veterans Hospitals in the region, the number of departments, the number of specialists and beds, medical equipment, the appropriateness of drug use, and the appropriateness of medical expenses.

The expansion of commissioned hospitals is one of MPVA's most important policies. MPVA also announced that it will allow approximately 200 additional commissioned hospitals to be used in 2024.

Figure 1: Changes in the number of commissioned hospitals



(3) Other medical services

In addition, prosthetics (52 types) are provided to veterans with physical disabilities. In addition, we provide support for patients suffering from Agent Orange aftereffects and symptoms, as well as psychological rehabilitation services for veterans suffering from trauma.

(4) Nursing care support

MPVA provides professional nursing services by building and operating veterans nursing facilities for elderly veterans in need of long-term care. Alternatively, a portion of the out-of-pocket costs for using services at medical institutions is being supported for low-income, elderly, and national meritorious persons who have received a medical care rating. Like medical support, this is also based on <ACT ON THE HONORABLE TREATMENT OF AND SUPPORT FOR PERSONS OF DISTINGUISHED SERVICE TO THE STATE>.

Table 5: Status of nursing facilities

Region	Sowon	Gwangju	Gimhae	Daegu	Daejeon	Namyangju	Wonju	Jeonju
Capacity	222	200	200	200	200	206	200	200
Year of opening	2008	2008	2009	2011	2012	2015	2020	2022

Source: 2021 National Veterans Compensation Annual Report (MVPA) and 2021 Veteran medical statistics (KVHS)

(5) Mobile Veterans Welfare Services

This is a service provided to ensure a comfortable retirement life for elderly veterans. In particular, the in-home welfare service visits the homes of veterans who have difficulty moving due to disabilities or old age, but do not receive adequate help from their families, and provides household activities such as cleaning and health care support services such as companionship. This service is managed by 72 social workers and 1,349 personnel (as of 2022).

In addition, there is a Senior Care Products service that provides daily necessities to veterans over 65 years of age, and a mobile veterans welfare team service for veterans living far from the MPVA office. In addition, there are compensation payments for veterans who have suffered a disaster.

2. Case analysis: Statistical analysis of factors affecting veterans satisfaction in commissioned hospitals

For reference, this analysis was partially modified from the results of my degree program Capstone project.

(1) Abstract

This study examined the impact of the characteristics of commissioned hospitals on the satisfaction of veterans by using the satisfaction survey data of Korean veterans. As a result of a regression analysis using departments, beds, and specialists as independent variables and satisfaction scores as dependent variables, it was found that there was a positive correlation between the number of specialists and satisfaction in general hospitals. However, in clinics and tertiary hospitals, the number of beds was found to have a negative effect on satisfaction. Additionally, the presence or absence of a Veterans Affairs hospital did not have a significant effect on satisfaction with the referral hospital. Despite limitations, such as using only one year of survey data, this study may provide selection criteria for the ministry of Patriots and Veterans Affairs in designating commissioned hospitals.

(2) Introduction

The topic of this study is 'How do the characteristics of commissioned hospitals affect the satisfaction of veteran patients in South Korea?'. The Ministry of Patriots and Veterans Affairs (MPVA) in south Korea allows veterans to use private hospitals (commissioned hospitals) in addition to the Veterans Hospitals they directly operate for convenience. Expanding the number of

commissioned hospitals is one of MPVA's most important policies in recent years.

However, MPVA has so far focused only on increasing the number of commissioned hospitals and has not paid attention to whether veterans are satisfied with commissioned hospitals and what factors hospitals with high patient satisfaction have. Therefore, the purpose of my research is to examine factors that influence veterans' satisfaction with medical institutions. After reviewing existing papers related to satisfaction with medical services, I will conduct statistical analysis to investigate what factors that affect user. These factors include the number of medical departments, number of beds, number of specialists in each commissioned hospital, and whether or not there is a Veterans Affairs hospital in the area affect patient satisfaction.

Through this, I would like to derive implications for future MPVA policies. If variables related to patient satisfaction are found to be significant, they may be useful to MPVA as they seek to expand veterans healthcare. For example, if my results find that more specialists lead to higher patient satisfaction, MPVA may give a higher weight to the number of specialists in their review criteria.

(3) Literature Review

Kraska, Weigand, and Geraedts (2017) analyzed patient satisfaction data from more than 200,000 patients in 532 German hospitals. This study argued that characteristics such as the number of medical staff, and location of a hospital have a significant impact on patient satisfaction. Researchers found that more nurses per bed and more specialized departments were associated with higher patient satisfaction. Additionally, hospitals

with better quality control and hospitals located in urban areas reported higher patient satisfaction.⁴⁾

However, Jo (2009) found that the main components that affect medical consumer satisfaction are the doctor's qualifications and attitude, such as friendliness, rather than medical factors such as facilities, equipment, and procedures⁵⁾. In addition, according to Kim, Cho, Ahn, Goh and Kim (2008), in large hospitals with a certain level of facilities, facility factors can not affect patient satisfaction. In other words, once a certain level of facility requirements is achieved, hospital facilities no longer influence increasing patient satisfaction even if the facilities are improved beyond that level⁶⁾.

Meanwhile, Zickmund, Burkitt, and Gao (2018) analyzed data from a survey of satisfaction with U.S. Veterans Affairs hospital services among 1,196 U.S. veterans. They measured satisfaction with items such as “overall health care, outpatient and inpatient care, primary care, specialist and mental health providers, provider communication and respect, accessibility, cost of treatment, physical facilities, pharmacy, pain management. For reference, of the 1,196 respondents to the overall satisfaction survey with VA health care, 565 (47.2%) responded 'very satisfied' and 431

4) Kraska RA, Weigand M, Geraedts M. Associations between hospital characteristics and patient satisfaction in Germany. *Health Expect.* 2017 Aug;20(4):593–600. doi: 10.1111/hex.12485. Epub 2016 Jul 22.

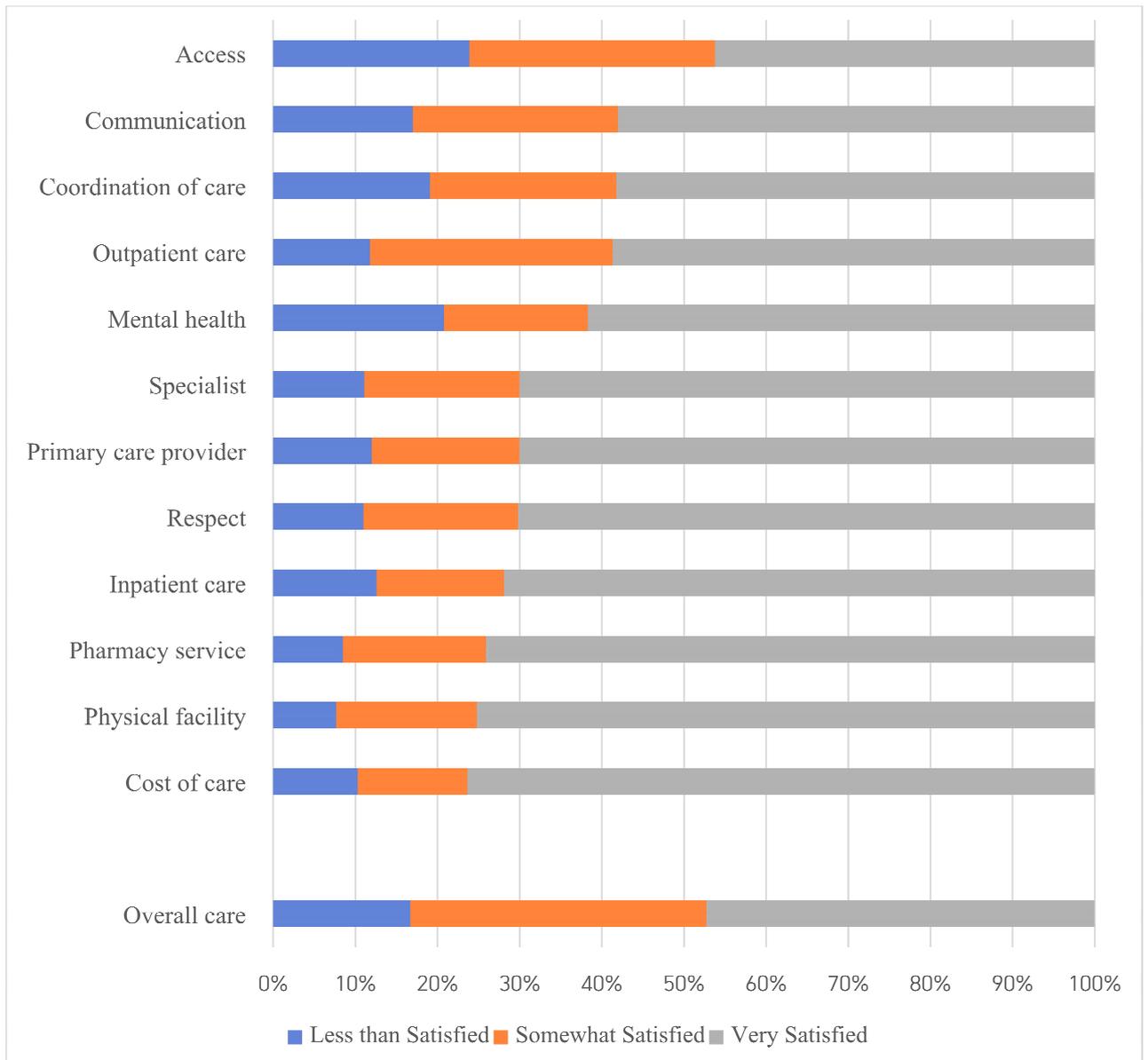
5) Jo, S. N. (2009). The Influence of Doctors' Qualities and Attitudes on Medical Service Satisfaction. *Korea journal of population studies*, 32(3), 21–41.

6) Kim, Y.-K., Cho, C.-H., Ahn, S.-K., Goh, I.-H., & Kim, H.-J. (2008). A study on medical services quality and its influence upon value of care and patient satisfaction – Focusing upon outpatients in a large-sized hospital. *Total Quality Management & Business Excellence*, 19(11), 1155–1171.

(36.0%) responded 'somewhat satisfied', indicating that users are satisfied with VA health care. This appears to be similar to 86.1 (somewhat satisfied), which is the satisfaction level of Korean veterans with commissioned hospitals. In addition, the satisfaction level was high in the order of treatment cost and physical facilities, and the lowest level of satisfaction was in terms of accessibility. In particular, considering that only 58% of respondents were 'very satisfied' in the communication category, it can be said that in addition to factors related to hospital facilities, non-facility factors are also factors in determining satisfaction among American veterans.⁷⁾

7) Zickmund, S.L., Burkitt, K.H., Gao, S. et al. Racial, Ethnic, and Gender Equity in Veteran Satisfaction with Health Care in the Veterans Affairs Health Care System. J GEN INTERN MED 33, 305–331 (2018).

Figure 2 : Results of a satisfaction survey on US Veterans Affairs hospital services



Source: Racial, Ethnic, and Gender Equity in Veteran Satisfaction with Health Care in the Veterans Affairs Health Care System(2018).

As a result of the literature review, it was found that patients' satisfaction with the hospital was determined not only by the hospital's facility factors, such as the number of medical staff,

but also by non-facility factors, such as friendly attitudes toward patients.

(4) Research Question

My research question is “How do hospital characteristics affect veteran patients satisfaction in Korea?”. The purpose of my research is to find out the factors that influence veterans' satisfaction with actual medical institutions. If variables related to patient satisfaction can be found through this, MPVA will be able to reflect research results in the screening criteria for selecting commissioned hospitals. For example, if more specialists lead to higher patient satisfaction, they may give higher weight to the number of specialists in their review criteria.

(5) Data Plan

To analyze my research question, I need the following data, and the reasons and sources for needing it are as follows. All data is publicly available on the South Korean central government's website, and there is no data related to living individuals.

① Number of medical departments in commissioned hospital

In general, the more diverse the number of medical departments, the better the size and facilities of the hospital are expected to be. Veterans will find it convenient to be able to receive treatment for multiple diseases at the same time at one hospital, so the number of medical departments is an important indicator.⁸⁾ MPVA discloses the status of commissioned hospitals every three months on the Korea Public Data Portal website. This

status includes the number of medical departments in the commissioned hospital.

② Number of beds in commissioned hospital

The number of hospital beds is also a representative indicator of the size and facilities of a hospital. In general, the more beds there are, the more convenient hospitalization is likely to be, which can have a positive impact on veteran satisfaction. On the other hand, since a large number of beds means a large hospital, treatment and hospitalization procedures are complicated, and satisfaction may decrease accordingly. As with the number of medical departments, the number of beds in the commissioned hospital is included in the status of commissioned hospitals that MPVA discloses every three months on the Korea Public Data Portal website.

③ Number of specialists in commissioned hospital

The number of specialists is a quantitative indicator that can measure a hospital's medical capabilities. In general, the greater the number of specialists, the more convenient treatment and surgery is likely to be, which will have an impact on veterans' satisfaction. The Hospital Evaluation Integrated Portal on the website of the Health Insurance Review and Assessment Service, a public institution under the Ministry of Health and Welfare (MOHW) of Korea, discloses data on the number of specialists in

8) Korean veterans who had received hospital treatment for one year in 2020 had an average of 1.8 diseases, and 50.2% had two or more complex diseases. (Ministry of Patriots and Veterans Affairs & Korea Institute for Health and Social Affairs. (2022, July). *Research Report on the Results of a Survey on the Living Conditions of National Veterans*. Statistics Korea.)

all hospitals in Korea. Anyone who knows the name and region of the hospital can search and check the information, so they can also find out the number of specialists at the commissioned hospital.

④ Region where the commissioned hospital is located and the level of the commissioned hospital

Commissioned hospitals have recently come to have the characteristics of a complement to Veterans Hospitals, but they are fundamentally introduced as a replacement system. Therefore, veterans' satisfaction may vary depending on whether there is a Veterans Hospital in the area where the commissioned hospital is located. For example, in areas where there is no Veterans Affairs hospital, satisfaction may be high because commissioned hospitals fill the medical gap. On the other hand, areas where a Veterans Affairs hospital is located may have relatively low satisfaction compared to the Veterans Affairs hospital.

Additionally, the grade of the commissioned (tertiary hospital, general hospital, clinic) is necessary to identify the characteristics of the hospital itself. In Korea, hospitals have differences depending on their level in terms of out-of-pocket costs, facility standards, equipment, specialized diseases, and hospital treatment atmosphere. Using this indicator will help reflect the capabilities and characteristics of the hospital itself.

The location and level of the hospital are included in the MPVA data mentioned in number 1 above.

⑤ Commissioned hospital patient satisfaction survey results

KVHS, a public institution under MPVA, conducts a

commissioned hospital user satisfaction survey every year and discloses the results on its website. The scores for individual hospitals were released until 2021, and the 2022 satisfaction survey results did not disclose the scores for individual hospitals, so I would like to analyze them using the 2021 data. For reference, in the satisfaction survey I used in this study, all information that could identify the respondents was anonymized. And I only used the final result score of the satisfaction survey in the analysis.

KVHS randomly selects veterans who have used commissioned hospitals every year (3,532 people and 264 hospitals in 2021) and surveys satisfaction through phone interviews. The survey questions consist of quality of care (waiting for treatment, equipment, etc.), medical staff (kindness, etc.), and hospital environment. Satisfaction is on a 5-point scale (very satisfied – satisfied – average – dissatisfied – very dissatisfied). As a result of a recent survey, the average satisfaction score was 86.1 points, which is higher than 'satisfied', with the lowest score being 68.1 points and the highest score being 96.3 points.

However, the results of this satisfaction survey were only used to award recognition to a small number of excellent hospitals and are not used as policy feedback, i.e., to inform future decisions about veterans healthcare.

(6) Research Design

My variables and research design are as follows.

① Independent variables

The number of departments (e.g., internal medicine,

orthopedics, rehabilitation medicine, etc.) reported to MPVA of commissioned hospitals, ranging from 1 to 33 depending on the hospital.

The number of beds in commissioned hospitals is based on the number of beds reported to MPVA and varies from 0 to 866 depending on the hospital. The number of specialists in commissioned hospitals includes only specialists notified to the Health Insurance Review and Assessment Service, a public institution under the MOHW and excludes generalists and residents. There are 1 to 217 people.

The variable for whether there is a Veterans Hospital in the area where the commissioned hospital is located will be set as a dummy variable. Regions without a Veterans Hospital will be assigned 0, and regions with one will be assigned 1.

② Dependent variable

The dependent variable is satisfaction survey result scores for veterans who used commissioned hospitals in 2021. The KVHS annually surveys commissioned hospital satisfaction and discloses the results.

A random sample of 3,532 people who used 269 commissioned hospitals was selected and phone interviews were conducted from September 3 to September 16, 2021. I use only the data of 264 hospitals in this analysis, excluding the 5 hospitals with inaccurate independent variables.⁹⁾ The survey items consisted of quality of care, friendliness, hospital environment, and public interest of hospitals.

9) Unable to determine number of specialists.

③ Model

I will conduct a regression analysis with number of medical specialties, number of beds, and number of specialists as independent variables and patient satisfaction as the dependent variable. Also, I will repeat the regression analysis performed previously for each level of hospital (tertiary hospital, general hospital, clinic). Since the number of medical specialties, beds, and specialists varies greatly depending on the level of hospital, I believe it will be more statistically significant to separate them. I plan to use the Stata program and calculate their P-value to determine whether there is a significant linear relationship between the variables.

In addition, I would like to use t-test to find out whether the presence or absence of a Veterans Hospital affects the satisfaction of commissioned hospital by distinguishing regions with and without Veterans Hospitals.

(7) Results

① Relation of 'number of departments/beds/specialists' on 'patient satisfaction'

Figure 3: Predictors of patient satisfaction

	(1) point
departments	-0.0658 (-0.82)
beds	-0.00341 (-0.83)
specialist	0.0160 (0.81)
_cons	87.13*** (151.87)
<i>N</i>	264

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure 3 shows the results of regression analysis with 'number of departments/beds/specialists' as the independent variable and 'patient satisfaction' as the dependent variable. In this case, none of the independent variables have statistically significant coefficients, as all their p -values are above 0.05. This means that there is no significant linear relationship between the department, bed, and specialist with satisfaction.

② Relationship between the number of departments/beds/specialists on patient satisfaction

Figure 4: The result on the impact of each factor on patient satisfaction in clinics

	(1) point
departments	-0.0493 (-0.27)
beds	-0.0997* (-2.35)
specialist	0.0440 (0.17)
_cons	87.83*** (84.13)
<i>N</i>	75

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure 4 shows the results of the impact of each factor on patient satisfaction in a clinic-level hospital. In the case of the clinic, only the number of beds (p-value = 0.021) had a statistically significant relationship with satisfaction, and since the coefficient was a negative number, satisfaction decreased as the number of beds increased. In addition, the other independent variables, medical department and specialist, did not have a significant relationship with satisfaction.

Figure 5 : The result on the impact of each factor on patient satisfaction in general hospitals

	(1) point
departments	-0.265 (-1.32)
beds	0.00125 (0.18)
specialist	0.249** (2.91)
_cons	85.81*** (68.12)
<i>N</i>	109

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure 5 shows the results of the impact of each factor on patient satisfaction in a general hospitals–level hospital. In the case of general hospitals, only the number of specialists (p–value = 0.004) had a statistically significant relationship with satisfaction, and since the coefficient was a positive number, the more specialists there were, the higher the satisfaction level. The other independent variables, the number of treatment departments and hospital beds, did not have a significant relationship with satisfaction.

Figure 6 : The result on the impact of each factor on patient satisfaction in tertiary hospitals

	(1) point
departments	0.0346 (0.25)
beds	-0.0152* (-2.09)
specialist	0.0341 (1.31)
_cons	88.31*** (42.30)
<i>N</i>	80

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure 6 shows the results of the impact of each factor on patient satisfaction in a tertiary hospitals-level hospital. In the case of tertiary hospitals, only the number of beds (p-value = 0.04) was statistically significant, and since the coefficient was negative, satisfaction decreased as the number of beds increased. The other independent variables, the number of departments and specialists, did not have a significant relationship with satisfaction.

As a result of the analysis according to the level of the hospital, a statistically significant coefficient was derived at each level. The results are summarized in Table 6.

Table 6: Summary of results

Level of hospital	Independent variables	P-value	Relationship with patient satisfaction	R-squared
All	Departments Beds specialists	0.413 0.406 0.420	- - -	0.0138
Clinic	Departments Beds specialists	0.792 0.021 0.869	- Negative -	0.0926
General hospital	Departments Beds specialists	0.189 0.854 0.004	- - Positive	0.0935
Tertiary hospital	Departments Beds specialists	0.807 0.040 0.193	- Negative -	0.0619

However, in all cases, R-squared is small, so it is difficult to say that the explanatory power of the model is high. However, what is interesting is that, contrary to expectations, the number of beds has a negative relationship with satisfaction in both clinics and tertiary hospitals. Although an additional study is needed, the reasons for this may be the possibility that the more beds there are, the higher the congestion, the lower the quality of service per individual, and the possibility of differences in treatment types (inpatient or outpatient). In particular, considering that most veterans in Korea are very elderly, they are likely to experience difficulties with crowded hospitals and complex medical procedures.

③ The relationship between the presence or absence of a Veterans Hospital on patient satisfaction

Figure 7 : The result of t-test to compare the average satisfaction . ttest point, by(VH)

Two-sample t test with equal variances

Group	Obs	Mean	Std. err.	Std. dev.	[95% conf. interval]	
0	216	86.09724	.329768	4.846579	85.44725	86.74723
1	48	87.0465	.7028504	4.869491	85.63254	88.46045
Combined	264	86.26983	.2988257	4.855343	85.68144	86.85823
diff		-.9492546	.7740315		-2.473369	.5748597

diff = mean(0) - mean(1) t = -1.2264
H0: diff = 0 Degrees of freedom = 262

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0
Pr(T < t) = 0.1106 Pr(|T| > |t|) = 0.2212 Pr(T > t) = 0.8894

Figure 7 shows the results of whether patient satisfaction at commissioned hospitals varies depending on the presence or absence of a Veterans Hospital. As a result of a t-test to compare the average satisfaction of two groups (region without Veterans Hospital: 0, region with Veterans Hospital: 1), the average difference between the two groups is -0.9492546 and the t-statistic is -1.2264.

"H₀" specifies the null hypothesis to assume that the difference between the means is zero. "H_A" specifies an alternative hypothesis that can be one-sided (diff < 0 or diff > 0) or two-sided (diff != 0). Because the one-sided p-value is greater

than 0.05, I cannot reject the null hypothesis that there is no difference between the means of the two groups at the significance level of 0.05. In conclusion, therefore, there is no statistically significant difference between the two groups.

(8) Conclusion and Policy implications

As a result of the analysis, regression analysis for all hospitals showed no significant linear relationship between the independent variables and dependent variables. In analysis by hospital level, the number of medical departments did not have a statistically significant effect on patient satisfaction at all levels of hospitals. And the number of specialists had a slight positive correlation with satisfaction only at the general hospital level. Lastly, the number of beds was found to have a slight negative correlation with satisfaction in clinic-level hospitals and tertiary general hospitals. This is a result that does not conform to the common sense that large hospitals, which can be represented by the number of departments, number of specialists, number of beds will increase patient satisfaction. In particular, in the case of hospital beds, it is necessary to pay attention to the fact that the more beds there are, the more it has a negative effect on patient satisfaction.

This means large-scale facilities may have a negative impact on patient satisfaction. In other words, non-facility factors such as the friendliness of doctors, hospital services, and respect for veterans may have a greater impact on veteran patients' satisfaction with the hospital than how large the hospital's facilities are.

This is similar to Jo's (2009) research finding that doctors' attitudes have a greater impact on medical consumer satisfaction

than medical factors such as facilities examined in the literature review. This is also supported by the research results of Kim, Cho, Ahn, Goh and Kim (2008), who found that in hospitals with a certain level of facilities, facility factors can no longer affect patient satisfaction.

In addition, veterans in South Korea have characteristics such as being vulnerable to crowded environments due to their old age¹⁰⁾, having a higher percentage of chronic diseases requiring periodic prescriptions than severe diseases requiring high-level treatment compared to the public¹¹⁾, and having a high desire to be respected as veterans. Considering the characteristics of veterans, it can be hypothesized that hospitality, customer-oriented service, preferential treatment, and respect for veterans may have a greater impact on satisfaction than the size or facilities of the hospital.

In addition, it was confirmed that there was no statistically significant difference in average satisfaction between the group with and without a veteran hospital in the region where the hospital was located. This result is different from the existing expectation that commissioned hospitals are substitutes for Veterans Hospitals, and that satisfaction with commissioned hospitals may vary depending on whether there is a Veterans Hospital or not. In other words, it can be said that veterans' satisfaction with commissioned hospitals is determined

10) The average age of Korean veterans is 70 years old (Source: Ministry of Patriots and Veterans Affairs. (2022). *2021 National Veterans Compensation Annual Report*. Ministry of Patriots and Veterans Affairs.)

11) In 2019, 29.5% of outpatients at the Veterans Hospital had chronic diseases, while the national average rate of patients with chronic diseases among the general public was 14.5% (Source: Korea Veterans health service. (2022). *2021 Veteran Medical Statistics*. Korea Veterans Health Service.)

independently of the Veterans Hospital and it seems that veterans select and use the hospitals that suit them according to their needs in Veterans Hospitals and commissioned hospitals. Therefore, when designating a commissioned hospital, it is judged that the existence of a Veterans Hospital is not an important factor.

In the future, when MPVA promotes policies to expand commissioned hospitals, it is necessary to revise the commissioned hospital designation requirements to increase the satisfaction experienced by policy targets. MPVA should consider non-facility factors such as hospitality in addition to existing facility aspects such as 'number of departments, beds, specialists and existence of Veterans Hospitals,'.

(9) Limitations of this Study

I would like to mention that this study has several limitations. First, this study was conducted using only the results of a one-year satisfaction survey. Therefore, the volatility that may occur over time has not been taken into account, and the possibility that some extreme values may be included cannot be ruled out. And it's hard to say that the sample is large enough. When analyzing based on the hospital level, the sample size of the clinics was only 75, so it can be said that the sample size was not sufficient to have high statistical reliability.

Additionally, the independent variables used in this study cannot fully represent the hospital's medical facility factors. The number of medical departments, specialists, and hospital beds used in the study has the advantage of being an easily measurable and comparable indicator. However, even in hospitals of the same size, patient satisfaction can be very different

depending on the hospital's construction age, whether it has expensive high-tech medical equipment, and the available area per patient.

However, this study is significant in that it is the first study to use actual veteran patient satisfaction results. Therefore, based on the results of this study, there is a need to develop research using satisfaction surveys and additional independent variables over the next several years.

3. Implications

Recently, MPVA has been promoting the introduction of services based on high-tech technology. Examples include the development of cutting-edge medical equipment and prosthetic limbs using robotic technology, and an artificial intelligence-based greeting support application to prevent lonely deaths in elderly people living alone.

Figure 8 : Examples of veterans health care and welfare using the latest technology

	
<p>Prosthetic limbs using robotic technology¹²⁾</p>	<p>Rehabilitation treatment using robot technology¹³⁾</p>

	
<p>Nursing program using VR technology¹⁴⁾</p>	<p>Safety confirmation robot using robot technology¹⁵⁾</p>

In particular, in the 2020 COVID-19 pandemic, treatment and care through the information and communication technology were partially expanded to prevent the spread of infection. Non-face-to-face treatment using information and communication technology was allowed as an exception, and medicines were delivered via courier. However, after the COVID-19 pandemic ended, telehealth was not institutionalized and is being scaled back again.

And, other than telehealth, the remaining digital health and welfare care services are still just at the starting point. MPVA still provides mostly passive support, such as assistance with medical expenses. And MPVA is focusing only on quantitative expansion, such as building additional facilities at the Veterans Affairs Hospital, expanding the number of commissioned hospitals, and building additional nursing homes, rather than qualitative

12) photo source : www.hankookilbo.com
13) photo source : www.bosa.co.kr
14) photo source : www.kyeonggi.com
15) photo source : www.sentv.co.kr

improvement.

To this end, MPVA is spending a budget of more than 700 billion won (2024) every year. Nevertheless, veterans' satisfaction with medical care and welfare remains low, and demands for improvement are increasing. As a result, as a result of a survey of veterans, the rate of feeling proud as a veteran was only 51.7% in 2021, indicating that MPVA is not receiving a positive evaluation from policy customers.¹⁶⁾

In particular, considering the case analysis results, I was able to see that our country's veterans have a desire for customized services in addition to quantitative aspects. In other words, in order to substantially improve the policy satisfaction of our country's veterans and veterans, quality improvement through personalized services is urgently needed rather than quantitative expansion like the existing method.

This is evidence that MPVA failed to appropriately respond to changes in the needs of policy consumers due to environmental changes. Now there is a need to change from provider-centered service delivery to consumer-tailored support. A health management system for the prevention of serious diseases or a system that allows consumers to receive treatment at the location and time of their choice is needed. In addition, we must provide support so that people can receive more convenient and higher quality services. To achieve this, the 4th industrial revolution technology must be applied to veterans health care and welfare services.

16) Research Report on the Results of a Survey on the Living Conditions of National Veterans (2022)

III. Digital Transformation

1. Concept

According to Lee, Choi, Ra & Kim (2019), digital innovation refers to a broad concept in which human activities change and innovate as they are digitized and informationized using a tool called a computer.¹⁷⁾

Additionally, in the ‘Digital Government Innovation Promotion Plan’ announced by the Korean government in 2019, the characteristics of digital innovation were expressed as an era centered on artificial intelligence and the cloud. At the same time, the Korean government selected convenient customized services, linking, sharing and opening of data, efficient and flexible systems, and integrated governance as promotion tasks.¹⁸⁾

A similar concept to this is the 4th Industrial Revolution. This term was first used by Klaus Schwab at Davos Forum in 2016. He said, “a Fourth Industrial Revolution is building on the Third, the digital revolution that has been occurring since the middle of the last century. “It is characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres.” Additionally, he said, “The possibilities of billions of people connected by mobile devices, with unprecedented processing power, storage capacity, and access to knowledge, are unlimited. And these possibilities will be multiplied by emerging technology breakthroughs in fields such as artificial

17) Lee Seogjun, Choi Youngjin, Ra Jong-hei, & Na Hyeung Kim (2019). IT-Based Information: Digital Transformation and Intelligent Transformation. Information Technology Architecture Research, 16(4), 347–358.

18) Digital Government Innovation Promotion Plan, October 29, 2019, Joint government ministries

intelligence, robotics, the Internet of Things, autonomous vehicles, 3-D printing, nanotechnology, biotechnology, materials science, energy storage, and quantum computing”¹⁹⁾

In summary, digital innovation can be said to mean, in a broad sense, innovating and changing the content and delivery system of services based on accumulated information using tools such as information and communication technology, artificial intelligence, robots, and the Internet of Things. In this study, we will use the concepts in a broad sense without distinguishing between the meanings of digital innovation and the 4th industrial revolution.

2. The role of digital innovation in healthcare and welfare

According to Marbouh, D., et al. (2023), the Fourth Industrial Revolution has revolutionized all fields, including healthcare, moving away from the traditional one-size-fits-all approach to healthcare management and moving towards real-time personalized monitoring and treatment management. Researchers also argued that healthcare service provision has begun to embrace these technological innovations and has entered a new transformation called Healthcare 4.0. ²⁰⁾

In addition, in relation to the development and use of digital

19)

<https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>

20) Marbouh, D., Swarnakar, V., Simsekler, M. C. E., Antony, J., Lizarelli, F. L., Jayaraman, R., Garza-Reyes, J. A., Shokri, A., Cudney, E., & Ellahham, S. (2023). Healthcare 4.0 digital technologies impact on quality of care: a systematic literature review. *Total Quality Management & Business Excellence*, ahead-of-print(ahead-of-print), 1-26.
<https://doi.org/10.1080/14783363.2023.2238629>

technologies to improve health, WHO defined digital healthcare as the use of digital technologies such as the Internet of Things, artificial intelligence, big data, and robotics for health.

Meanwhile, according to Yoo, & Park (2023), using digital technology to improve participants' lifestyle habits or induce physical activity was actually effective in preventing and improving aging. Researchers also found that using digital technologies increased participants' motivation to take care of their health.²¹⁾

According to Han (2022), the digitalization of medical services is a global trend. For example, the United States includes non-face-to-face treatment in its reimbursement system, Germany has the Digital Healthcare Promotion Act to promote the digitalization of medical care, and Japan has the Next Generation Medical Infrastructure Act to promote the use of data in the medical field. The researcher said that the background for active legislation is that it is expected that the development of digital healthcare will effectively manage health, reduce social costs due to aging, and reduce the rate of misdiagnosis through AI.²²⁾

Regarding welfare, in a study by Kim & Kim (2022), a person in charge of social welfare work said that social welfare work and service support using digital is an expanded concept of social welfare practice that transcends time and space and It is an effective way to overcome physical limitations that have never been experienced before.²³⁾

21) Yoo, Ha Jin, & Park, Myeong A (2023). Digital Healthcare for Frailty(Systematics Review). GRI REVIEW, 25(4), 309-332.

22) Jeong-Won Han (2022). Development of Community-based Digital Health Care. Journal of the Korea Institute of Information and Communication Engineering, 26(12), 1826-1831.

23) Kim, Yong Deug, & Kim, Gyea Hyang (2022). The Experiences of Social Workers on Digital-Based Practices during COVID-19. Journal of Korean

As such, changes in the delivery system of medical and welfare services using digital technology are an irreversible trend of the times, and urgent introduction is needed in the field of veterans affairs as well.

social welfare administration, 24(1), 151–181.

IV. Study of health and welfare services for veterans in USA

1. Veterans health care and welfare system in USA

(1) Overview of the U.S. Department of Veterans Affairs

The Department of Veterans Affairs (VA), one of 15 organizations in the U.S. federal government, is the second largest after the Department of Defense. In FY 2024, VA had \$390.15 Billion distributed among its 3 sub-components. The detailed distribution details are listed in Table 1.

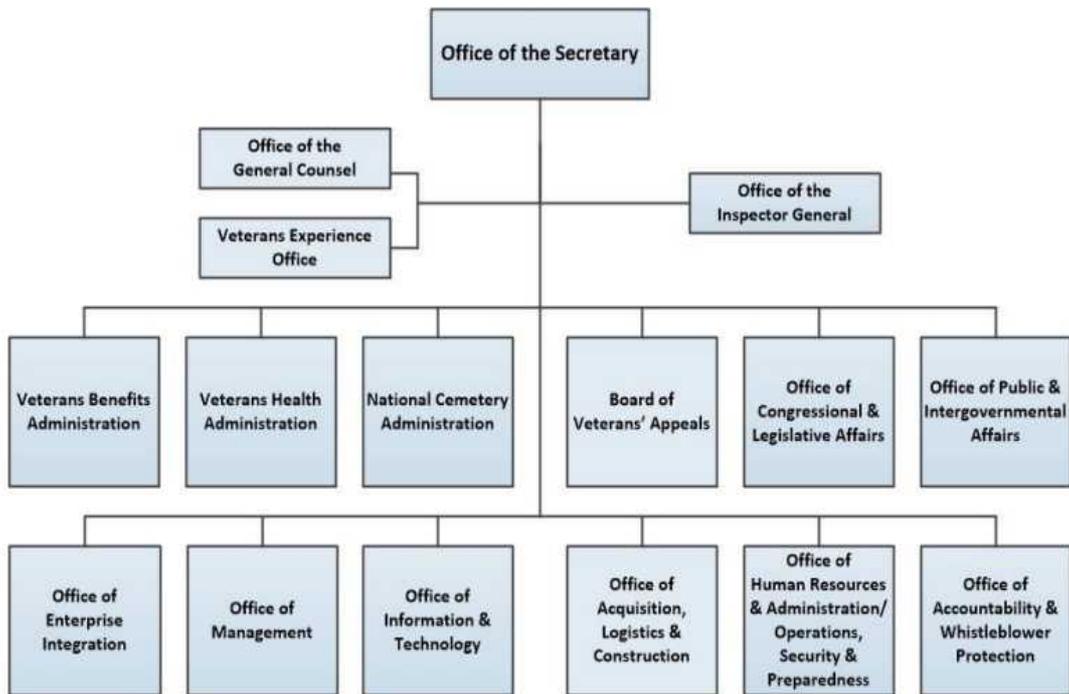
Table 7 : US VA Budget

Sub-Component	FY24 Total Budgetary Resources
Benefits Programs	\$195,426,229,906.98
Veterans Health Administration	\$149,405,094,486.64
Departmental Administration	\$45,321,351,054.67

Source : <https://www.usaspending.gov/>

VA's organizational structure is shown in Figure 1. Among them, the department responsible for the medical care and welfare of veterans is the Veterans Healthcare Administration (VHA). VHA provides a wide range of primary care, specialty care and social support services for veterans' health or illness. VHA advances medical research and development to support the health and well-being of veterans by pursuing medical research in areas that directly address veterans' diseases and conditions.

Figure 9: US VA organizational chart



Source : FY 2023 Annual Performance Plan & FY 2021 Report (U.S. Department of Veterans Affairs)

(2) Medical and welfare delivery system²⁴⁾

VHA presents its mission as ‘Honor America’s Veterans by providing exceptional health care that improves their health and well-being.’ Their vision is ‘VA will lead the future in delivering unparalleled health and well-being to our nation’s Veterans, and to the nation.’

VHA provides health care to 9 million veterans through 1,321 health care facilities. Health care facilities include 172 VA Medical Centers and 1,138 outpatient sites (VHA outpatient clinics). To this end, more than 371,000 healthcare professionals and support

24) U.S. Department of Veterans Affairs website
<https://www.va.gov/health/aboutvha.asp>

staff are employed.

VHA also provides long-term care services for veterans with illnesses or disabilities. Veterans can receive services in Nursing homes, Assisted-living centers, Private homes where a caregiver supports a small group of individuals, and Adult day health centers. Similar to our country, these places are operated directly by the VA or by state or community organizations. For locations not directly operated by VA, VA inspects and approves. In the case of nursing homes, in addition to the federal government, there is also a 'State Veteran home' (SVH) operated by the state government. In the U.S. state of Kentucky, which has a similar area to Korea, there are five SVHs. The state government is promoting the operation of SVH as a core task of welfare services.²⁵⁾

Of course, veterans can receive services such as nursing services at their own homes. Veterans receive 24/7 nursing and medical care, Physical therapy, Help with daily tasks (like bathing, dressing, making meals, and taking medicine), Comfort care and help with managing pain, Support for caregivers who may need skilled help or a break.

(3) VHA's plans for services utilizing digital transformation technologies²⁶⁾

Meanwhile, VHA sets two of the four goals in its Long Range Plan (FY2022-2025) as 'VHA delivers high-quality, accessible and integrated health care' and 'VHA maximizes performance through shared ownership and is on the forefront of

25) Source: Interview with the Executive Director of the Kentucky Department of Veterans Affairs (April 2024)

26) LONG-RANGE PLAN FY 2022-2025(Veterans Health Administration of US VA)

innovation'. In addition, they selected 'Provide greater choice for care across the VA system at facilities and through virtual care, community care and collaborative opportunities' as a detailed strategy, expressing their will to expand telehealth.

Additionally, this plan includes 'Provide digital services through a single integrated and equitable digital platform on VA.gov using My HealthVet and the VA mobile app to unify the Veteran experience across health, benefits and business lines'.

In this way, I can see that the U.S. VHA already clearly recognizes the importance of medical and welfare services based on digital innovation and has plans to expand this. Below, I will look at the current status of services utilizing digital innovation technology in the United States and examples from the veterans sector.

2. Telehealth using information and communication technology

(1) Concept

The term Telehealth or Telemedicine has been used since the 1970s and generally refers to "the use of information and communication technologies to improve patient outcomes by increasing access to treatment and medical information".²⁷⁾

The U.S. Department of Health and Human Services' Health Resources and Services Administration defines Telehealth as "Telehealth as the use of electronic information and telecommunications technologies to support and promote long-distance clinical health care, patient and professional

27) The Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS);
<https://www.hrsa.gov/telehealth/what-is-telehealth>

health-related education, and public health and health administration.” Additionally, it states, “Technologies include videoconferencing, the internet, store-and-forward imaging, streaming media, and landline and wireless communications”.²⁸⁾

The World Health Organization (WHO) says about Telehealth, “The delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities”.²⁹⁾

Meanwhile, Telemedicine is used in the same sense as Telehealth, but is also used in a narrow sense limited to the provision of services by doctors. In this case, the meaning of Telehealth includes the meaning of telemedicine, as well as training for health care providers, medical administrative meetings, and services provided by pharmacists and social workers. In this study, the two concepts will be used without separation.

(2) Features of telehealth

According to WHO, the first modern forms of telehealth began in the 1960s, spearheaded by the military and space technology sectors and a small number of individuals using readily available commercial equipment. Since then, the rapid decline in

28) The Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS);

<https://www.hrsa.gov/telehealth/what-is-telehealth>

29) World Health Organization (WHO), Telemedicine, Global Observatory for eHealth series – Volume 2(2010), pp.8~9.

ICT costs has triggered the replacement of analog communication methods with digital methods. The introduction and popularization of the Internet has further accelerated the pace of ICT development, expanding the scope of telehealth to include web-based applications (e.g., email, remote consultations and meetings via the Internet) and multimedia approaches (e.g., digital images and videos).³⁰⁾

Telehealth reduces the cost and effort for people who live far from a medical institution to receive treatment. This allows for greater communication and coordination with health care providers. And this is even more useful for people managing health conditions, especially chronic diseases such as diabetes. In terms of cost, virtual visits are likely to be cheaper than in-person visits.

However, telehealth may not be able to provide a correct diagnosis because the health care provider does not meet the patient in person to examine them. There may be technical problems, such as lost communication connections or software problems. Additionally, some insurance companies may deny coverage for telehealth.

Despite these problems, telehealth is expanding as a new type of medical service delivery method. In particular, the COVID-19 pandemic further accelerated the spread of telehealth.

30) World Health Organization (WHO), Telemedicine, Global Observatory for eHealth series – Volume 2(2010)

(3) Examples of the private sector in the United States

① Amazon Clinic³¹⁾

According to the American online distribution company Amazon, Amazon launched 'Amazon Clinic', a telehealth service platform, across the United States in 2023. 'Amazon Clinic' is a platform that connects doctors and patients. Amazon does not provide telehealth services itself, but connects patients with telehealth providers.

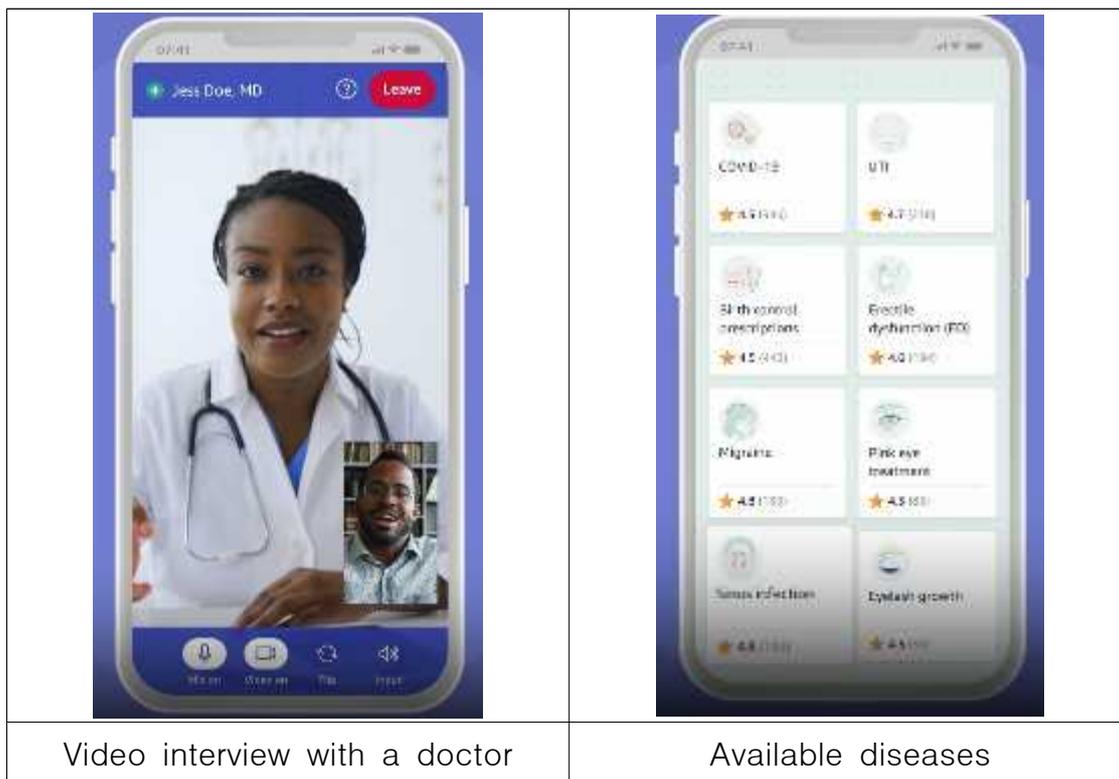
This service targets more than 50 mild diseases, including sinusitis, allergies, acne, hair loss, and migraines. The service is available 24 hours a day, 7 days a week and is available in all 50 states, while Messenger Prescription is only available in 34 states due to regulations in some states. Users simply select a doctor and answer the doctor's simple questions about their condition.

Prescriptions can be obtained from any pharmacy, including Amazon's own online pharmacy. In some cities, Amazon directly delivers medications by courier. In addition, Amazon also operates 'AWS Health Scribe', an AI service that automatically drafts patients' medical records.

Amazon Clinic, which had a low usage rate due to high usage fees before 2022, is expected to gradually expand its business area by drastically reducing usage fees in 2023.

31) <https://clinic.amazon.com/>

Figure 10 : How to actually use Amazon Clinic



source : Amazon Clinic website(<https://clinic.amazon.com>)

② Virtual Care Center at Mercy³²⁾

Mercy, a medical institution based in St. Louis, Missouri, established the world's first virtual care center in a four-story building specializing in telehealth in Chesterfield, a suburb of St. Louis. The Virtual Care Center operates only through telehealth, and is called a 'Hospital Without Beds' because it is staffed only by medical staff without outpatients or inpatients.

Virtual care uses highly sensitive two-way cameras, online-enabled devices and real-time vital signs to allow clinicians to remotely examine patients at home in addition to delivering at Mercy's traditional hospitals. In addition, this Virtual Care Center is

32) Mercy webpage(<https://www.mercy.net/about/virtual-care-program>)

conducting not only telehealth, but also telehealth technology development, training, and product testing.

Mercy Virtual Care services, centered around the Virtual Care Center, operate 24 hours a day, have over 300 medical staff, and serve 600,000 patients in seven states (Arkansas, Kansas, Missouri, North Carolina, Oklahoma, Pennsylvania, and South Carolina). Deliver virtual care services to improve patient outcomes and access while reducing total cost of care.

Figure 11 : Virtual Care Center



(4) Status of use in the veterans affairs field

① Overview of utilization status

The U.S. VA is actively using telehealth. In 2021, more than 2 million veterans received care through VA telehealth. VA telehealth is available to all veterans who are eligible to receive

care from VA and who live in one of the 50 U.S. states or U.S. territories.

Through VA's secure video conferencing application, called "VA Video Connect," veterans and caregivers can meet with VA health care providers in real time. In this case, the U.S. VA has partnered with major carriers (AT&T, TracFone's SafeLink, T-Mobile, and Verizon) to ensure that veterans and caregivers do not incur data charges when using the "VA Video Connect" application. This allows veterans to access their VA care team via telehealth without worrying about data charges.

Figure 12 : How to use VA Video Connect

- 1) Consult with the VA's medical team to determine whether telehealth is appropriate

- 2) Search and select the VA medical center of the desired type or location through the VA Video Connect website or application, and make a telehealth appointment. At this time, veterans may ask VA staff to invite a caregiver or other guest.

Find VA locations

Find a VA location or in-network community care provider. For same-day care for minor illnesses or injuries, select Urgent care for facility type.

City, state or postal code (*Required) [Use my location](#)

40513

Facility type (*Required) Service type

VA health All VA health services Search

Choose a facility type

- VA health
- Urgent care
- Emergency care
- Community providers (in VA's network)
- Community pharmacies (in VA's network)
- VA benefits
- VA cemeteries
- 114 Vet Centers

Lexington, KY 40502-2235

[Get directions on Google Maps](#)

Main number: [859-233-4511](tel:859-233-4511)

Mental health: [859-281-3223](tel:859-281-3223)

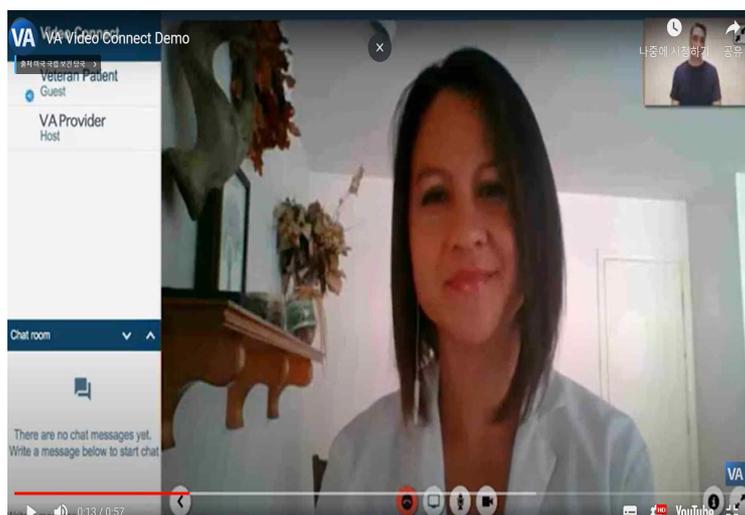
3.4 miles

Franklin R. Sousley Campus

2250 Leestown Road
Lexington, KY 40511-1052

[Get directions on Google Maps](#)

- 3) When veterans schedule an appointment to see a VA provider through VA Video Connect, they receive an email from the provider with relevant instructions and links.
- 4) Receive treatment by accessing VA Video Connect through the link received by email on the appointment date.



Source: <https://mobile.va.gov/app/va-video-connect#introduction/>

Meanwhile, VA offers telehealth services in more than 50 specialty areas, including primary care, mental health care, cardiology, and pain management. In particular, the director in charge of the Kentucky Department of Veterans Affairs said in an interview that telehealth is more important in the field of mental care for veterans to prevent suicide. He said that telehealth services are a way to simultaneously solve the problem of manpower shortage of psychiatrists and counselors and low motivation of veterans. That's why he said the state government is becoming more interested in telehealth.³³⁾

Table 8: List of 50 medical specialties providing telehealth services

Clinical Specialty		TeleRehabilitation
TeleCardiology	TelePathology	TeleAmputation
TeleChaplain	TelePharmacy	Telehealth Assistive Technology
TeleDentistry	TelePodiatry	TeleBlind Rehabilitation
TeleDermatology	TelePrimary Care	TeleChiropractic Care
TeleEyeCare	TelePulmonology	TeleKinesiotherapy
TeleGenomics	TeleRheumatology	TeleOccupational Therapy
TeleGI Hepatology	TeleSCI/D	TeleOrthotic Prosthetic Care
TeleHematology	TeleSpirometry	TelePhysical Medicine Physician
TeleICU	TeleStroke	TelePhysical Therapy
TeleInfectious Disease	TeleSurgery	TeleProsthetic & Sensory Aids Service

33) Interview with the Executive Director of the Kentucky Department of Veterans Affairs (April 2024)

TeleMental Health	TeleTransplant	
TeleMOVE!	TeleWholeHealth	TeleRecreational and Creative Arts
TeleNephrology	TeleWound Care	Therapy
TeleNeurology	Virtual PACT	TeleSpeech Pathology
TeleNutrition	Womens Health	

Additionally, VA strictly manages patients' personal information. For security purposes, we only use programs developed or approved by VA, and we have established and complied with data management principles and personal information protection principles. Only approved providers have access to the data, and all telehealth personnel are required to complete security training.

② Five programs to improve telehealth services

There are more than 4 million veterans living in rural areas in the United States. 20% of veterans in rural areas do not have access to the internet at home..³⁴⁾Rural communities face unique health care challenges, including long distances to clinical facilities and a lack of qualified providers. Accordingly, VA is operating several programs to improve the digital gap and access to telehealth services for veterans.

34)Source :

<https://news.va.gov/126698/va-rural-veterans-options-connect-providers>

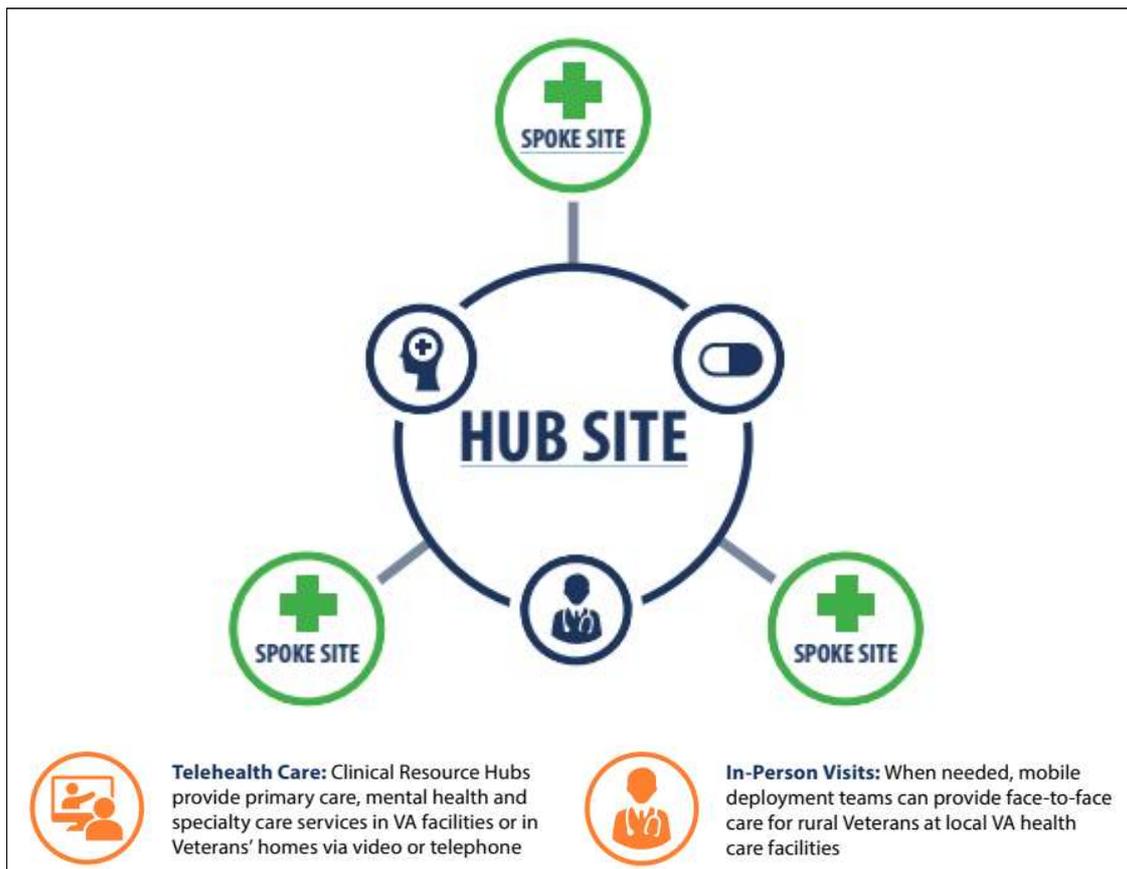
(Program 1) Clinical Resource Hubs (CRH)

First introduced in 2015, Clinical Resource Hub (CRH) is a solutions network program owned and managed by VHA's Veterans Integrated Services Network (VISN). This provides support to increase access to VHA clinical services for veterans when rural facilities lack treatment or service capacity. For example, if rural clinical facilities do not have specialists such as geriatric psychiatrists, CRH providers step in to provide veterans with mental health care support. For veterans seeking depression, pain management treatment, or quitting smoking but are too far from a VA facility to join an in-person support group, CRH offers a virtual space to connect.

The use of CRHs is increasing, with over 2 million appointments for mental health treatment, primary care and specialty care (clinical pharmacy, rehabilitation and pain management) through CRHs by June 2023.

CRH consists of a hub site and each spoke site. Hub sites are staffed with a variety of clinical and administrative services and provide medical services to veterans at the spoke sites through telehealth technology or in-person visits.

Figure 13 : CRH model

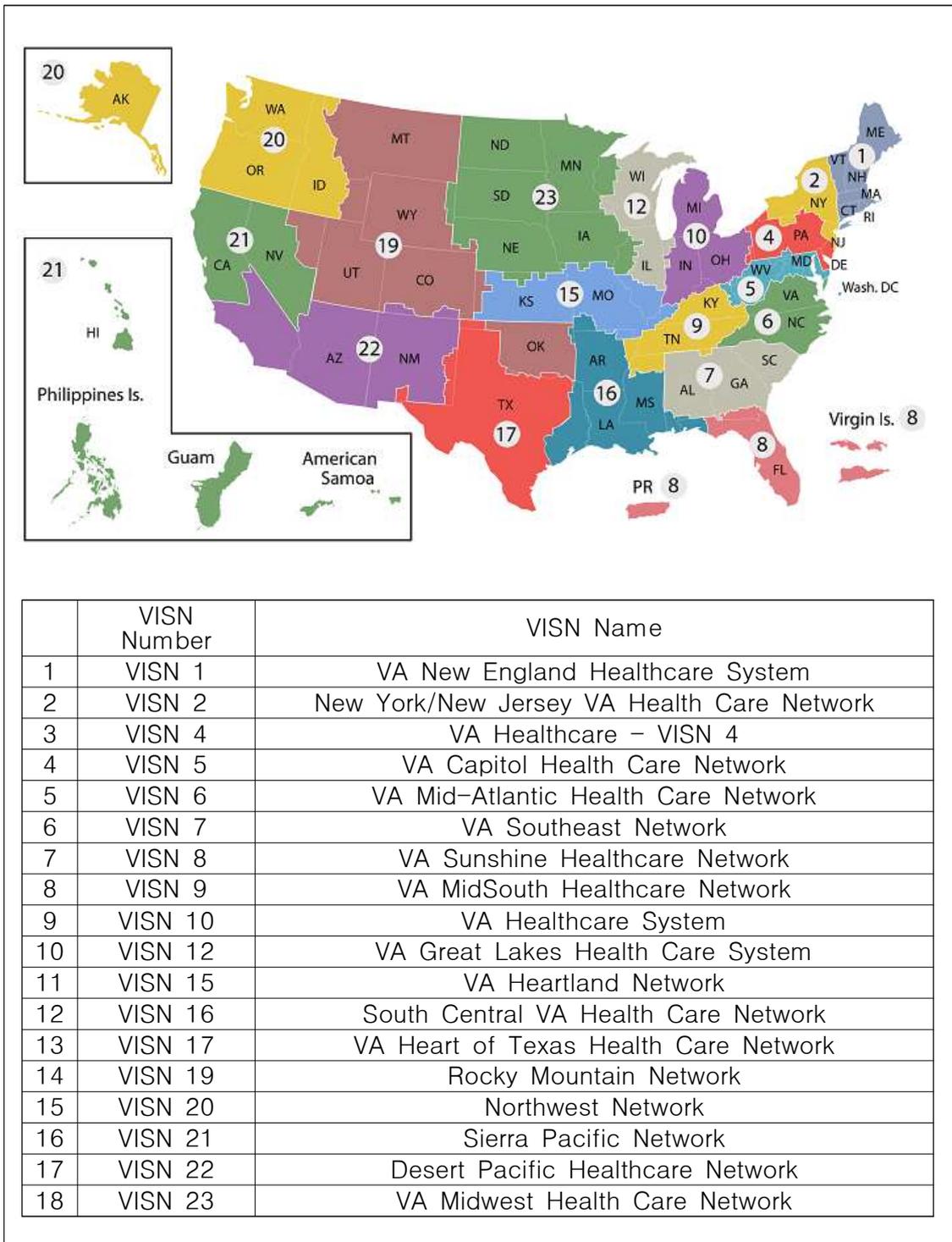


source :

https://www.ruralhealth.va.gov/docs/VRHRC_FactSheet_102819_FINAL508.pdf

Meanwhile, the Veterans Integrated Services Network (VISN) is a regional health system, with 18 locations across the United States, designed to better meet local health care needs and provide greater access to care. Each Veterans Integrated Service Network (VISN) has an established CRH supported by a multidisciplinary leadership team. This will improve access to quality health care for the estimated 4 million veterans living in rural areas.

Figure 14 : VISN Status



source :<https://www.va.gov/HEALTH/visns.asp>

(Program 2) VA ATLAS(Accessing Telehealth through Local Area Stations)

ATLAS is a program that provides a space where veterans can receive telehealth from their medical staff through VA Video Connect. Veterans who do not have a good internet connection at home, are not accustomed to using related devices, or live in remote areas and take a long time to visit the hospital in person can receive telehealth more easily and conveniently by visiting the ATLAS site. For reference, according to the Federal Communications Commission, more than 8.3 million homes and businesses in the United States still do not have high-speed Internet installed. ATLAS was introduced to bridge the digital gap for veterans and increase access to medical services.

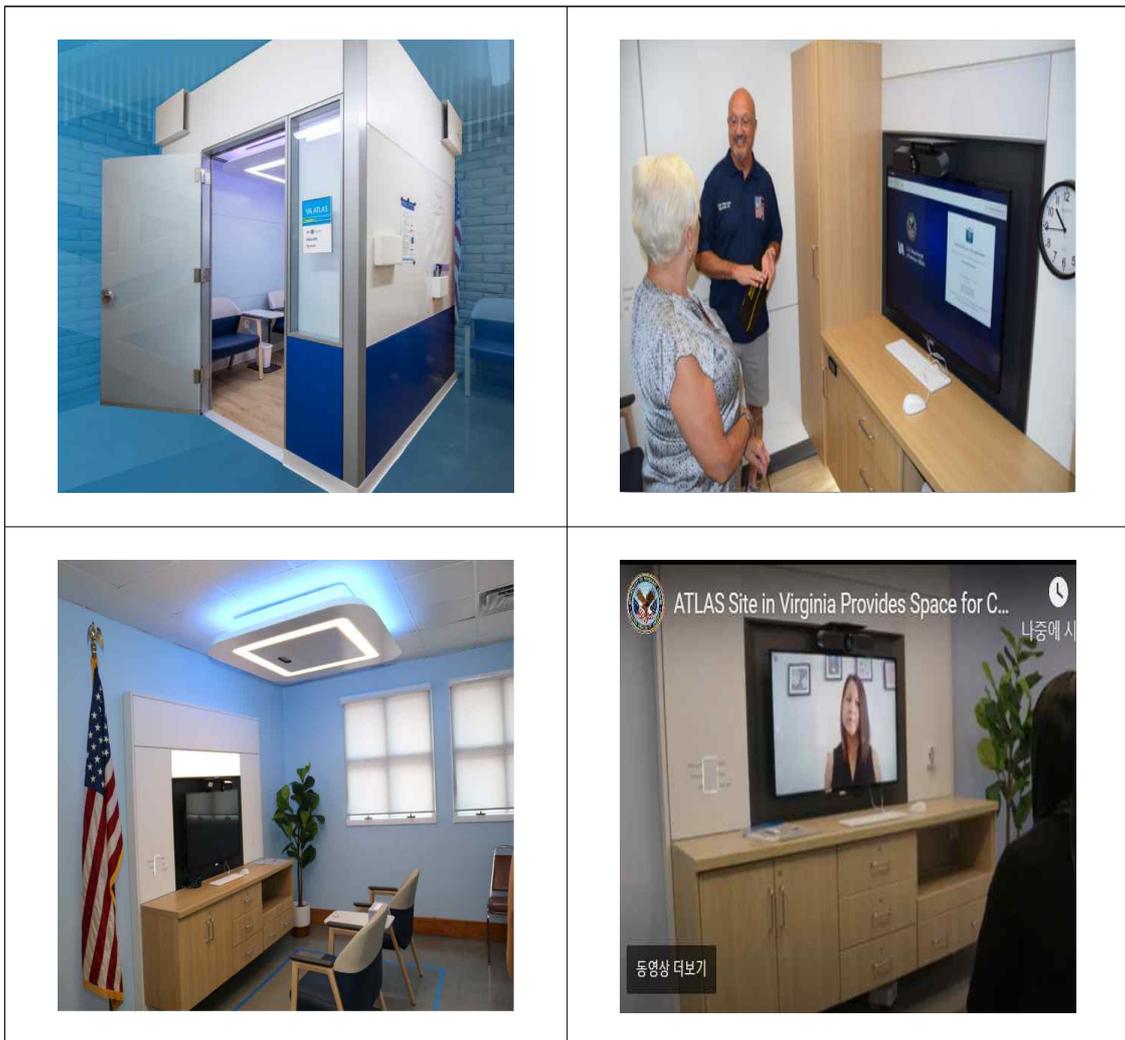
The ATLAS site is equipped with facilities and devices that can use telehealth through VA Video Connect, such as monitors, cameras, microphones, and chairs. Additionally, the ATLAS site has on-site staff who assist visiting veterans with guidance, equipment use, and technical issues. However, since they do not have access to medical and personal information, they do not participate in telehealth without separate consent.

As of April 2024, there are 17 ATLAS sites throughout the United States, focusing on overseas territories such as Saipan and Tinian and rural small towns.

Table 9 : ATLAS Status

	Site	City	State
1	American Legion Post #12 – Kellis–Draper	Wickenburg	AZ
2	VFW Post #2487	Los Banos	CA
3	American Legion Post #176	Springfield	VA
4	American Legion Ball–McColum Post #5	Emporia	KS
5	VFW Post #7103	Athens	TX
6	Greenwood County Veterans Center	Greenwood	SC
7	Rota Health Center	Rota	MP
8	Abbeville County Library	Abbeville	SC
9	Community Guidance Center	Saipan	MP
10	Greene County Veteran Service Office	Waynesburg	PA
11	Kagman Community Health Center	Saipan	MP
12	VFW Post #5007	Gowanda	NY
13	Tinian Community Health Center	Tinian	MP
14	Tinian Health Center	Tinian	MP
15	University of Montana	Missoula	MT
16	Montana State University	Bozeman	MT
17	VFW Post #6786	Eureka	MT

Figure 15 : ATLAS



(Program 3) Virtual Health Resource Center (VHRC)

VA's Virtual Health Resource Center (VHRC) is staffed by medical technology experts to provide counseling and training on virtual care tools, including telehealth applications, to veterans and Department of Veterans Affairs employees.

VHRC's medical technology experts are trained to provide counseling to veterans and Department of Veterans Affairs staff, including hands-on assistance, tips and tricks, training and

continuing education on the use of virtual care tools. Veterans and VA employees can learn about available virtual health tools, get help setting up and using VA rental devices or VA apps, get technical support, and find the VA technology that best suits their specific needs and interests. . VHRC offers face-to-face, phone, and video consultations.

As of April 2024, there are 37 VHRCs located throughout the United States.

Table 10 : VHRC Status

	Site	City	State
1	James E. Van Zandt Veterans' Administration Medical Center	Altoona	PA
2	West Texas VA HCS	Big Spring	TX
3	Brockton VA Medical Center	Brockton	MA
4	Buffalo VHRC	Buffalo	NY
5	South Charlotte VA Clinic Salisbury Health Care	Charlotte	NC
6	Coatesville VHRC	Coatesville	PA
7	Eastern Colorado Health Care System	Aurora	CO
8	Erie VA Medical Center	Erie	PA
9	Veterans' Health Care System of the Ozarks	Fayetteville	AR
10	Iowa City VA Health Care System	Iowa City	IA
11	Iron Mountain	Iron Mountain	MI
12	Kernersville VA Clinic Salisbury Health Care	Kernersville	NC
13	John L. McClellan Memorial Veterans Hospital	Little Rock	AR
14	Tibor Rubin Medical Center	Long Beach	CA

15	VA Greater Los Angeles Health Care System	Los Angeles	CA
16	Southeast Louisiana Veterans Health Care System	New Orleans	LA
17	Olympia CBOC	Olympia	WA
18	Omaha Virtual Health Resource Center	Omaha	NE
19	Mobile Medical Unit @ Veterans Memorial Museum	Chehalis	WA
20	Lincoln Virtual Health Resource Center	Lincoln	NE
21	Grand Island Virtual Health Resource Center	Grand Island	NE
22	Orlando VA HCS Virtual Health Resource Center	Orlando	FL
23	VA Pittsburgh Medical Center	Pittsburgh	PA
24	Prescott VAMC	Prescott	AZ
25	Central Virginia Health Care System	Richmond	VA
26	Roseburg VHRC	Roseburg	OR
27	Salem VAMC	Salem	VA
28	W.G. (Bill) Hefner Salisbury VA Medical Center	Salisbury	NC
29	VA San Diego Healthcare System	San Diego	CA
30	San Francisco VA Medical Center	San Francisco	CA
31	Puget Sound VA HCS	Seattle	WA
32	Silverdale CBOC	Silverdale	WA
33	St. Cloud VA Health Care System	St. Cloud	MN
34	St. Louis VA Medical Center – Jefferson Barracks	St. Louis	MO
35	Syracuse VA Medical Center Address	Syracuse	NY
36	James A. Haley Veterans' Hospital and Clinics	Tampa	FL
37	Tucson VA Medical Center	Tucson	AZ

source : https://telehealth.va.gov/facility-locator?display_all=1

(Program 4) Digital divide consult

Digital Divide Consult is a program that provides Internet services or technology necessary for VA telehealth to veterans who do not have an Internet connection or video-enabled devices. When veterans request a Digital Divide Consult, their VA care team will refer them to a social worker who can assist with key programs such as:

Table 11 : Digital Divide consult's main programs

Program	Contents
VA's Connected Devices Program	Provides eligible Veterans with internet-connected tablets at no cost so they can access VA care through telehealth. VA helps with initial device setup and provides 24/7 tech support for VA-loaned devices.
FCC's Lifeline program	Subsidizes the cost of broadband and phone services. Many Veterans are eligible for FCC Lifeline benefits, including Veterans with low incomes and Veterans who participate in Medicaid, qualifying VA pension, VA Survivors Pension and other federal programs.
FCC's Affordable Connectivity Program	Provides eligible households with discounts toward home internet service. Households can also receive a one-time discount to purchase a computer or tablet.
Everyone On program	Works to connect people living in the U.S. with low-cost home internet service, affordable computers and tablets, and digital literacy training.

Source:

https://news.va.gov/124072/programs-increase-your-access-telehealth-care/#toc_Digital_divide_consult

(Program 5) Mobile carrier partnerships

As previously mentioned, the VA has partnered with major U.S. carriers AT&T, TracFone's SafeLink, T-Mobile, and Verizon to help veterans avoid data charges when meeting with VA providers using VA Video Connect. Veterans and caregivers are automatically recognized when they use VA Video Connect, and no action is required if they are on an eligible plan.

3. Surgery, rehabilitation and care using robot technology

(1) Concept

In general, robotic technology used in the medical and welfare fields includes surgical robots, recycling robots, robotic prosthetic limbs (prosthetic hands), and care robots.

Surgical robotics began in 1987 when Dr. Richard Satava, a surgeon and U.S. Army colonel, joined the Stanford Research Institute (SRI) to initially develop a "telepresence surgical system" for open surgery. Afterwards, laparoscopic surgical robots were used, and in 2001, cholecystectomy was performed using a computerized robotic device called ZEUS, proving that remote surgery using a robotic system is actually possible. Afterwards, the da Vinci system was approved by the FDA, and robotic surgery expanded in earnest.³⁵⁾

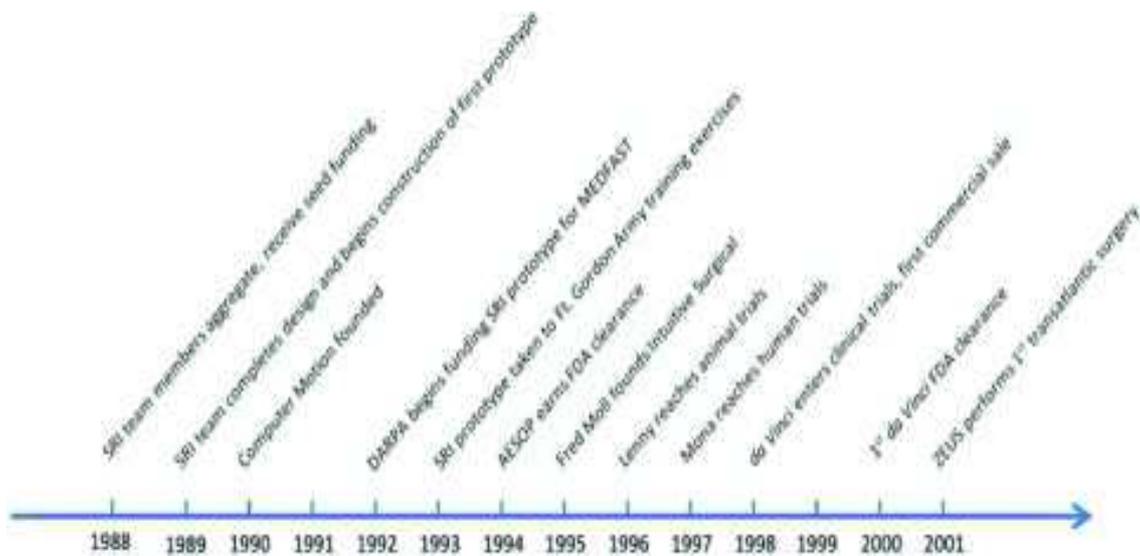
35)

<https://www.generalsurgerynews.com/Opinion/Article/09-21/The-History-of-Robotic-Assisted-Surgery/64651>

Figure 16 : surgical robot

	
<p>Computer Motion's ZEUS</p>	<p>Intuitive's da Vinci Xi robotic platform</p>

Figure 17: History of surgical robots



Rehabilitation robots are robots whose purpose is to restore problems occurring in the body to their original state, such as limb paralysis due to disease or accident.

A prosthetic robot is a device that applies robotic technology to prosthetic limbs and hands for people with amputations, and allows them to move joints close to the movements of actual human joints. However, although it may imply an image of only limbs, it actually refers to any device that supports or replaces a body part or function.

Care robots are machines that operate partially or fully autonomously, with the goal of providing physical, cognitive or emotional support to potential users, older people, relatives and professional caregivers.³⁶⁾

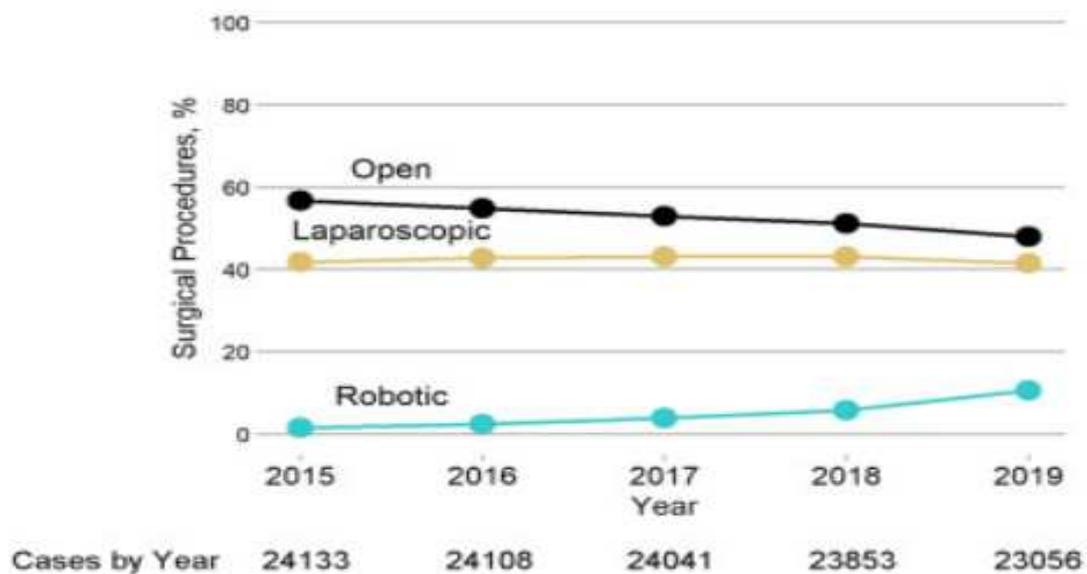
(2) Status of use in the veterans affairs field

The ratio of robotic surgery to general surgery (cholecystectomy, ventral hernia repair, and inguinal hernia repair) in the VHA's health care system shows that robotic surgery is increasingly occurring over open, laparoscopic surgery.³⁷⁾

36) Johansson-Pajala, RM., Thommes, K., Hoppe, J.A. et al. Care Robot Orientation: What, Who and How? Potential Users' Perceptions. *Int J of Soc Robotics* 12, 1103–1117 (2020).

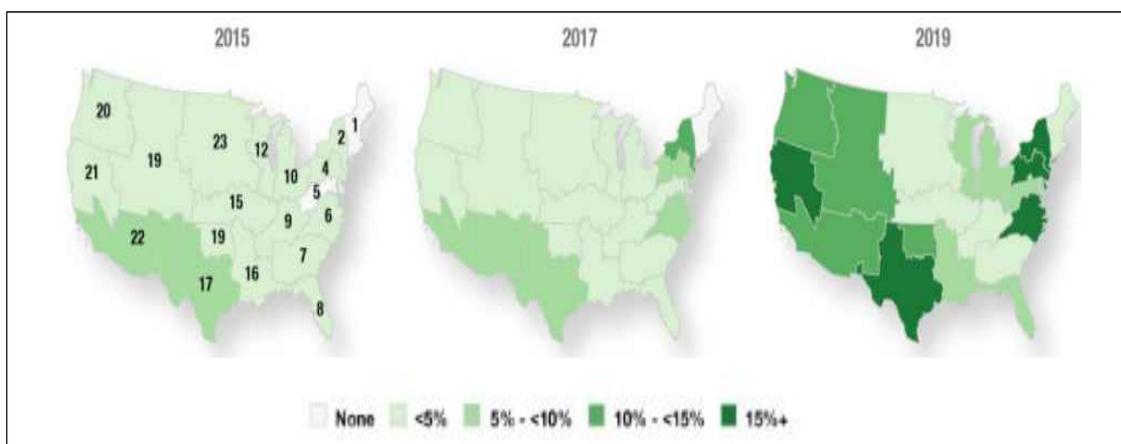
37) Mederos, M. A., Jacob, R. L., Ward, R., Shenoy, R., Gibbons, M. M., Girgis, M. D., ... & Kondo, K. (2022). Trends in robot-assisted procedures for general surgery in the Veterans Health Administration. *Journal of Surgical Research*, 279, 788–795.

Figure 18 : Temporal trends in utilization of robotic surgery for All General Surgery in the VHA



Source : [https://www.journalofsurgicalresearch.com/article/S0022-4804\(22\)00419-X/fulltext](https://www.journalofsurgicalresearch.com/article/S0022-4804(22)00419-X/fulltext)

Figure 19 : Proportion of robotic surgeries by Veterans Integrated Service Network (VISN) 2015, 2017, and 2019.



The number of robotic surgeries in VHA's general surgery department increased 16-fold from 334 in 2013 to 5,338 in 2021. Considering that the Community increased 7.5-fold during the same period, it can be seen that there was an even greater increase in the field of veterans affairs.³⁸⁾

Meanwhile, today VA's Prosthetics and Sensory Services is the world's largest provider of prosthetic devices and sensory aids. VA has established and operates a separate center for the development of prosthetic robots and recycling robots. These centers typically have close working relationships with affiliated universities and other institutions, as well as commercial partners and other federal agencies.³⁹⁾

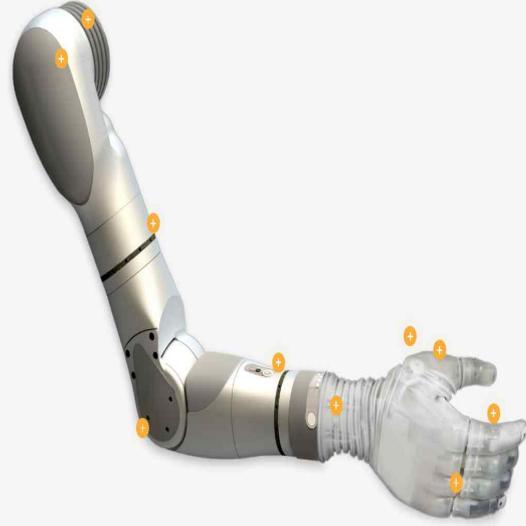
38) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9932937/>

39) <https://www.research.va.gov/topics/prosthetics.cfm#research1>

Table 12 : VA Research Centers about Prosthetics/Limb Loss

Center name	Location	Main research content
Advanced Platform Technology Center	Cleveland, Ohio,	Develop new technologies to help veterans who have difficulty controlling body movements or sensory issues and veterans who have lost limbs.
Center for Functional Electrical Stimulation	Cleveland, Ohio,	It uses controlled electrical currents to help paralyzed muscles work again. This center focuses on applying electrical currents to generate or inhibit activity in the nervous system.
Center for Wheelchairs and Associated Rehabilitation Engineering, part of the Human Engineering Research Laboratories (HERL)	Pittsburg, Pennsylvania	The center has made important contributions to the design of wheelchairs, seating systems and other mobility systems.
Center for Limb Loss and MoBility	Seattle, Washington	The center's research aims to reduce the impact of functional and anatomical limb loss by exploring diseases that cause limb dysfunction and developing cutting-edge technologies for foot research.
Center for Neurorestoration and Neurotechnology	Providence, Rhode Island	Supports research into the development of brain-computer interfaces to help veterans who experience paralysis, loss of limbs, or have difficulty thinking or communicating.

Figure 20 : Prosthetics using robot technology in use at VA

 A black and silver prosthetic foot with a motorized heel and a textured sole, shown against a white background.	 A close-up photograph of a person's lower leg and foot wearing a black prosthetic leg with a white and red sneaker, walking on a paved path.
<p>Empower's Ottobock developed by VA in collaboration with researchers at MIT and Brown University</p>	
 A silver and grey prosthetic arm with a hand, shown against a white background. The hand is a realistic-looking prosthetic with fingers and a thumb.	 A woman wearing a black and white exoskeleton suit with two long, thin poles extending from her legs, standing on a white background.
<p>Mobius Bionics' LUKE Arm, which has been used in VA patients since 2017.⁴⁰⁾</p>	<p>Golifeward's ReWalk, which has been used for VA patients since 2015⁴¹⁾</p>

40) <https://www.research.va.gov/topics/prosthetics.cfm>

41) <https://golifeward.com/>

Additionally, VA operates the Amputation System of Care (ASoC) to minimize disability for veterans with limb loss and improve the quality and consistency of amputation rehabilitation care. ASoC's organizational structure is divided into four layers. These include Regional Amputation Centers (RACs) in 7 Veterans Affairs Medical Centers (VAMCs), Polytrauma Amputation Network Sites (PANS) in 18 VAMCs, Amputation Clinic Teams (ACTs) in 106 VAMCs, and Amputation Points of Contact (APoC) in 22 VAMCs.

Figure 21 : VHA Amputation System of Care



And, VA is leveraging virtual platforms to provide specialty care to veterans in smaller facilities that do not have specialty amputation services. Virtual care connects amputation rehabilitation specialists at large VA sites, allowing veterans to connect with

providers from a variety of locations, including their homes, VA clinics close to home, and community locations such as Community Prosthetics Partners offices. In 2019, 13.8% of veterans who received care at VA outpatient amputation specialty clinic had at least one virtual encounter that same year.⁴²⁾

Lastly, there are case study results on care robots for veterans. According to Brecher, D. B. (2020), a 90-year-old veteran diagnosed with Alzheimer's dementia and admitted to a Veterans Affairs Community Living Center experienced reduced anxiety and stress through robotic cats called 'Joy For All,' and his aggressive behavior disappeared..⁴³⁾ According to Geoffrey W. Lane et al. (2016), the use of a seal-shaped robot called Paro increased positive mood and behavioral observations in veterans suffering from chronic diseases.⁴⁴⁾ As such, it appears that care robots are being used in veterans care facilities.

Figure 22 : Paro robot



42) <https://www.prosthetics.va.gov/asoc/index.asp>

43) Brecher, D. B. (2020). Use of a Robotic Cat to Treat Terminal Restlessness: A Case Study. *Journal of Palliative Medicine*, 23(3), 432–434. <https://doi.org/10.1089/jpm.2019.0157>

44) Lane, G. W., Noronha, D., Rivera, A., Craig, K., Yee, C., Mills, B., & Villanueva, E. (2016, May 19). Effectiveness of a Social Robot, "Paro," in a VA Long-Term Care Setting. *Psychological Services*. Advance online publication. <http://dx.doi.org/10.1037/ser0000080>

4. Utilization of artificial intelligence technology

(1) Concept⁴⁵⁾

According to IBM, artificial intelligence (AI) is a technology that allows computers and machines to simulate human intelligence and problem-solving abilities.

Weak AI, also known as narrow AI or artificial narrow intelligence (ANI), is AI that is trained and focused to perform a specific task. These include Apple's Siri, Amazon's Alexa, and self-driving cars.

Strong AI consists of Artificial General Intelligence (AGI) and Artificial Super Intelligence (ASI). This is a theoretical form of AI where machines have the same intelligence as humans. The idea is that AI has consciousness with the ability to solve problems, learn, and plan for the future.

(2) Status of use in the veterans affairs field

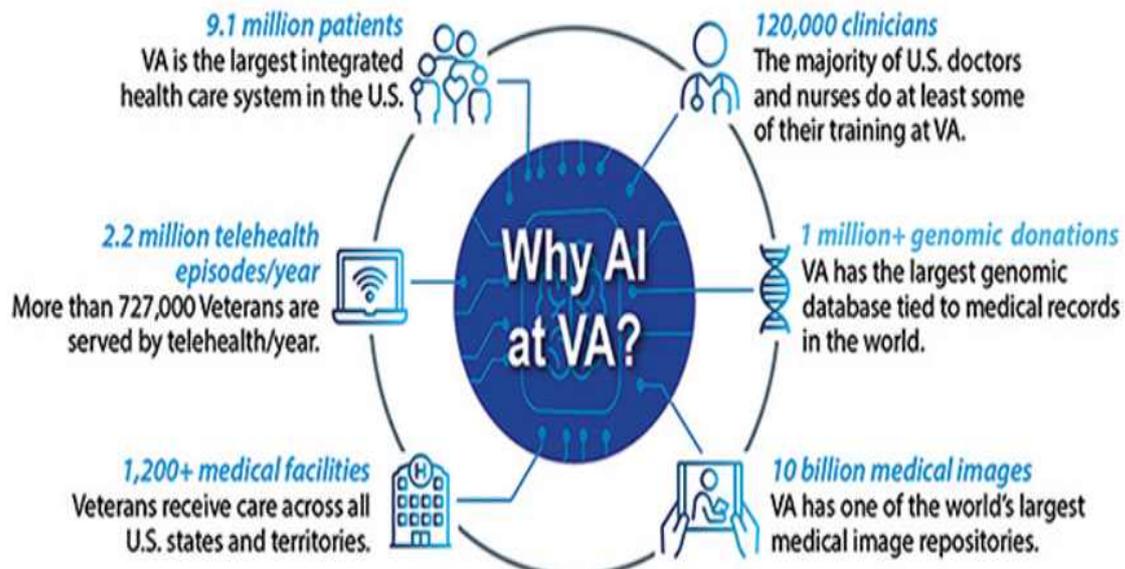
In 2019, VA announced the establishment of the National Artificial Intelligence Institute (NAII). NAII is VA's primary organization for artificial intelligence research, implementation, policy, and collaboration, providing and integrating AI research and development that is meaningful to veterans and the American people.

AI uses computers to simulate human thinking, especially in applications involving large amounts of data. VA is currently using AI to reduce veterans' wait times for treatment, identify people at high risk for suicide, and help doctors consolidate cancer lab test results and select effective treatments. The Institute is providing

45) <https://www.ibm.com/topics/artificial-intelligence>

new capabilities and opportunities to improve health outcomes for veterans and others.

Figure 23 :The AI in the field of veterans affairs



Additionally, VA established an AI Strategy at the organizational level. As the US National AI Initiative Act was enacted, VA also established an AI Strategy in line with the strategic goals of The US National AI Strategy (2019), and VA's four strategic goals are as follows:⁴⁶⁾

⁴⁶⁾https://www.research.va.gov/naii/VA_AI_Strategy_V2-508.pdf

Figure 24 : 4 strategic objectives of VA’s AI Strategy(2021)

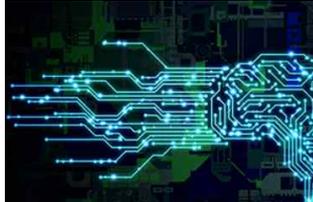
<p>Strategy 1: Use existing AI to improve outcomes and experiences for our Veterans.</p> <ul style="list-style-type: none"> • Develop shared public datasets and environments for AI training and testing. • Measure and evaluate AI technologies through standards and benchmarks.
<p>Strategy 2: Increase VA Artificial Intelligence capacity and capabilities.</p> <ul style="list-style-type: none"> • Make long-term investments in AI Research. • Develop effective methods for human-AI collaboration. • Develop shared public datasets and environments for AI training and testing. • Better Understand the National AI R&D Workforce Needs.
<p>Strategy 3: Increase Veteran and stakeholder trust in AI.</p> <ul style="list-style-type: none"> • Understand and address the ethical, legal, and societal implications of AI. • Ensure the safety and security of AI Systems.
<p>Strategy 4: Build upon the VA’s existing partnerships across agencies and industry.</p> <ul style="list-style-type: none"> • Expand Public-Private Partnerships to Accelerate Advances in AI.

And, VAs must adhere to nine principles when designing, developing, acquiring, and using AI. These nine principles define trustworthy AI as (1) lawful and respectful of national values, (2) purposeful and performance-driven, (3) accurate, trustworthy, and effective, and (4) safe and secure, (5) understandable, (6)

accountable and traceable, (7) regularly monitored, (8) transparent, and (9) accountable.

Based on this, VA attempted various programs using AI technology. The flagship pilot programs implemented by VA are shown in Figure 00.

Figure 25 : Flagship Pilot Projects of VA

COVID-19 120-Day Mortality Model	
<p>Early in the pandemic, NAll collaborated with the Washington, D.C. Veterans Affairs Medical Center (VAMC) to provide resources and guidance to develop machine learning models to predict the severity of the disease course of COVID-19 patients.</p> <p>Later, in 2021, the COVID-19 mortality model transitioned to more widespread use across the VA and was operationalized in 13 VAMCs nationwide. This provided VA medical staff with insights that helped them predict the severity of a patient's disease course and plan their care accordingly.</p>	
AI-To-Go Tool	
<p>The AI-To-Go tool is a cloud-based pipeline for AI research and statistical models. This tool allows researchers and practitioners to access and track AI models from validation to user acceptance and finally enterprise-level implementation. AI-To-Go allows you to stack models and compare their performance while receiving input from clinicians on the value and impact of the information presented.</p>	

Digital Command Center	
<p>The Digital Command Center (DCC) aims to leverage VA’s AI capabilities, infrastructure, and expertise to improve the health and well-being of veterans. Once fully operational, DCC will use predictive analytics combined with AI to make it easier for VA to integrate, track and share data among medical center administrators.</p> <p>DCC's data integration and centralization allows VAMCs to improve operational efficiency, bed space management, quality of care, patient experience, clinician satisfaction, transparency, coordination and staffing.</p>	
Suicidal Ideation Text Screening	
<p>A new natural language processing (NLP) engine, the Suicidal Ideation Detection Engine, determines whether text responses can be filtered more quickly and accurately, allowing the Veterans Crisis Line to more quickly identify and assist veterans in crisis.</p> <p>This helps VA detect, assess, and report indicators of suicidal thoughts, self-harm, emotional dysregulation, pain, and other mental health problems, and reports outcomes.</p>	
Smart Wearable Pilot	
<p>With advances in monitoring vital signs such as oxygen, heart, and sleep, AI-based technologies can now diagnose patients and detect abnormalities. Through continuous sensing and monitoring, wearable devices</p>	

<p>provide healthcare professionals with valuable information about their patients' health.</p> <p>AI develops and tests methods to better detect and treat post-traumatic stress disorder (PTSD) and suicidal thoughts. And it's used to analyze combinations of data to track the effects of multiple variables, including stress, sleep, diet, basic training and veterans' retirement.</p>	
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Source : <https://www.research.va.gov/naii/pilot-projects.cfm>

In addition, VA is using AI in various fields. A representative example is 'ClearRead CT', which selects chest CT (computed tomography) scans as data input to increase the detection rate of malignant lung nodules that may be missed by radiologists. And the REACH-VET (Recovery Engagement and Coordination for Health-Veterans Enhanced Treatments) program, which uses algorithms to identify patients at highest risk of suicide.

V. Conclusion and policy recommendations

1. Development and introduction of new services for national meritorious persons and veterans in the medical and welfare fields

As can be seen from the example of the United States, the introduction of new services utilizing digital technology is an inevitable trend. Although it has been partially introduced in Korea's veterans affairs field, it is still only the beginning compared to the United States. Services based on digital technology are an area that needs to be further developed and expanded in the future.

Considering the characteristics of Korean national meritorious people and veterans, the need to utilize digital technology becomes even higher. The most representative example of this is telehealth. Considering the limitations in the number of Veterans Hospitals and Commissioned Hospitals, the resulting problem of waiting for treatment at Veterans Hospitals, the worsening regional imbalance in medical resources, and the high rate of patients with chronic diseases due to aging, I think the benefits of telehealth will be very high. Additionally, telehealth is expected to be effective in veterans nursing homes and home welfare services.

Among them, if chronic disease management is carried out remotely using Veterans hospitals and Veterans Affairs nursing homes as a base, it is possible to prevent worsening of serious diseases, thereby improving the health of veterans and reducing costs. The Veterans Hospital staff can be used as coordinators for telehealth services. Additionally, the Veterans Affairs Office could be used as a space like VA ATLAS in the United States.

However, despite these advantages, the service delivery system using digital technology still faces many challenges even in the United States. In a meeting with Kentucky's Department of Veterans Affairs, they said that while there are many advantages to providing services using digital technology, the actual delivery of services requires some preparation. They said that while COVID-19 has been a catalyst for telehealth, many veterans still have difficulty accessing and using information devices. The United States, which started before us, is also experiencing various difficulties in the field when it comes to contact with actual consumers, so we will also need thorough preparation work.

Figure 26 : Meeting with the Kentucky Department of Veterans Affairs (April.2024)



However, in Korea, telehealth is strictly restricted according to related laws, so this issue must be resolved first. However, during COVID-19, when non-face-to-face treatment was exceptionally allowed for returning patients with chronic diseases who needed prescriptions, veterans were very satisfied with the system of delivery of prescription drugs by courier after non-face-to-face treatment at the Veterans Affairs Hospital.

In the future, in order to make telehealth a reality for veterans, MPVA must prepare the legal basis for telehealth and guidelines for management of medical information and sensitive personal information. In addition, each veterans hospital and commissioned hospital needs to prepare equipment for telehealth and equipment to be provided or rented to veterans. In addition, MPVA must deploy dedicated personnel to support telehealth at veterans hospitals, etc.

Furthermore, in addition to patient-hospital telehealth, MPVA should also review various telehealth methods such as primary hospital-secondary hospital, commissioned hospital-Veterans Hospital, and regional Veterans Hospital-Central Veterans Hospital.

Lastly, we need to come up with a plan to change the perception of elderly veterans and veterans who are not familiar with digital methods. MPVA needs to benchmark the US VA's agreement with telecommunication companies to not cover telecommunication costs.

In addition to telehealth, there is a need to expand services so that various services using robot technology and artificial intelligence technology can be activated in Korea as soon as possible. For this, it is necessary to secure the relevant budget and have manpower dedicated to it.

2. Strategic plan for MPVA organization

(1) Introduction

Strategic planning is “a disciplined effort to produce fundamental decisions and actions that shape and guide what an organization is, what it does, and why it does it.” (Bryson, J. M. (2018))⁴⁷⁾. Public institutions are mostly organizations established for intangible values, and it is very difficult to measure their performance and strategy, unlike private companies that have a clear and visible goal of profit. For this reason, we have seen many public institutions fail to realize the value of the organization properly or disappear as a result due to not sensitively recognizing external changes.

The same applies to MPVA. Strategic planning is essential for MPVA to strengthen its competitiveness through communication with the external environment. This is essential for MPVA to successfully propose and implement new services suitable for the era of the 4th Industrial Revolution. In other words, this is a policy proposal for organizational changes at the Ministry of Veterans Affairs that are necessary for the new customized service discussed above to be institutionalized.

(2) MPVA's environment analysis : SWOT-analysis

< Strength >

A strong justification for the organization's existence – The assertion that the responsibility for the patriots and veterans who

47) Bryson, John M. Strategic Planning for Public and Nonprofit Organizations: A Guide to Strengthening and Sustaining Organizational Achievement, John Wiley & Sons, Incorporated, 2018. ProQuest Ebook Central,

devoted themselves to the country is the natural role of the state and is a powerful weapon that no one can oppose. Accordingly, the MPVA has never been abolished since 1961, even when other ministries within the government have repeated integration, abolition, and establishment.

< Weakness >

People's Negative Perception of Veterans Affairs – From the 1960s, when Korea was not economically prosperous, to relatively recent years, veterans' support has been expanded in terms of dispensation rather than systematic compensation for sacrifice and dedication. As a result, the public's perception of veterans has become fixed, instead of respect or courtesy, as an object to be helped.

< Opportunity >

Strengthening the role of veterans and strengthening the status of the MPVA – The status of the MPVA was elevated from 'an agency under the Prime Minister' to 'an independent official member of the Cabinet of Ministers.' In addition, as veterans became an important agenda in diplomatic relations with countries that participated in the Korean War, politics and media became more interested in veterans.

< Threat >

Rapid decrease in policy targets – The number of war veterans, who account for the majority of policy targets, is rapidly declining due to aging (the average age of Korean War veterans is 90s, Vietnam War veterans are in their 70s), while new entrants

are few and far between is declining rapidly expenses.

(3) Problems facing the MPVA

<Necessity to fulfill fundamental roles and values stipulated by laws and regulations>

As discussed above, the MPVA carries out tasks such as compensation, welfare, courtesy, management of veterans' organizations, and creation of a culture that promotes veterans. These are the duties imposed on the MPVA by statute and are the primary value of the MPVA's existence. On the surface, MPVA's performance is not bad, including receiving a good evaluation from the Government Performance Evaluation Committee.⁴⁸⁾

However, MPVA is not receiving positive reviews from the media, the National Assembly, and veterans.⁴⁹⁾ I think this is the result of being complacent with mannerism without any special crisis in the organization for 60 years after its establishment, unaware of changes in the surrounding environment, and sticking to the way of the past. MPVA must reexamine the way it works internally and develop new strategies to successfully carry out its mission.

<It should show higher public value according to the improvement of the organization's status>

In addition, MPVA became a member of the State Council

48) Government performance evaluation committee. (2023, February). Government Business Evaluation Report. Government Performance Evaluation Portal.

49) National policy committee. (2023, September). National Assembly Audit Report. National Policy Committee.

with independent ministerial powers only now, 62 years after its establishment. As it is the first realization of the new president's pledges for reorganization, MPVA should show the public its achievements and values. In addition to honoring and supporting war veterans, it is necessary to create and realize a higher level of public value.

(4) Formulating Strategy

1-step: What are the practical alternatives, dreams, or visions we might pursue to address this strategic issue, achieve this goal, or realize this idealized scenario?

① Need to expand services to improve Veterans' satisfaction with policies

As a result of MPVA's policy satisfaction survey, 42.7% of respondents answered that they were dissatisfied with MPVA's policies. In addition, 45.5% of those who responded that the range of current support targets was small as a reason for dissatisfaction, and 40.2% responded that the level of support was low. Therefore, to properly realize the values currently assigned to the MPVA, 'compensation, welfare, courtesy and management of war veterans, and creation of a culture that promotes war veterans', the quantity and quality of the currently implemented services must be increased. In particular, it is necessary to expand medical support, which veterans consider most important.

② Reform within the organization for the success of organizational capacity building and strategic planning

1) Organizational redesign: MPVA is an executive-oriented

institution with more local organizations in charge of enforcement than the headquarter that formulates policies. Even the headquarters is run around the function of keeping existing policies current. There is only one team in the headquarters that is in charge of developing new policies, and even this is carried out along with other tasks. Therefore, it is necessary to create an independent department for the establishment and promotion of new strategic plans. In order to secure strong momentum, this department should be under the direct control of the Minister or Vice Minister. In addition, the organization must be redesigned by analyzing the organizations to be strengthened and those to be reduced according to the strategic plan.

2-step: What are the barriers to the realization of these alternatives, dreams, or idealized scenarios?

① Need to expand services to increase veterans' satisfaction with policies

Korea does not have a social atmosphere that explicitly opposes expanding veterans' support, but this inevitably accompanies an increase in budget and an increase in organizations. Therefore, the cooperation of the ministry in charge of the budget, the ministry in charge of the quota of civil servants, and the National Assembly is essential, but in reality this is a very difficult task.

② Reform within the organization for the success of the organization's internal capacity building and strategic plan

1) Organizational Redesign: Civil servant organizations in

Korea must follow very strict regulations on organizational composition or changes in personnel, and must be reviewed by the department in charge of the organization. As with the budget, establishing a new organization or changing beyond a certain range is a very difficult task in reality.

3-step: What major proposals might we pursue to achieve these alternatives, dreams, or idealized scenarios directly or to overcome the barriers to their realization?

① Need to expand service to enhance Veterans' satisfaction with policies

The most important thing is to secure a strong driving force. A powerful minister or vice minister should oversee the strategic plan, but a separate department should be established to oversee the strategic plan. Through this department, even if the minister or vice minister is replaced, the realization of the strategic plan must be continuously pursued.

② Reform within the organization for the success of the organization's internal capacity building and strategic plan

Consultation with other ministries (organizational, personnel) should be prioritized for both organizational redesign, change in performance evaluation method, and provision of incentives. In addition, it is necessary to prepare an improvement plan first at a level that can be implemented on its own at the same time as consultation. Also, the purpose of the new strategic plan should be explained to internal members, and public hearings or meetings to share the necessity should be held regularly. This is

to increase the participation of internal members and reduce resistance.

4-step: What major actions (with existing staff within existing job descriptions) must be taken within the next year (or two) to implement the major proposals?

Table 13: Major Actions Plan within the next 2 year

	~12month(Existing Resources)	~24month(Additional resources)
①	<ul style="list-style-type: none"> ·Establishment of a detailed expansion plan ·Consultation with other ministries ·Securing the budget ·Submission of relevant laws to the National Assembly 	<ul style="list-style-type: none"> ·Relevant laws passed by the National Assembly and enforced ·Relocating or increasing personnel and organizations, if necessary
②	<ul style="list-style-type: none"> ·Establishment of an exclusive organization ·Consultation with other ministries on organization revision, performance revision, and incentive proposals ·Statute amendment ·Holding a conference 	<ul style="list-style-type: none"> ·Implementation of amended laws related to performance and incentives ·Continuing to hold meetings to respond to objections within the organization
③	<ul style="list-style-type: none"> ·Submission of relevant laws to the National Assembly ·Hold a meeting 	<ul style="list-style-type: none"> ·Enforcement of amended laws ·Ongoing management

5-step: What specific steps must be taken within the next six months to implement the major proposals, and who is responsible?

Once the decision is made to develop and implement a strategic plan, the first thing to do is to set up a separate department dedicated to this strategic plan. Of course, this will initially be an ad hoc organization. This department, parallel with the process of making it a formal organization with real authority, should oversee the process of specifying the strategic plan and having each department set up detailed action plans in accordance with the strategic plan.

Each department establishes a detailed promotion plan for the work it is responsible for according to the direction of the strategic plan. In particular, in the case of pension and medical departments, strategic expansion plans should be established.

At the same time, the necessity and contents of the strategic plan must be shared and disseminated to internal and external related organizations (Financial Department, Personnel Department, Organization Department, National Assembly, Veterans' Association). This is a way to reduce anxiety and encourage engagement within the organization, and a way to secure external resources. This is a task that requires the leadership of ministers and vice ministers.

(5) Implementing Strategy

Table 14: Strategy Action Plan

Strategic Problem	Milestone	Action Step	Person(s) Responsible	Potential Barriers or Resistance	Collaborators
Expansion of Veterans Service	Increase of more than 10% of current budget Policy satisfaction increased by 5 percentage points	Draft expansion plan completed	Director of each department in charge, Director of the strategic planning department	Non-cooperation of other ministries (finance ministries) in obtaining budgets	–
		Listen to stakeholders	Director of each department in charge,		Veterans Organizations
		Budget and organizational acquisition efforts	Minister		Office of the President, other ministries within the government
		Submission of related bills to the National Assembly	Director of each department in charge, Director of national assembly department		Ruling party, Office of the President
		Efforts for passage in the National Assembly and Enforcement of amendments	Minister		Ruling party, Press, Veterans Organizations

Internal reform of the organization	Establishment of strategic planning department	Temporary organization launched	Director of organization department, Minister	Non-cooperation of other ministries in the establishment of new organizations	-
		Completed regular organization	Director of organization department		Office of the President,
	Change in performance evaluation method and create incentives	Draft amendments	Director of department in charge of performance, Director of the strategic planning department	Employee backlash and welfare inaction Non-cooperation of other ministries (human resources ministries) in the introduction of the new system	Employee unions
		Listen to stakeholders	Director of department in charge of performance, Director of the strategic planning department, Minister		
		Completion and implementation of regulatory revisions	Director of department in charge of performance		

(6) Communicating Strategy

Table 15: Communicating Strategy

Audience (Who)	Purpose (what/why)	Frequency (When)	Delivery Vehicle (Where/How)	Communicator (Who)
Executives in the headquarter	Highlighting the need, Motivation, Increase interest, Share the situation	Biweekly	Direct contact, Regular meeting	Minister (Vice Minister)
Employees in the Headquarters	Progress check, Highlighting the need, Share the situation, Encourage participation, Provide feedback	Monthly	Direct contact, Regular meeting	Director of the strategic planning department
Members of the Strategic Planning Department in the Headquarters	Progress check, Provide feedback Dissemination of instructions	Monthly	Direct contact, Regular meeting	Minister (Vice Minister)
Members of the National assembly, Budget, Organizational and Performance Departments of the Headquarters	Progress check, Share the situation, Encourage participation	Biweekly	Direct contact, Regular meeting	Director of the strategic planning department

Employee of branch office (Employee unions)	Share content and vision, Reduce backlash, Highlighting the need, Obstacle (non-cooperation) removal	Monthly	Direct contact, Regular meeting, video conferencing, e-mail, MPVA Newsletter	Director of the strategic planning department
Ministers and vice ministers of other ministries (budget, organization) within the government	Persuasion of necessity, Request for cooperation, Obstacle (non-cooperation) removal	1time immediately after establishing a plan, then whenever necessary	Direct contact (Council of Ministers)	Minister (Vice Minister)
Employees of other ministries (budget, organization) within the government	Persuasion of necessity, Request for cooperation, Resource acquisition, Obstacle (non-cooperation) removal	1time immediately after establishing a plan, then whenever necessary	Direct contact, Report in the annual regular procedure E-mail	Directors of department in charge of Budget, national assembly, organization, performance Director of the strategic planning department
Members of Ruling party, Office of the President	Persuasion of necessity, resource acquisition, Request for cooperation	1time immediately after establishing a plan, then whenever necessary	Direct contact	Minister (Vice Minister)
Press	Request for cooperation in advocacy reporting	1time immediately after establishing a plan, then whenever necessary	Direct contact, Press release	Minister (Vice Minister) Spokesperson

(7) Conclusion

Last year, MPVA became a member of the State Council. This is also a crisis in which MPVA will soon have to demonstrate greater performance and value realization. At this time, it is essential to expand new services for the health and welfare they face.

In order to successfully provide customized services using the 4th Industrial Revolution technologies discussed above, MPVA needs to strengthen its organizational capabilities through internal reform in addition to developing services. MPVA's new type of service will be successful when momentum is secured through the establishment of an organization that oversees this, and feedback and modifications to the strategic plan are actively carried out through constant communication with internal and external stakeholders.

VI. Reference

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